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• Goldstone Resources Inc.

Historical Tailings Characterization
Northern Empire Mill, Beardmore, ON

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1 Introduction

Exp Services Inc. (**exp**) was commissioned by Goldstone Resources Inc. (Goldstone) to undertake a characterization study of the historical Northern Empire Mill tailings located in Tansleyville, Ontario, as described in the Request for Proposal (RFP) dated June 19, 2015. The purpose of the study is to satisfy the requirements of Part 6 (Ground Water Monitoring) and Part 7 (Metal Leaching and Acid Rock Drainage Requirements) of the Mine Rehabilitation Code of Ontario (O.Reg. 240/00), as they apply to the historical tailings deposit. Specifically, the scope of work included the following:

- Providing documentation required by the applicable sections of Parts 6 & 7 (i.e., Sections 50 to 59) of the Code;
- Determining elevations and flow direction(s) of groundwater from the historical tailings stack;
- Commenting on any tailings related influences on the Blackwater River, Empire Lake and groundwater users in the Tansleyville settlement;
- Providing comments on the long-term chemical stability of the deposit;
- Providing recommendations (if any) for remediating the site;
- Allowing for one draft review by the MOECC and the MNDM prior to finalizing the report.

2 Background

The historical Northern Empire tailings deposit is located immediately northeast of Beardmore, Ontario and south of the Tansleyville settlement along Highway 11, approximately 200 km northeast of Thunder Bay, Ontario (see Figure 1 in Appendix A). The deposit sits on the north bank of the Blackwater River immediately within and south of an old gravel pit separating it from the Tansleyville residences to the north (see Figure 2). Empire Lake (approximate surface area of 8 ha) lies to the immediate northeast of the site, and an unnamed lake is located about 150 m west of the site.

2.1 Historical Tailings Placement

Tailings were deposited at the site during the Northern Empire mining period from 1934 to 1942. Approximately 426,000 tons of ore were milled during this period. According to the RFP, the original Northern Empire mill was designed for plate amalgamation with regrind of the amalgamation tailings followed by flotation. However, the mill was modified during the first year of operation to use the cyanidation / flotation process with gold recovery by Merrill Crowe process.

The tailings surface is approximately 50% vegetated by naturally infesting vegetation consisting of various species of coniferous and deciduous trees and smaller vegetation.

2.2 Preliminary Tailings Investigation

Preliminary investigation of the deposit, conducted by Goldstone personnel, indicated that the tailings appear to have been deposited in or adjacent to a historical gravel pit borrow area. A topographic high exists between the northern limit of the deposit and the Tansleyville residences. The tailings do not appear to have been deposited along the Blackwater River as there is an approximate 10 m wide section of natural silty soil between the river bank and the tailings stack. However, the tailings do appear to form the beach on the southwest corner of Empire Lake and along both sides of a small creek draining Empire Lake to the Blackwater River.

According to a 1991 sampling program conducted to determine gold content, the tailings thickness ranges from 0 m at the fringes to 4.5 m in the central high point. Based on the topography, the average thickness was estimated to be about 1.5 m.

The approximate surface area of the tailings deposit, as mapped by Goldstone, is about 42,000 m^2 (note that the surface area of the tailings deposit, as mapped by **exp** for this current investigation, is about 31,500 m^2 [31.5 ha]). Based on the 1.5 m average thickness, the volume of tailings present in the deposit is about 63,000 m^3. Assuming an in-place density of 1.8 t/m^3 (estimate based on the tailings moisture content and specific gravity), the mass of tailings is about 113,400 t (tonnes). It is understood that some 426,000 tons (386,460 t) of ore were

milled. Accordingly, this suggests that a significant amount of tailings is unaccounted for in the tailings area.

2.3 **Surficial Geology**

According to the Ontario Ministry of Natural Resources (MNR) Ontario Geological Survey Map 5077, the predevelopment regional geology in the area consists of sandy glaciofluvial outwash plain deposits with a subordinate landform consisting of sandy alluvial plain deposits; mainly low local relief, undulating to rolling, and with mixed wet and dry surface conditions. Bordering the site and in the area of background monitoring well MW-6 (see Figure 3) is bedrock ridge with subordinate landforms consisting of till ground moraine and peat organic terrain; with mainly moderate relief, jagged, rugged and cliffed, and with dry surface conditions. Bedrock is generally found at or close to the surface. Where the bedrock is not at the surface, it is generally overlain by a shallow layer of till, or less commonly, peaty organics, although some areas with up to 9 m of sediment have been noted.

An examination of Ontario Base Maps (NRCAN and MNR, 2008) indicates that a surface water divide (Moose Mountain) is present east of the site. The site is within the Moose Mountain drainage basin, which flows westward, ultimately to Lake Nipigon. The Blackwater River is present to the south of the site and Empire Lake is present to the northeast.

2.4 **Bedrock Geology**

According to Ontario Geological Survey Bedrock Geology of Ontario West-Central Sheet Map 2542, the Tansleyville area borders two bedrock geologies. The northern area is described as Neo to Mesoarchean supracrustal rocks, metasedimentary rocks, wacke arkose, argillite, slate, marble, chert, iron formation, and minor metavolcanic rocks.

The southern area is described as Neo to Mesoarchean supracrustal rocks, mafic to intermediate metavolcanic, basaltic and andesitic flows, tuffs and breccians, chert, iron formation, with minor metasedimentary and intrusive rocks, and with related migmatites.

3 Methodology

3.1 Overview

For the purposes of the historical tailings investigation, the following principal field work and analytical tasks were undertaken:

- Six (6) boreholes were advanced into the historical tailings area, and monitoring wells were installed in all boreholes;
- Representative soil samples were collected from the boreholes and submitted for chemical laboratory analysis for the following parameters: modified Sobek acid-base accounting (paste pH, fizz rate, total sulphur, total sulphide, acid leachable sulphate, total carbon, total carbonate, acid generation potential, acid neutralization potential, neutralization potential ratio, shaker flask extraction (with leachate analysis of pH, conductivity and dissolved metals) and bulk metals analysis;
- Representative groundwater samples were collected from the monitoring wells and submitted for laboratory analysis of the following parameters: pH, conductivity, hardness, total suspended solids, acidity, alkalinity, total ammonia, total cyanide, dissolved sulphate and dissolved metals;
- Representative groundwater samples were collected (by Goldstone personnel) from nearby residential wells and submitted for laboratory analysis for the following parameters: pH, dissolved mercury and total metals;
- Representative surface water samples were collected (by Goldstone personnel) from Empire Lake and the Blackwater River and submitted for laboratory analysis for the following parameters: pH, conductivity, hardness, total suspended solids, total dissolved solids, acidity, alkalinity, weak acid dissociable cyanide, total cyanide, dissolved cyanide and total metals.

3.2 Boreholes and Monitoring Wells

On July 21, 22 and 23, 2015, six (6) boreholes, complete with monitoring wells, were advanced/installed for the purposes of the present investigation. Borehole/well locations are shown on Figure 3 (Appendix A), and were selected to investigate the nature of the historical tailings deposit and the potential for off-site impact by contaminated groundwater, specifically with reference to Tansleyville residents, Empire Lake and the Blackwater River. MW103 is roughly in the center of the identified tailings deposit, MW101 is about 125 m south of the nearest Tansleyville residence and about 60 m southwest of Empire lake, MW102 is about 60 m south of Empire Lake, MW105 is about 60 m north of the Blackwater River, MW104 is on the western fringe of the site, and MW106 is near the eastern fringe of the site and about midway between the Blackwater River and Empire Lake. Results for a seventh well (MW6), previously

installed as part of the Northern Empire annual groundwater monitoring program, were used to provide background data for the current investigation. The background well is located on the Northern Empire property about 300 m east of the mill complex and about 580 m southeast of the historical tailings area (see Figure 3).

The boreholes were advanced using a track-mounted CME 850 drill rig equipped with hollow stem, continuous flight augers, and a 75 mm OD split spoon sampler. The boreholes were advanced, for both hydrogeological and geotechnical purposes, to depths ranging between about 3.7 m and 10.1 m below ground surface.

Standard Penetration Tests (SPTs, split spoon samples) were generally performed in the boreholes at intervals of about 0.75 m. The recovered soil samples were examined and logged in the field by **exp** geotechnical personnel.

Drilling and sampling equipment was decontaminated prior to initial use. Down-hole sampling equipment was cleaned prior to each use with a detergent solution and rinsed sequentially with potable water and methanol. Prior to any subsequent use, down-hole drilling equipment was thoroughly cleaned by scrubbing off soil material and washing with potable water. No petroleum-based lubricants were used on any down-hole equipment during drilling.

The Borehole Logs are provided in Appendix B. Conditions encountered within the boreholes are described below.

Representative samples of the various soil strata encountered in the boreholes were taken to **exp**'s laboratory in Thunder Bay for further examination by a geotechnical engineer and for laboratory classification testing. Representative sub-samples (eight [8] samples plus one blind duplicate) were then placed into laboratory supplied jars for analysis of bulk metals, shake flask extraction (water leachable metals) and modified Sobek acid-base accounting (to determine potential for acid generation and acid neutralization). The sample jars were labelled with dates and names. All samples were placed into a cooler with ice and shipped under Chain of Custody to SGS Canada Inc. In addition, representative soil sub-samples (eight [8] samples) were submitted for physical laboratory analysis for grain size, specific gravity and moisture contents.

Upon completion of the boreholes, monitoring wells were installed to depths ranging from about 3.7 m (MW102 & MW106) to 10.1 m (MW101). Generally a 1.5 m section of screen (50 mm [2in.] diameter PVC slotted pipe) was installed at the bottom of each well, except for MW101 in which about 3.3 m of screen was installed due to the depth of the well, and MW102 in which about 1.0 m of screen was installed due to the shallow depth of the well. The remainder of the well at each location, to a height of about 0.8 m above ground surface, was completed with 50 mm (2 in.) PVC riser pipe. The annulus of each well was filled with filter packs (i.e., silica sand), from the bottom of the well to about 0.3 m to 0.6 m above the top of the slotted pipe, with the exception MW101 which was filled to about 2.4 m below ground surface with natural soil due to caving. The annulus of each well was then sealed to about 0.15 m below ground surface with bentonite clay, in order to create an impermeable layer and limit surface water infiltration, with

the exception of MW104 which was filled to about 0.6 m below ground surface. The remainder of the annulus at each well was then filled to the ground surface with auger cuttings.

A 10 cm x 10 cm x 1.5 m long above ground well protector, with lockable hinged lid, was installed over the PVC well pipe.

The wells were tagged as a cluster with MOECC Well No. A147193 by the drilling contractor (Cartwright Drilling Inc.). The deepest well (MW101) was given the actual physical well tag. The MOECC well record is provided in Appendix B.

Upon completion of the well installations, the wells were developed by purging (ten well volumes and/or until dryness).

The background well MW6 was previously installed on April 10, 2014 as part of the Northern Empire annual groundwater monitoring program. The well was screened from a depth of about 3.7 m to about 0.6 m below ground surface with 50 mm (2 in.) diameter PVC slotted pipe; this includes a portion of screen extending about 0.3 m above bedrock (i.e., within the overburden). The remainder of the well, to a height of about 0.8 m above ground surface, was continued with 50 mm (2 in.) PVC riser pipe. The annulus of the well was filled with a filter pack (i.e., silica sand) from about 3.7 m to about 0.6 m below ground surface, including a portion of filter extending about 0.3 m above bedrock. The remainder of the annulus was filled to ground surface with bentonite clay, in order to create an impermeable layer and limit surface water infiltration of the well. The borehole log is included in Appendix B.

In situ rising head hydraulic conductivity testing was conducted at MW102 to MW106, upon completion of the well installations. The wells were purged to dryness, ranging between about 1.5 L to 8.5 L, and water recovery / water depth measurements were recorded at intervals of about 1 minute or greater until 80% well recovery was achieved, using a water interface meter. The duration to achieve 80% recovery ranged between about 15 minutes and 57 minutes. The well recovery data were subsequently used for calculation of hydraulic conductivity of the screened zones tested.

On August 3, 2015, Delta Survey Ltd. personnel obtained GPS coordinates, and geodetic elevations of the ground surface and top of pipe at the borehole locations (see Section 3.6).

3.3 **Groundwater Sampling**

Exp attended the site to conduct summer and fall groundwater sampling events in 2015. Samples were collected on August 4, and again on October 26, 27 and 29 from all seven (7) wells (MW101, MW102, MW103, MW104, MW105, MW106 and background well MW6). Prior to removing any water from the monitoring wells, the static groundwater level in each well was measured. Groundwater levels and elevations, referenced to a local benchmark, are given on Table C-1 in Appendix C. During the summer sampling event, all wells were purged of approximately three well volumes of groundwater, or until dry using dedicated Waterra tubing. The following day, after the monitoring wells had recovered (i.e., to a minimum of 80% of static

level), samples were taken in laboratory supplied bottles containing appropriate preservative. During sampling, field measurements of temperature, pH and electrical conductivity were taken. The field parameter measurements are included on Table C-5 in Appendix C.

For the purposes of the fall sampling event, the client requested the use of a low flow pumping/sampling system to reduce the levels of total suspended solids. Therefore, for the fall event, wells were purged of approximately three well volumes, or until dry, using a low flow pumping system (SamplePro Micropurge Pump and the MP50 Controller / Compressor) in MW101, MW102, MW103, MW104, MW106 and MW6. However, the water column height in MW105 was insufficient to allow the use of the low flow technique (i.e., the low flow sampling cylinder containing the bladder could not be lowered far enough to straddle the static water elevation), and the well was purged (and sampled) using the dedicated Waterra tubing and foot valve installed in the well. After the monitoring wells had recovered (generally to a minimum of 80% of static level) field measurements of temperature, pH and electrical conductivity were obtained using a multi-parameter water quality meter. Sampling had to be conducted over several days due to failure of the low flow pump.

Samples were collected directly into a suite of laboratory-supplied bottles from the low flow pumping system or the dedicated Waterra tubing. The samples for dissolved metals analysis were filtered in the field using a 0.45 micron in-line filter. The sample bottles were labelled with date and sample name, and preserved as required. All samples were immediately placed into a cooler with ice packs and shipped under Chain of Custody, to Maxxam Analytics, a Canadian Association for Laboratory Accreditation (CALA) certified laboratory, in Mississauga, Ontario.

3.4 **Surface Water Sampling**

Surface water sampling was not included in **exp**'s scope of work for this study; however, relevant surface water data from related studies at the Northern Empire Mine are available. The following discussion is presented at the request of the client and follows from our review of data provided by the client.

According to the RFP, Empire Lake is a spring fed lake with two sources, one on the lake bottom in the northwest quadrant of the lake and a second smaller source to the northeast of the lake in the Highway 11 south side ditch. According to the area residents, the lake remains ice free much longer than surrounding lakes, which would support this theory.

Surface water sampling of Empire Lake was conducted in the summer and fall of 2014 and in spring, summer and fall of 2015 by Goldstone personnel. Lake water samples were collected on August 14 and November 10, 2014 and on May 26, August 10 and October 19, 2015 from three (3) locations: adjacent to the inflow from the spring fed pond on the south side of Hwy 11 ditch (EL1), lake area in the vicinity of the Tansleyville settlement point wells (EL2) and headwater of the outflow from Empire Lake to the Blackwater River, including water in contact with the tailings beach (EL3). In addition, samples from the Blackwater River were collected on August 10 and October 19, 2015 from two locations. Location BWR1A is approximately 650 m

east, and upstream, of the historical tailings area, while location BWR1B is approximately 200 m west, and downstream, of the historical tailings area.

Samples were collected directly into a suite of laboratory supplied bottles by Goldstone personnel. The sample bottles were labelled with date and sample name, and preserved as required. All samples were shipped, under Chain of Custody, to ALS Environmental, a Canadian Association for Laboratory Accreditation (CALA) certified laboratory.

3.5 **Tansleyville Residents Water Sampling**

Residential potable water well sampling was not included in **exp**'s scope of work for this study; however, relevant residential water well data from related studies concerning the Northern Empire Mine are available. The following discussion is presented at the request of the client and follows from our review of data provided by the client.

The Tansleyville settlement contains eight residential properties (see Figure 4). Of these, four are occupied year round, one is periodically vacant, one is vacant and under renovation, one is seasonal (summer only) and the last one only has a garage on the property with no well, with plans of constructing a residence.

During 2014, residents of Tansleyville were initially notified in writing by Goldstone of the Northern Empire tailings investigation and that it would include an Empire Lake surface water quality program and the collection of tap water samples from their water supply. This notice was followed up by visits to the individual residents by Goldstone personnel to identify owners, explain the program in detail, answer any questions they had and to ascertain the type of well and treatment equipment installed at each residence. All the residents visited indicated they were using sand point wells to draw water supply. All the sand points are located within 20 m of the Empire Lake shoreline. None of the residents polled are using any type of water treatment. .

Only five of the Tansleyville residences were included in the monitoring program; the three other properties were either not occupied of did not wish to participate. Goldstone personnel sampled the well at the Fred Checkley, Myron Nelson and Madeline Turbide residences on September 22 and November 17, 2014 and May 27, August 10 and October 20, 2015. Tom Nelson's residence was sampled June 18, August 10 and October 29, 2015 and the Veilleux residence was sampled September 22, 2014, August 10 and October 20, 2015 due to part time occupancy.

Samples were collected directly into a suite of laboratory supplied bottles from the water supply at each residence by Goldstone personnel. The sample bottles were labelled with date and sample name, and preserved as required. All samples were shipped, under Chain of Custody, to ALS Environmental, a Canadian Association for Laboratory Accreditation (CALA) certified laboratory.

3.6 **Elevation Survey**

Delta Survey conducted a survey on August 3, 2015 of the top of pipe elevations and ground surface elevations of monitoring wells, including the background well MW6 located in the Northern Empire Mill site. The elevations were referenced to the floor of the Polishing Pond Pumphouse, with a geodetic elevation of 312.98 m. See Figure 2 (Appendix A) and Table C-1 (Appendix C) for details.

3.7 **Analytical Program**

Groundwater samples from the six on site monitoring wells, as well as background well MW6, were analysed for the following parameters specified in Part 6 (Ground Water Monitoring) of the Mine Rehabilitation Code of Ontario (O.Reg. 240/00):

- pH
- Conductivity
- Total Suspended Solids
- Alkalinity
- Acidity
- Hardness
- Cyanide
- Ammonium
- Sulphate
- Aluminum
- Arsenic
- Cadmium
- Calcium
- Copper
- Iron
- Lead
- Mercury
- Molybdenum
- Nickel
- Zinc

At the request of the client, sodium was added as a parameter for the fall sampling event.

Soil samples from the six monitoring well locations were analyzed to determine the potential for significant metal leaching (ML) or acid rock drainage (ARD) conducted through the following tests specified in Part 7 (Metal Leaching and Acid Rock Drainage Requirements) of the Mine Rehabilitation Code of Ontario (O.Reg. 240/00):

- Bulk Metals
- Shake Flask Extraction
- Acid Base Account – Modified Sobek

Surface water samples taken from Empire Lake and the Blackwater River, and water sampled from the wells of the Tansleyville residents were analysed for the following parameters specified in Part 5 (Surface Water Monitoring) of the Mine Rehabilitation Code of Ontario (O.Reg. 240/00):

- pH
- Conductivity
- Total Suspended Solids
- Total Dissolved solids
- Alkalinity
- Acidity
- Hardness
- Cyanide
- Ammonium
- Sulphate
- Aluminum
- Arsenic
- Cadmium
- Calcium
- Copper
- Iron
- Lead
- Mercury
- Molybdenum
- Nickel
- Zinc

The client also tested for sodium during the 2015 sampling events.

4 Subsurface Conditions

4.1 Local Soil Conditions

The following information is based on logs for boreholes installed for the purposes of the present investigation (see Appendix B). Details of the field work performed are provided in Section 3, above. In addition, stratigraphic sections are shown on Figures 7A and 7B, in Appendix A.

4.1.1 Tailings

Tailings were encountered surfacing most of the borehole locations, except for MW101 (refer to separate description below) with no tailings, and rootmat or peat above tailings at MW104 and MW106. The tailings were generally described as loose to very loose, brown to grey, moist to wet, and containing trace organics, roots and rootlets. The tailings extended to depths ranging between about 1.0 m (MW104) and 4.8 m (MW105) below ground surface.

Eight (8) grain size analyses (hydrometer analyses) and eight (8) specific gravity tests were performed on representative samples of the tailings (MW102-S2A/B, MW103-S1, MW103-S5, MW104-S1B/2A, MW105-S1, MW105-S3, MW105-S6, and MW106-S2); the grain size results are presented on Figure 8 and the specific gravity results are provided with the Borehole Logs in Appendix B. Based on the gradation, the tailings are generally of silt particle size (greater than 50% smaller than 0.075 mm). The specific gravity results ranged between about 2.67 and 2.84, with an average of about 2.75.

4.1.2 Peat

Peat was encountered underlying the tailings in MW102, MW103 and MW105. The peat was generally described as soft to firm, grey to brown, wet and containing some wood pieces and strong sulphur odours. The peat extended to depths ranging between about 2.3 m and 5.0 m below ground surface.

4.1.3 Silt and/or Sand

Native silt and/or sand was generally encountered beneath the peat and the tailings. The silt and/or sand was generally described as very loose to compact, brown to grey, moist to wet, containing trace to some organics and trace to some shells. Trace wood pieces were encountered at MW103 and MW105. The silt and/or sand extended to depths ranging from 2.3 m to a maximum termination depth of about 6.7 m below ground surface.

Clayey silt was encountered beneath the silt at MW102, and was described as very soft, grey, wet, and containing trace gravel. The clayey silt extended to the termination depth of about 3.7 m below ground surface.

4.1.4 Sand and/or Gravel

A mixture of sand and/or gravel was encountered at MW101 (located in the old borrow pit). The sand and/or gravel was generally described as compact to very dense, brown, damp to wet at depth, and containing trace silt and trace rootlets in the upper 0.3 m. A layer of cobbles and boulders was noted within the sand and gravel ranging from 2.6 m to 3.7 m depth. The sand and/or gravel extended to the termination depth of 10.1 m below ground surface.

The pre-existing background well **MW6** (installed as part of the Goldstone annual groundwater monitoring program), was described as being surfaced with peat (black organics) overlying a brown sandy silt. Underlying the sandy silt at a depth of about 1.0 m was bedrock.

4.2 Hydrogeological Setting and Groundwater Flow

Groundwater flow from the tailings deposits potentially discharges to several surface water receptors, including the Blackwater River to the south, Empire Lake to the north, a small creek immediately east (draining Empire Lake to the Blackwater River) and a small unnamed lake to the west (See Figures 5, 7A and 7B in Appendix A).

Several monitoring wells were installed for the purposes of the present investigation. Details are provided above in Section 3. Groundwater levels and elevations measured at the initial installation of the monitoring wells and during the two subsequent monitoring events are summarized in Table C-1 in Appendix C. Water levels for all monitoring wells are relative to a local benchmark, as surveyed on August 3, 2015.

Groundwater elevations (August 3, 2015) ranged from 303.63 m at MW103 near the centre of the tailings deposit to 301.51 m at MW106 in the east portion of the site. The groundwater levels suggest that groundwater flow radiates out from MW103 towards both the Blackwater River to the south and Empire Lake to the north. Based on the measured elevations, surficial topography and the locations of the wells, groundwater at MW101 and MW102 likely flows northeast towards Empire Lake, while groundwater at MW103, MW104, MW105 and MW106 most likely flows south or southwest to the Blackwater River. Groundwater at MW106 could also have a local flow component east toward the small creek.

Drainage patterns and major watersheds are shown on Figure 6 – Watershed Location Plan, in Appendix A. Based on the topographic information available, three major watersheds are noted at the site and surrounding area. Depending on location on the site, surface water runoff is potentially directed toward any of the various surface water bodies adjacent to and surrounding the site, including Empire Lake, a small creek draining Empire Lake to the Blackwater River, the river itself, or the unnamed lake west of the site. Empire Lake and the creek generally receive surface water runoff from the eastern part of the historical tailings area, and the Blackwater River generally receives surface water runoff from the western part of the historical tailings.

Based on rising head tests conducted by **exp** at MW102 to MW106 (i.e., wells constructed within the tailings deposit – see Section 3.2), hydraulic conductivities (K) at the well locations

were estimated using the Bower and Rice method of analysis. Monitoring wells MW103 and MW105 were screened entirely within the tailings, MW102 was generally screened within the tailings, and MW104 was screened within sand and silt (tailings at MW104 did not extend to the water table).

The flow velocities in the following tables were calculated using Darcy's Law, $V = K\,i / n$, where:

K = hydraulic conductivity;
i = hydraulic gradient;
n = effective porosity.

Based on the measured specific gravity and natural moisture contents of the saturated tailings, an approximate soil porosity of 0.45 was assumed in the calculations of flow velocities.

The hydraulic conductivity results from the rising head tests, as well as the hydraulic gradients and the estimated/calculated flow velocities, are presented in Table 1, below.

Table 1. Estimated Groundwater Flow Velocities Using Rising Head Test Results

Monitoring Well	MW Screen Depth, m	Hydraulic Conductivity (K) cm/s	Hydraulic Gradient (*i*) m/m*	Flow Velocity cm/s	Flow Velocity m/yr
MW102	1.1-2.1	2.4×10^{-5}	0.015	8.0×10^{-7}	0.3
MW103	1.5-3.4	1.1×10^{-4}	--	--	--
MW104	3.1-4.6	5.5×10^{-4}	0.023	2.8×10^{-5}	8.9
MW105	2.7-4.3	2.7×10^{-5}	0.005	3.0×10^{-7}	0.1
MW106	1.2-2.7	6.1×10^{-5}	0.019	2.6×10^{-6}	0.8
Mean Value		7.5×10^{-5}	0.016	2.7×10^{-6}	0.8

Notes:
* Hydraulic gradients calculated from MW103 to the respective well.

In addition to rising head tests, and as indicated above, grain size analysis (i.e., hydrometer analysis) were conducted on representative samples of the tailings (MW102-S2A/B, MW103-S1, MW103-S5, MW104-S1B/2A, MW105-S1, MW105-S3, MW105-S6, and MW106-S2); the grain size results are presented on Figure 8. The hydrometer analyses were performed to allow for determination of the particle size corresponding to the 10% finer than fraction (D_{10}), which is used in the Hazen empirical estimation of hydraulic conductivity (K). While the Hazen method of estimating hydraulic conductivity, where $K\ (cm/s) = [D_{10}\ (mm)]^2$, was originally determined for uniformly graded sands, it can provide a rough, but useful, approximation for most cohesionless (non-plastic) soils. The hydraulic conductivity results, as well as the hydraulic gradients and estimated / calculated flow velocities are presented in Table 2, below.

Table 2. Estimated Groundwater Flow Velocities Using Grain Size Results

Sample No.	Sample Depth (m)	Percent (%) Passing 0.075	D_{10} (mm)	Hazen K (cm/s)	Hydraulic Gradient (*i*) m/m*	Flow Velocity cm/s	Flow Velocity m/yr
MW102-S2A/S2B	0.8-1.2	85.7	0.0024	5.8×10^{-6}	0.015	1.9×10^{-7}	0.06
MW103-S1	0-0.6	63.3	0.0090	8.1×10^{-5}	--	--	--
MW103-S5	3.1-3.7	73.1	0.0065	4.2×10^{-5}	--	--	--
MW104-S1B/S2A	0.2-1.0	84.8	0.0032	1.0×10^{-5}	0.023	5.2×10^{-7}	0.2
MW105-S1	0-0.6	52.7	0.0090	8.1×10^{-5}	0.005	9.0×10^{-7}	0.3
MW105-S3	1.5-2.1	59.8	0.0040	1.6×10^{-5}	0.005	1.8×10^{-7}	0.06
MW105-S6	3.8-4.4	69.9	0.0075	5.6×10^{-5}	0.005	6.3×10^{-7}	0.2
MW106-S2	0.8-1.4	94.3	0.0091	8.3×10^{-5}	0.019	3.5×10^{-6}	1.1
Mean Value				3.2×10^{-5}	0.016	1.1×10^{-6}	0.4

Notes:
* Hydraulic gradients calculated from MW103 to the respective well.

Based on the results presented above, the flow velocities calculated using the rising head tests ranged between about 0.1 m/yr and 8.9 m/yr, whereas the flow velocities calculated using the grain size analysis ranged between about 0.06 m/yr and 1.1 m/yr. The respective average values were calculated to be 0.8 and 0.4 m/yr.

5 Results and Discussion

5.1 Guidelines and Standards

There are no established provincial regulatory standards specifically designed for application at metal mining sites.

Test results were compared to the guidelines and standards summarized in Table 3, below.

Table 3. Summary of Relevant Guidelines and Standards

Guideline/Standard	Objective
Ontario Drinking Water Standards (ODWS)	Groundwater standards designed to protect quality of potential drinking water sources.
Provincial Water Quality Objectives (PWQO)	Surface water objectives designed to protect aquatic and terrestrial life and human use (comparison may also be made to results for adjacent/upgradient groundwater for reference purposes only).
Ontario Regulation 153/04 Table 2 Standards	Generic site condition standards (soil and groundwater) for use in a potable groundwater condition and residential land use.
Ontario Regulation 153/04 Table 8 Standards	Generic site condition standards (soil and groundwater) for use within 30 m of a water body in a potable groundwater condition.

The selection of the above guidelines and standards for the site is based on the following factors:

- A part of the site is within 100 m of properties with residential drinking wells (in the community of Tansleyville).
- A part of the site is within 30 m of a water body (Empire Lake and Blackwater River).
- Land use on adjacent properties within 100 m includes residential (community of Tansleyville).

It is stressed that there are currently no regulatory requirements for application of any of these objectives or standards to the results for the historical tailings site. Comparison with established guidelines and standards does, however, facilitate an assessment of the likelihood that the site conditions could represent an environmental hazard either now or in future.

In addition to the above listed standards, reference may be made to O.Reg. 153/04 Table 2 (potable groundwater situation) industrial land use standards, given the historical land use (i.e.,

industrial tailings deposition) of the site. Reference may also be made to O.Reg. 153/04 Table 3 (non-potable groundwater situation) residential and industrial land use standards, which could be applicable should it ever be determined that groundwater on and in the immediate vicinity of the site would not be sourced for drinking water. Indeed, Table 3 industrial land use standards are generally considered to be applicable to the newly-recommended Contaminant Attenuation Zone (CAZ) for Goldstone's Northern Empire Mill property immediately across (south) the Blackwater River south of the historical tailings deposit. This excludes any CAZ lands within 30 m of the Blackwater River, to which Table 8 criteria would be applicable in the absence of alternative standards established through a formal risk assessment. The criteria for a non-potable groundwater situation can be applied to the CAZ because groundwater from the Northern Empire Mill tailings facilities flows generally westward, and lands immediately downgradient of the CAZ are Town of Beardmore properties which are serviced with municipal water. However, these additional/alternative standards are not considered currently applicable to the historical tailings site, and are shown for reference purposes only.

5.2 Metal Leaching Potential

Bulk metal concentrations of the representative tailings (soil) samples are summarized in Table C-2 in Appendix C. Elevated levels (i.e., in comparison with established standards) would indicate an increased potential for leaching of undesirable concentrations and transport via groundwater flow to impact potential sensitive receptors (e.g., surface water or drinking water supplies).

Shake flask extraction (SFE) test results are summarized in Table C-3. SFE tests are short term leach tests. The testing involves mixing crushed samples with de-ionized water. The extracted leachate will contain readily soluble minerals ("salts") in neutral pH water, so results for these samples provide information on potential contaminant mobility in a non-acidic generating environment.

The following Table 4 presents a summary of the parameters that exceeded one or more of the above (Table 3) guidelines/standards for the SFE leachate tests and the tailings bulk metal analyses.

Table 4. Summary of Parameter Exceedances in SFE Tests and Bulk Metals Analyses

Parameter	Sample Number
SFE Leachate	
pH	MW106-S2
Aluminium	MW106-S2
Arsenic	MW102-S2A/S2B, MW103-S5, MW104-S1B/S2A, MW105-S3, MW105-S6, MW106-S2
Cobalt	MW102-S2A/S2B, MW104-S1B/S2A
Copper	MW104-S1B/S2A, MW106-S2
Iron	MW106-S2

Table 4. Summary of Parameter Exceedances in SFE Tests and Bulk Metals Analyses	
Parameter	**Sample Number**
Manganese	MW105-S6
Tailings Bulk Metals	
Arsenic	MW102-S2A/S2B, MW103-S1, MW103-S5, MW104-S1B/S2A, MW105-S1, MW105-S3, MW105-S6
Barium	MW104-S1B/S2A, MW106-S2
Cobalt	MW105-S3
Thallium	MW102-S2A/S2B, MW103-S1, MW103-S5, MW104-S1B/S2A, MW105-S1, MW105-S3, MW105-S6, MW106-S2
Vanadium	MW102-S2A/S2B, MW103-S1, MW103-S5, MW104-S1B/S2A, MW105-S1, MW105-S3, MW105-S6

The analytical results from the SFE leachates and **bulk** tailings samples indicate that arsenic is the principal contaminant of concern. Arsenic levels exceeded the ODWS and/or PWQO in all SFE leachate samples except MW103-S1 and MW105-S1. Arsenic levels exceeded the Regulation 153/04 Table 2 and Table 8 Standards in all the tailings samples with the exception of MW106-S2.

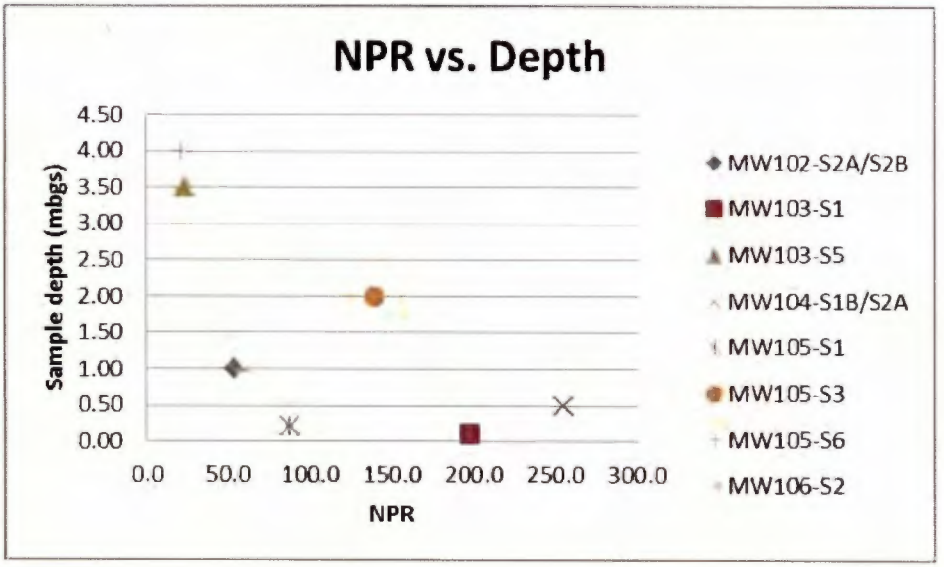
5.3 Acid Rock Drainage Potential

Acid Rock Drainage (ARD) is produced by the exposure of sulphides (such as pyrite) in atmospheric conditions. The assessment methods for ARD characterization include the Acid-Base Accounting (ABA) and Net Acid Generation (NAG) tests that are referred to as static procedures because each involves a single measurement in time. A modified ABA test protocol was conducted to characterize ARD for the tailings at this site. In addition, shake flask extraction (SFE) tests were conducted to assess the metal leaching (ML) potential of the tailings. SFE simulates the dissolution of soluble mineral phases from a sample in de-ionized water (i.e., neutral pH solution).

Results for the modified Sobek ABA tests are summarized in Table C-4. ABA tests compare the acid potential (AP) and the neutralization potential (NP) of a sample and determine its neutralization potential ratio (NPR). Generally, there is potential for metal mobilization where the NPR is <1. The NPR for the borehole tailings samples ranged from 22.0 (MW105-S6) to 255.0 (MW105-S1). The NPR values clearly show that the tailings samples are not potentially acidic drainage generating (non-PAG).

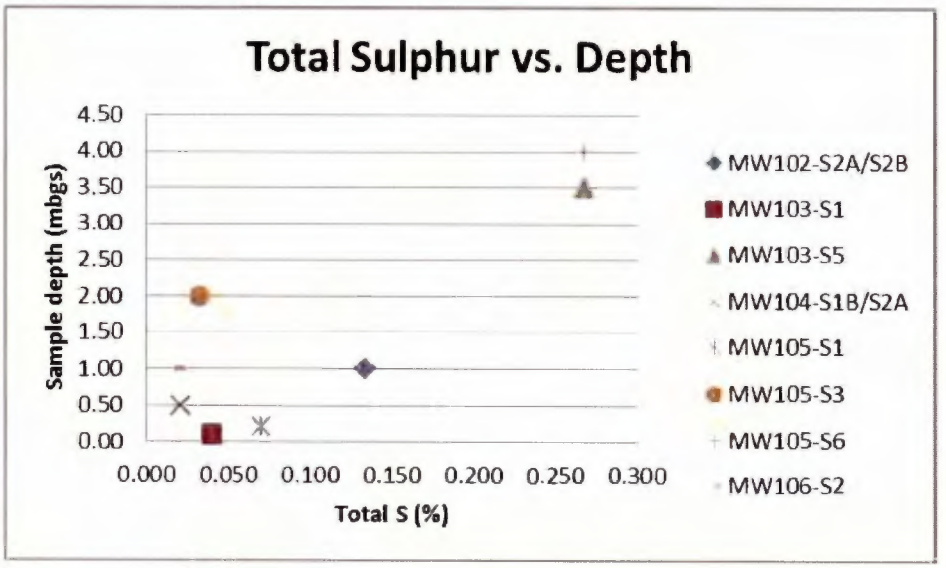
Figure 5.1, below, is a graph of NPR versus the tailings sample depth for the eight tailings samples.

Figure 5.1: NPR vs. Sample Depth for Tailings Samples.



The graph appears to show a trend of decreasing NPR with increasing depth. This trend suggests that the near-surface tailings are more depleted in acidic drainage generating minerals (such as sulphides) than deeper tailings, perhaps due to the effects of weathering, oxidation and near-surface runoff. Indeed, the graph of total sulphur versus tailings sample depth shows a trend of increasing sulphur content with depth (Figure 5.2, below).

Figure 5.2: Total Sulphur (%) vs. Sample Depth for Tailings Samples



5.4 Groundwater Impacts

Water quality results for the monitoring wells and residential wells are summarized in Table C-5 and Table C-7, respectively. Results are assessed in comparison to ODWS and O.Reg. 153/04 Table 2 criteria. Locations of the monitoring wells are shown on Figure 3 and locations of the residential wells area shown on Figure 4.

The following Table 5 presents a summary of the parameters that exceeded one or more ODWS or Reg. 153/04 criteria in groundwater samples from the site monitoring wells.

Table 5. Summary of Groundwater Monitoring Wells with Parameter Exceedances

Parameter	Sample Number
Hardness	MW6, MW101, MW102, MW103, MW104, MW105, MW106
Alkalinity	MW102, MW103, MW104, MW106
Sulphate	MW105
Dissolved Arsenic	MW102, MW103, MW105, MW106
Dissolved Iron	MW102, MW103, MW105, MW106

The analytical results for groundwater from the monitoring wells indicate that arsenic is the principal contaminant of concern, based on the reported levels and potential toxic effects. Arsenic levels exceeded the applicable criteria in all monitoring wells except MW101 and MW104 (both located at or just beyond the edge of the tailings) and the background monitoring well MW6. Iron also exceeded the ODWS in these same wells.

The introduction of low-flow sampling in six of the seven monitoring wells for the fall 2015 sampling event markedly reduced the levels of TSS compared with the summer event, as expected. Levels of total metals were also generally reduced in the fall samples from most wells, with the exception of MW103 (in which TSS also remained relatively high). The effect on dissolved metals was generally less noticeable; indeed, the dissolved arsenic levels in MW102, MW103 and MW106 were considerably higher in the fall samples.

The analytical results for groundwater from the residential water wells indicate that only two wells had ODWS exceedances. The Tom Nelson well supply exceeded the ODWS for iron in one of the three samples. The Veilleux well exceeded the ODWS for both iron and manganese in all three samples. Based on all available information, the iron and manganese levels in these two residential wells are considered unlikely to be related to the historical tailings deposits. Naturally elevated levels of both iron and manganese are relatively common in groundwater

within the Canadian Shield. Note that iron and manganese are non-health based, aesthetic parameters related to taste and staining of fixtures.

5.5 Surface Water Impacts

Water quality results for the surface water monitoring stations are summarized in Table C-6. Results are compared to PWQO criteria.

At Empire Lake, EL1 exceeded the PWQO for aluminum, arsenic, copper, iron and nickel in the August 10, 2015 sample. EL1 also exceeded the PWQO for nickel in the May 29, 2015 sample. It should be noted, however, that reported exceedances for aluminum may not be actual exceedances, because the PWQO for aluminum applies to clay-free (i.e., filtered) samples, whereas the metals analyses were performed on unfiltered samples.

EL1 is located in the northeast part of Empire Lake and is the furthest of the three monitoring stations from the historical tailings area. The levels of aluminum, arsenic, copper and iron in the August 10, 2015 sample are significantly higher than the levels measured at this station in August 2014, November 2014, May 2015 and October 2015. Similarly, the levels of nickel in the May 28 and August 10, 2015 samples are significantly higher than the levels measured at this station in August 2014, November 2014 and October 2015. Most of the analytical results for EL1 are similar to the results for EL2 and EL3.

In general, the results indicate that that the historical tailings area has not had adverse impact on Empire Lake water quality. The PWQO exceedances measured in EL1 appear to be anomalous (perhaps due to contamination introduced during sample handling, preservation or processing).

On the Blackwater River, BWR1B exceeded the PWQO for aluminum in the August 10, 2015 sample. BWR1B also exceeded the interim PWQO for arsenic in the October 19, 2015 sample.

BWR1B is downstream of the historical tailings area, so the recorded PWQO exceedances could potentially be related to drainage from the tailings area. Note, however that aluminum in the sample taken on October 19, 2015 was well below the PWQO. Similarly, arsenic in the sample taken on August 10, 2015 was well below the PWQO. Ongoing monitoring is indicated to identify any trends in water quality potentially due to effects of the historical tailings.

5.6 Quality Assurance and Quality Control (QA/QC)

The QA/QC program instituted for this investigation was in general accordance with the *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario (MOE, 1996).* Documentation of field work including location, weather, field measurements, number of samples, parameters collected for, time sampled, volume, and equipment type was completed. Soil, groundwater and surface water sampling was completed in accordance with industry standards, and applicable provincial guidelines/standards. The samples were placed in

laboratory-supplied containers and kept cool in an ice chest, and were submitted under Chain of Custody for chemical analysis in CALA certified laboratories.

The following samples were collected and submitted by **exp** personnel for Quality Assurance and Quality Control (QA/QC) purposes

- Soil (Tailings) – Bulk Metals (Table C-2), Shake Flask Extraction (Table C-3) and Modified Acid-Base Accounting (Table C-4): Blind duplicate of MW105-S3 (labelled as MW107-S4).

- Groundwater – all tested parameters (Table C-5): Blind duplicates of MW106 (August 2015 sampling) and MW102 (October 2015 sampling).

The relative percent difference (RPD) between the results for the sample and the field duplicate sample for each analysed parameter was calculated as the absolute value of the following:

$$RPD = \frac{(\text{Sample Result} - \text{Duplicate Result}) \times 100}{(\text{Sample Result} + \text{Duplicate Result}) / 2}$$

The RPD calculation is not considered valid for parameters reported to be present in very low concentrations (i.e., <5 times the laboratory detection limit) in either or both of the duplicate samples. The maximum RPD generally considered acceptable for soil and water samples is 40% and 30%, respectively.

This exercise revealed generally good agreement between the duplicate samples. No significant differences exceeding the recommended limits were reported (excludes results for some metals present in very low concentrations, and/or at levels well below applicable criteria).

A review of the laboratory Quality Control information provided with the analytical reports did not suggest any significant discrepancies that might compromise the overall validity of the reported data.

In general, there are no implications regarding data validity from the QA/QC results that could affect the conclusions of this study.

6 Conclusions and Recommendations

Based on results from modified Sobek ABA tests, SFE leachate analyses, bulk metal analyses and groundwater and surface water quality analyses, the following conclusions and recommendations are provided:

- The historical tailings are not potentially acidic drainage generating (non-PAG). However, ARD potential appears to increase slightly with depth in the tailings deposits, perhaps because near-surface tailings are more depleted in ARD generating minerals (such as sulphides) than deeper tailings.

- The measured characteristics of the tailings (i.e., non-acidic pH and low ARD potential) suggest a relatively high degree of chemical stability over the long-term.

- Arsenic is the principal contaminant of concern in the historical tailings area, being present in elevated concentrations in bulk tailings, in the SFE leachates and in groundwater from monitoring wells screened in the tailings.

- Residential water wells in the community of Tansleyville and surface water in Empire Lake do not appear to be impacted by the historical tailings deposit.

- Water quality in the Blackwater River downstream of the historical tailings area may be adversely impacted. Impacts to the Blackwater River are discussed in both the annual Performance Report and the Biological Monitoring Report (due every three years, including 2016) for the Northern Empire Mill site. Copies of the most recent reports will be provided to regulatory authorities upon their completion in the spring of 2016.

- No mitigative actions concerning the historical tailings appear to be warranted at this time. However, Blackwater River monitoring stations BWR1A and BWR1B should be included in the routine Performance Report monitoring for the Northern Empire Mill, and a new surface water station should be established in the small creek just above the discharge to the Blackwater River (i.e., roughly midway between BWR1A and BWR1B). In addition, **exp** recommends that the six groundwater monitoring wells installed at the tailings site and the three surface water locations in Empire Lake be routinely monitored (e.g., twice annually) for metals (notably arsenic) on an ongoing basis. The monitoring program should be re-evaluated annually. Any indications of increasing trends would require a re-examination of the need for active mitigation of the historical tailings deposit.

7 Limitations of Report

This report has been prepared for and is intended for the use of the client (Goldstone Resources Inc.) The contents of this report may not be reproduced in whole or in part, or used or relied upon in whole or in part by any other party for any purpose whatsoever without the expressed written consent of **exp**. Any use which a third party makes of this report, or any reliance on or decision made based on it, is the sole responsibility of such third party and **exp** accepts no responsibility for any damages of any kind or nature whatsoever, suffered by any other third party as a result of decisions made or actions based upon this report. The findings are relevant for the date(s) of the investigation and should not be relied upon to represent conditions of other dates.

This report provides certain information concerning the apparent degree and extent of soil, groundwater and surface water impact on and in the vicinity of the historical tailings deposits near the Northern Empire Mill site, as described herein. It is based on an authorized scope of work. Conclusions regarding site conditions are based on observations of existing conditions and the results of limited chemical analyses. Professional judgement was exercised in gathering and interpreting the information obtained and in the formulation of conclusions.

Conclusions regarding the environmental quality of the site and surroundings do not represent a warranty that all surrounding areas are of the same quality as those sampled. Substances could also exist in forms not indicated by the limited analytical testing conducted. Additionally, the scope of work was based, in part, on rules and regulations that we understand to be current or expected at the time of the work. Changes in regulations, interpretations and/or enforcement policies may occur in the future. Such changes could be reflected in the degree of remediation actually required, if any, at the time of the action.

If additional relevant information becomes available concerning this site, such information should be provided to **exp** so that our report may be reviewed and modified as necessary. **Exp** accepts no responsibility for the consequential effects of this factual report on the real or perceived value of this site, or on the ability to sell, finance or insure the property.

All reports, field data, notes, laboratory test data, calculations, estimates and other documents which are communicated by **exp** to the client or third parties, are instruments of service and will be retained by **exp**. These records will be stored in our files for a period of 10 years following submission of the final report, during which time they will be made available to the client, at all reasonable times, for review.

Exp has conducted the services reported herein in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practising in the same locality and under similar conditions as this project. No other representation, expressed or implied, is included or intended in this document.

We trust that this report is satisfactory to your present requirements. Should you have any questions, please contact the undersigned at your convenience.

Yours truly,

exp Services Inc.

Ahileas Mitsopoulos, P.Eng.
Project Engineer

Robert J. Rinne, M.Sc., QEP
Sr. Scientist

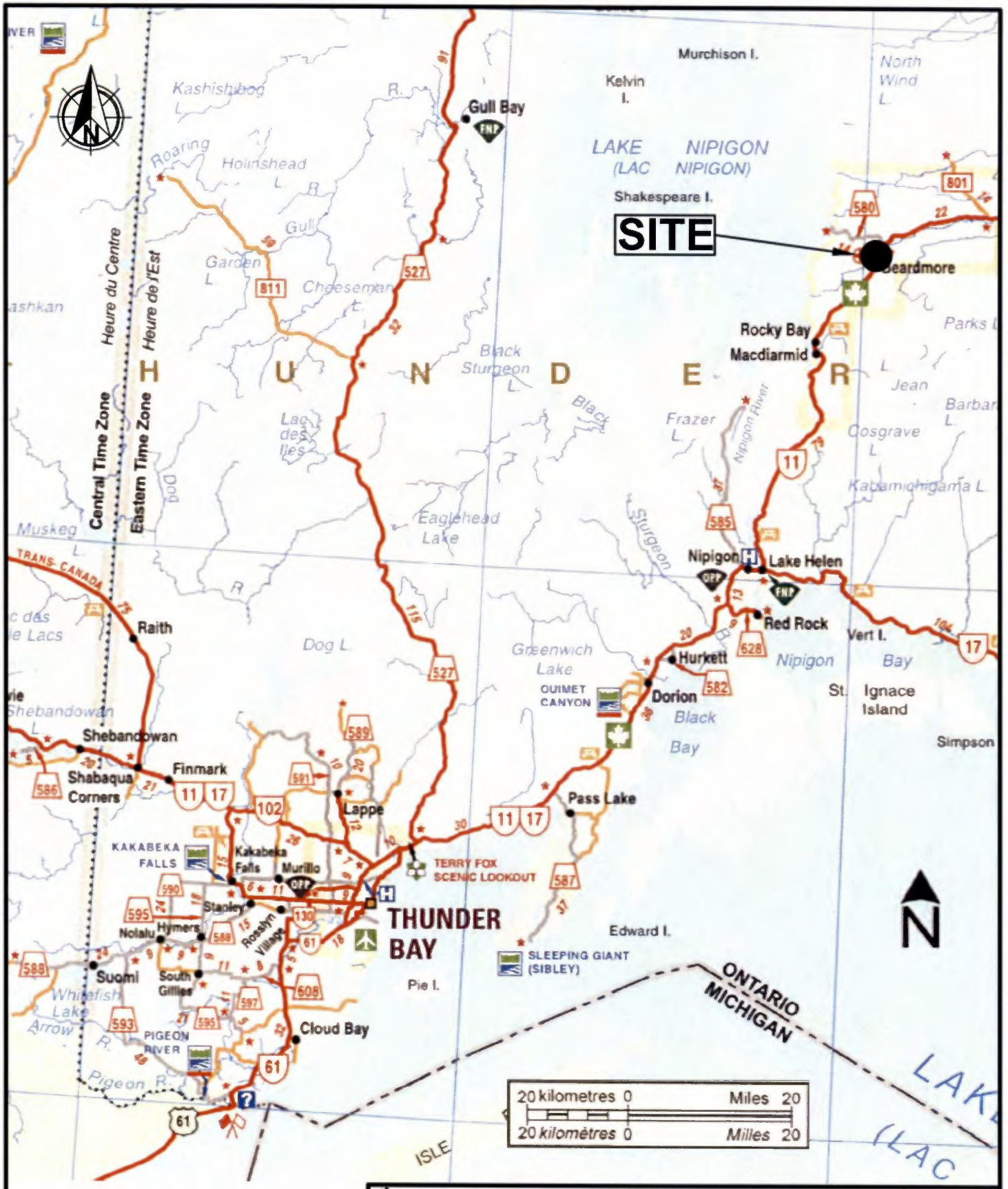
Perry Sarvas, P.Geo.
Sr. Hydrogeologist

Demetri N. Georgiou, MASc., P.Eng.
Principal Engineer / Branch Manager

Appendix A –

FIGURES

List of Figures



exp.

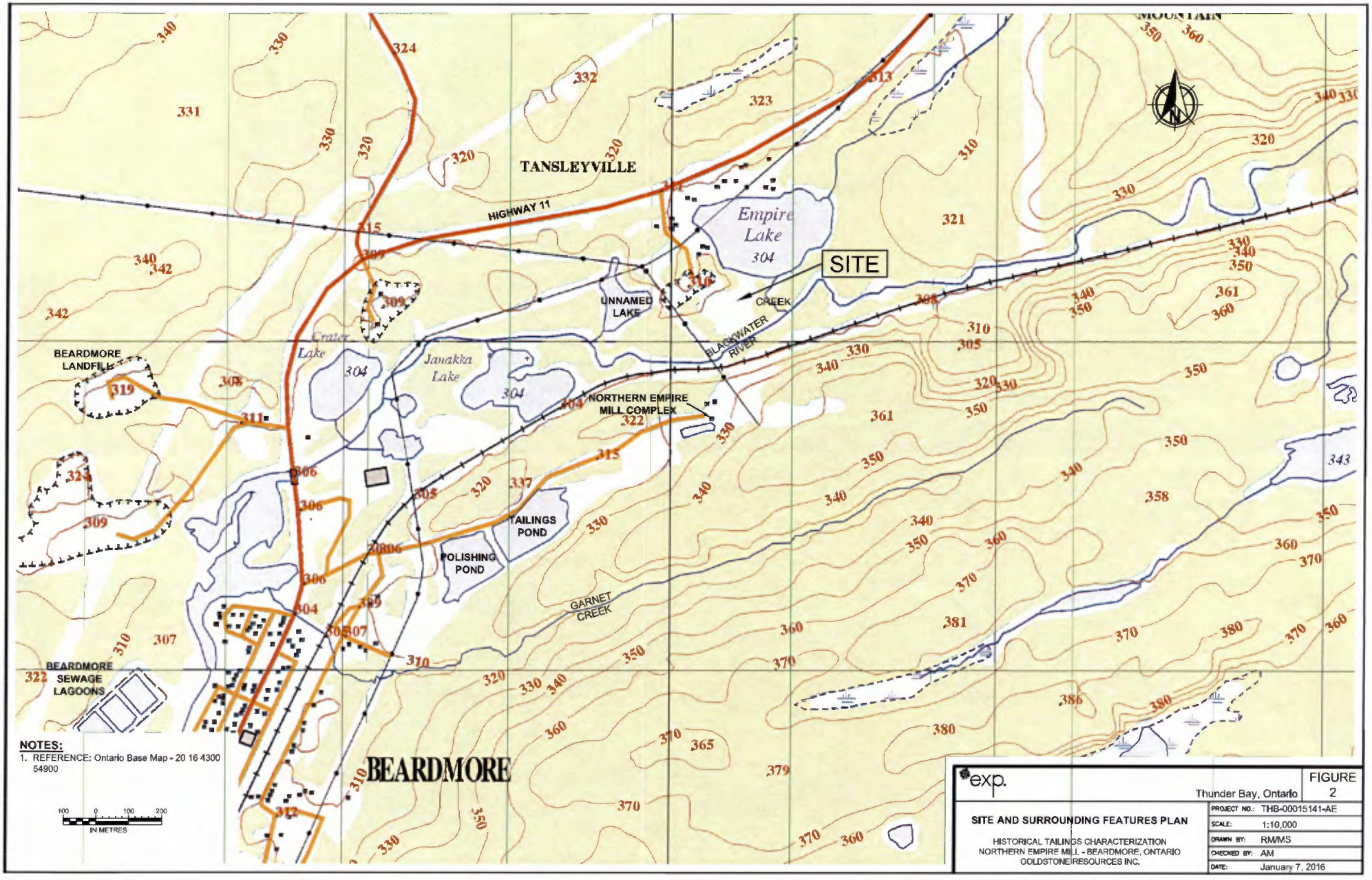
Thunder Bay, Ontario

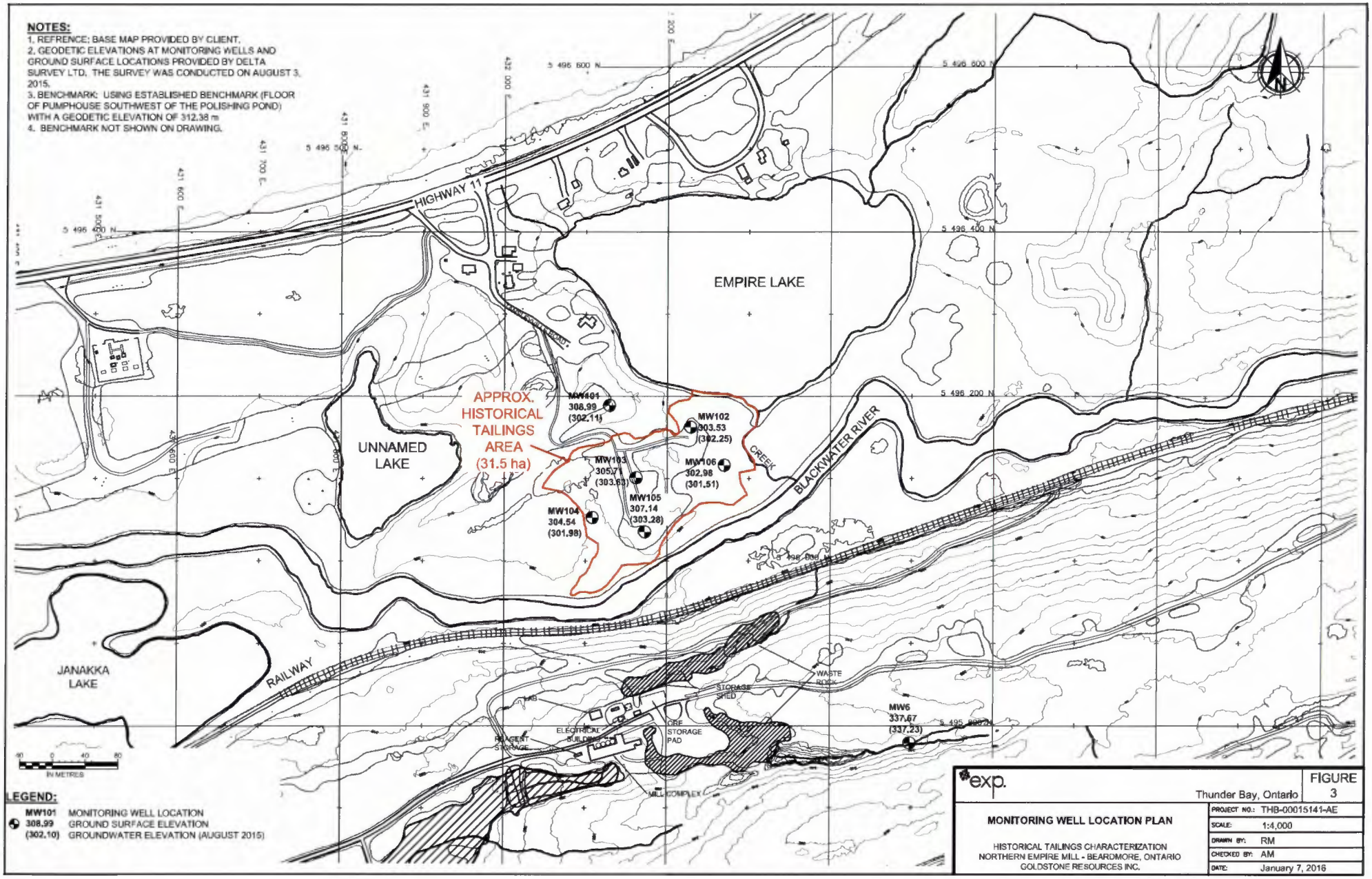
FIGURE 1

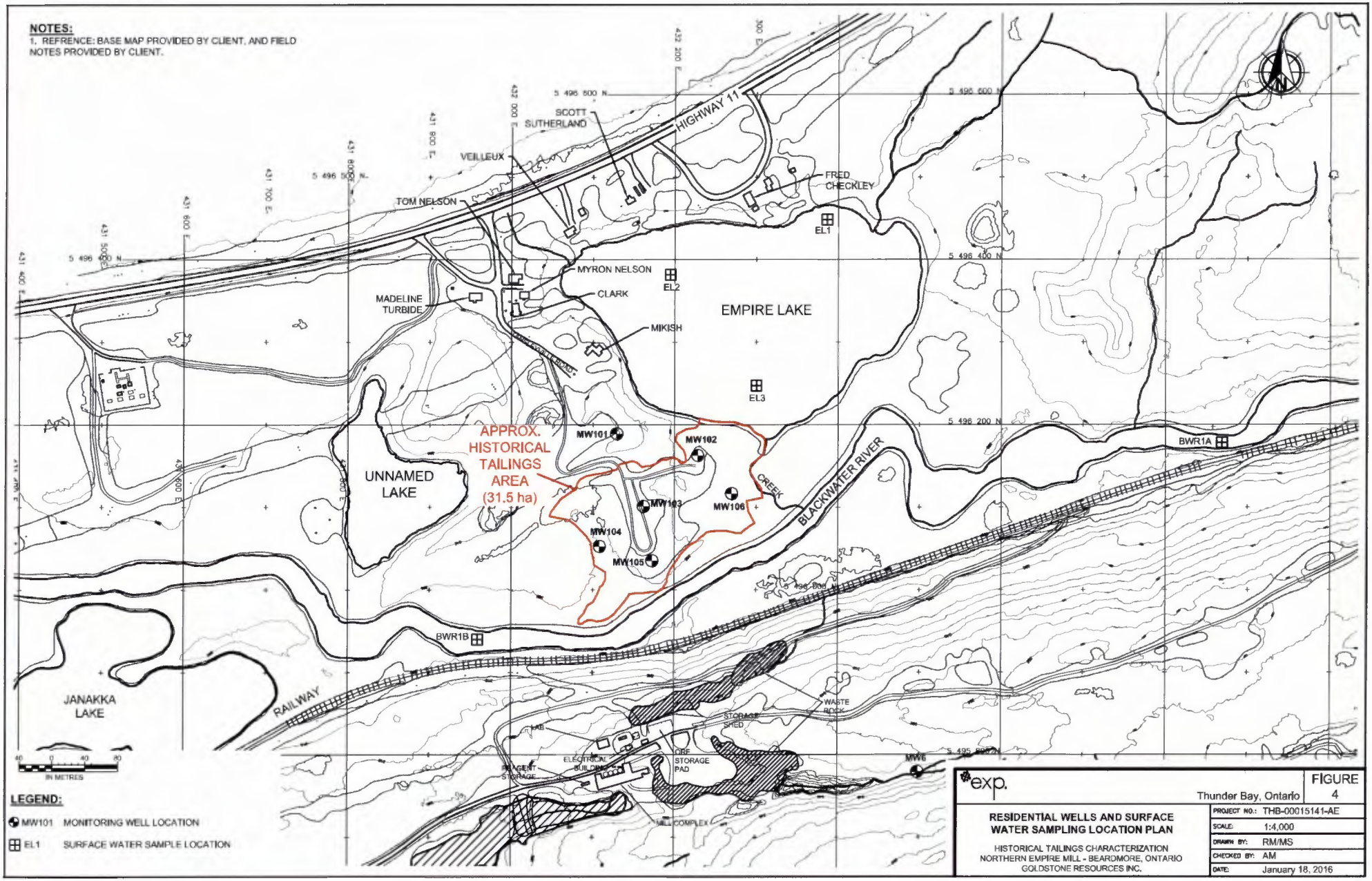
SITE LOCATION PLAN

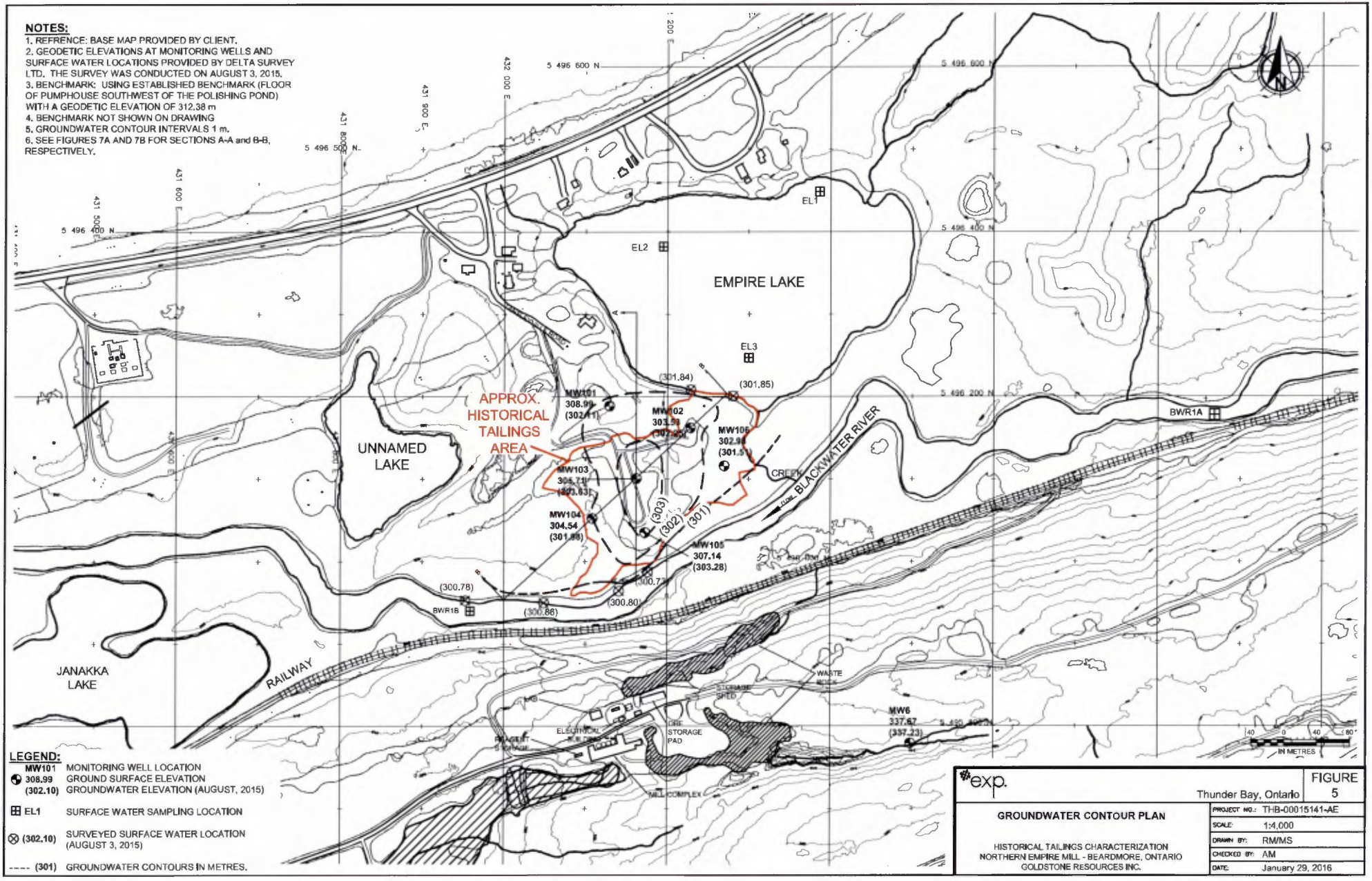
HISTORICAL TAILINGS CHARACTERIZATION
NORTHERN EMPIRE MILL - BEARDMORE, ONTARIO
GOLDSTONE RESOURCES INC.

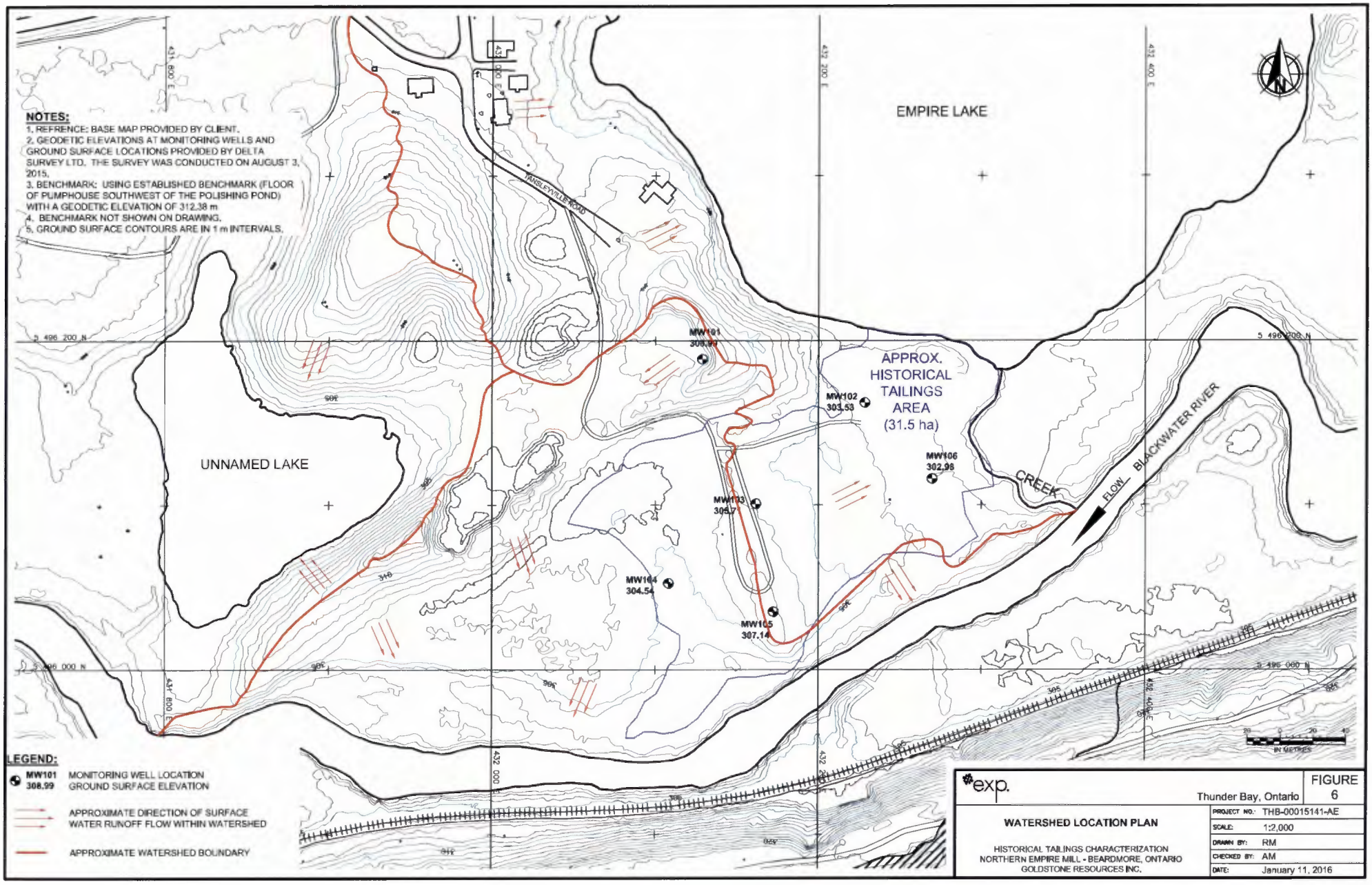
PROJECT NO.:	THB-00015141-AE
SCALE:	AS SHOWN
DRAWN BY:	RM/MS
CHECKED BY:	AM
DATE:	December 21, 2015


TANSLEYVILLE
HIGHWAY 11
Empire Lake
304
SITE
UNNAMED LAKE
CREEK
BLACKWATER RIVER
Crater Lake
304
Janakka Lake
304
BEARDMORE LANDFILL
NORTHERN EMPIRE MILL COMPLEX
TAILINGS POND
POLISHING POND
GARNET CREEK
BEARDMORE SEWAGE LAGOONS
BEARDMORE
NOTES:
1. REFERENCE: Ontario Base Map - 20 16 4300 54900
100 0 100 200
IN METRES
exp.
Thunder Bay, Ontario
FIGURE 2
SITE AND SURROUNDING FEATURES PLAN
HISTORICAL TAILINGS CHARACTERIZATION
NORTHERN EMPIRE MILL - BEARDMORE, ONTARIO
GOLDSTONE RESOURCES INC.
PROJECT NO.: THB-00015141-AE
SCALE: 1:10,000
DRAWN BY: RM/MS
CHECKED BY: AM
DATE: January 7, 2016


NOTES:
1. REFRENCE: BASE MAP PROVIDED BY CLIENT.
2. GEODETIC ELEVATIONS AT MONITORING WELLS AND GROUND SURFACE LOCATIONS PROVIDED BY DELTA SURVEY LTD. THE SURVEY WAS CONDUCTED ON AUGUST 3, 2015.
3. BENCHMARK: USING ESTABLISHED BENCHMARK (FLOOR OF PUMPHOUSE SOUTHWEST OF THE POLISHING POND) WITH A GEODETIC ELEVATION OF 312.38 m
4. BENCHMARK NOT SHOWN ON DRAWING.
HIGHWAY 11
EMPIRE LAKE
UNNAMED LAKE
JANAKKA LAKE
RAILWAY
BLACKWATER RIVER
CREEK
APPROX. HISTORICAL TAILINGS AREA (31.5 ha)
MW101 308.99 (302.11)
MW102 303.53 (302.25)
MW103 305.17 (303.63)
MW104 304.54 (301.98)
MW105 307.14 (303.28)
MW106 302.98 (301.51)
MW6 337.67 (337.23)
5 496 600 N.
5 496 400 N.
5 496 200 N.
431 200 E
431 400 E
431 600 E
431 800 E
WASTE ROCK
STORAGE SHED
ORE STORAGE PAD
REAGENT STORAGE
ELECTRICAL BUILDING
MILL COMPLEX
IN METRES
LEGEND:
MW101 MONITORING WELL LOCATION
308.99 GROUND SURFACE ELEVATION
(302.10) GROUNDWATER ELEVATION (AUGUST 2015)
exp.
Thunder Bay, Ontario
FIGURE 3
MONITORING WELL LOCATION PLAN
HISTORICAL TAILINGS CHARACTERIZATION
NORTHERN EMPIRE MILL - BEARDMORE, ONTARIO
GOLDSTONE RESOURCES INC.
PROJECT NO.: THB-00015141-AE
SCALE: 1:4,000
DRAWN BY: RM
CHECKED BY: AM
DATE: January 7, 2016


NOTES:
1. REFRENCE: BASE MAP PROVIDED BY CLIENT, AND FIELD NOTES PROVIDED BY CLIENT.
HIGHWAY 11
SCOTT SUTHERLAND
VEILLEUX
TOM NELSON
FRED CHECKLEY
EL1
MYRON NELSON
EL2
CLARK
MADELINE TURBIDE
MIKISH
EMPIRE LAKE
EL3
APPROX. HISTORICAL TAILINGS AREA (31.5 ha)
MW101
MW102
MW103
MW104
MW105
MW106
UNNAMED LAKE
BLACKWATER RIVER
CREEK
BWR1A
BWR1B
JANAKKA LAKE
RAILWAY
WASTE ROCK
STORAGE SHED
MAB
ELECTRICAL BUILDING
REAGENT STORAGE
ORE STORAGE PAD
MILL COMPLEX
MW6
5 496 800 N
5 496 600 N
5 496 400 N
5 496 200 N
431 200 E
431 400 E
431 600 E
431 800 E
IN METRES
LEGEND:
MW101 MONITORING WELL LOCATION
EL1 SURFACE WATER SAMPLE LOCATION
exp.
Thunder Bay, Ontario
FIGURE 4
RESIDENTIAL WELLS AND SURFACE WATER SAMPLING LOCATION PLAN
HISTORICAL TAILINGS CHARACTERIZATION
NORTHERN EMPIRE MILL - BEARDMORE, ONTARIO
GOLDSTONE RESOURCES INC.
PROJECT NO.: THB-00015141-AE
SCALE: 1:4,000
DRAWN BY: RM/MS
CHECKED BY: AM
DATE: January 18, 2016


NOTES:
1. REFRENCE: BASE MAP PROVIDED BY CLIENT.
2. GEODETIC ELEVATIONS AT MONITORING WELLS AND SURFACE WATER LOCATIONS PROVIDED BY DELTA SURVEY LTD. THE SURVEY WAS CONDUCTED ON AUGUST 3, 2015.
3. BENCHMARK: USING ESTABLISHED BENCHMARK (FLOOR OF PUMPHOUSE SOUTHWEST OF THE POLISHING POND) WITH A GEODETIC ELEVATION OF 312.38 m
4. BENCHMARK NOT SHOWN ON DRAWING
5. GROUNDWATER CONTOUR INTERVALS 1 m.
6. SEE FIGURES 7A AND 7B FOR SECTIONS A-A and B-B, RESPECTIVELY.
5 496 600 N.
5 496 400 N.
5 496 200 N.
431 800 E.
432 000 E.
431 600 E.
431 400 E.
EL1
EL2
EL3
EMPIRE LAKE
UNNAMED LAKE
JANAKKA LAKE
APPROX. HISTORICAL TAILINGS AREA
MW101
308.99
(302.11)
MW102
303.59
(307.45)
MW103
305.71
(303.63)
MW104
304.54
(301.89)
MW105
307.14
(303.28)
MW106
302.94
(301.51)
(301.84)
(301.85)
(300.78)
(300.86)
(300.80)
(303)
(302)
(301)
BWR1A
BWR1B
BLACKWATER RIVER
CREEK
RAILWAY
WASTE
STORAGE SHED
ORE STORAGE PAD
MILL COMPLEX
MW6
337.67
(337.23)
40 0 40 80
IN METRES
LEGEND:
MW101 MONITORING WELL LOCATION
308.99 GROUND SURFACE ELEVATION
(302.10) GROUNDWATER ELEVATION (AUGUST, 2015)
EL1 SURFACE WATER SAMPLING LOCATION
(302.10) SURVEYED SURFACE WATER LOCATION (AUGUST 3, 2015)
(301) GROUNDWATER CONTOURS IN METRES.
exp.
Thunder Bay, Ontario
FIGURE 5
GROUNDWATER CONTOUR PLAN
HISTORICAL TAILINGS CHARACTERIZATION
NORTHERN EMPIRE MILL - BEARDMORE, ONTARIO
GOLDSTONE RESOURCES INC.
PROJECT NO.: THB-00015141-AE
SCALE: 1:4,000
DRAWN BY: RM/MS
CHECKED BY: AM
DATE: January 29, 2016



exp. Thunder Bay, Ontario

FIGURE 6

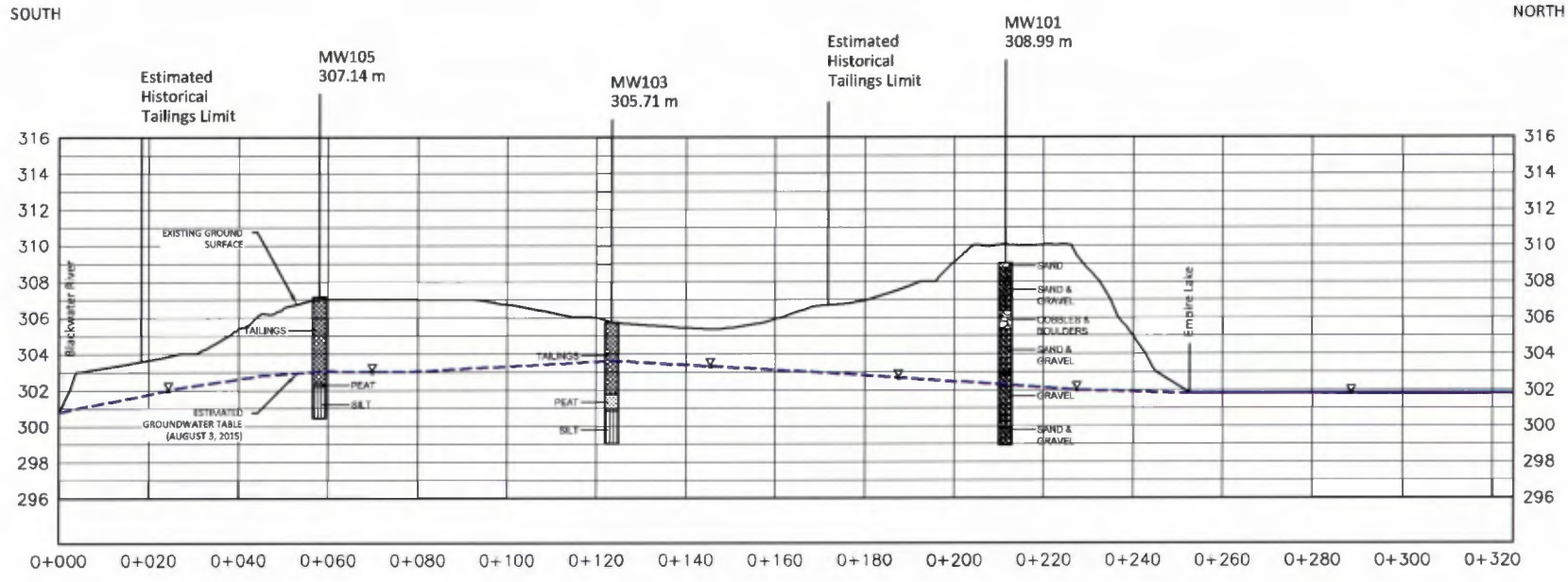
WATERSHED LOCATION PLAN

HISTORICAL TAILINGS CHARACTERIZATION
NORTHERN EMPIRE MILL - BEARDMORE, ONTARIO
GOLDSTONE RESOURCES INC.

PROJECT NO:	THB-00015141-AE
SCALE:	1:2,000
DRAWN BY:	RM
CHECKED BY:	AM
DATE:	January 11, 2016

NOTES:

1. REFRENCE: EXISTING GROUND SURFACE CONTOURS PROVIDED BY CLIENT.
2. GEODETIC ELEVATIONS AT MONITORING WELLS AND SURFACE WATER LOCATIONS PROVIDED BY DELTA SURVEY LTD. THE SURVEY WAS CONDUCTED ON AUGUST 3, 2015.
3. BENCHMARK: USING ESTABLISHED BENCHMARK (FLOOR OF PUMPHOUSE SOUTHWEST OF THE POLISHING POND) WITH A GEODETIC ELEVATION OF 312.38 m.
4. SEE FIGURE 5 FOR SECTION LOCATION.



A - A
PROFILE OF HISTORICAL TAILINGS AREA

10 0 10 20
IN METRES

exp. Thunder Bay, Ontario

FIGURE 7A

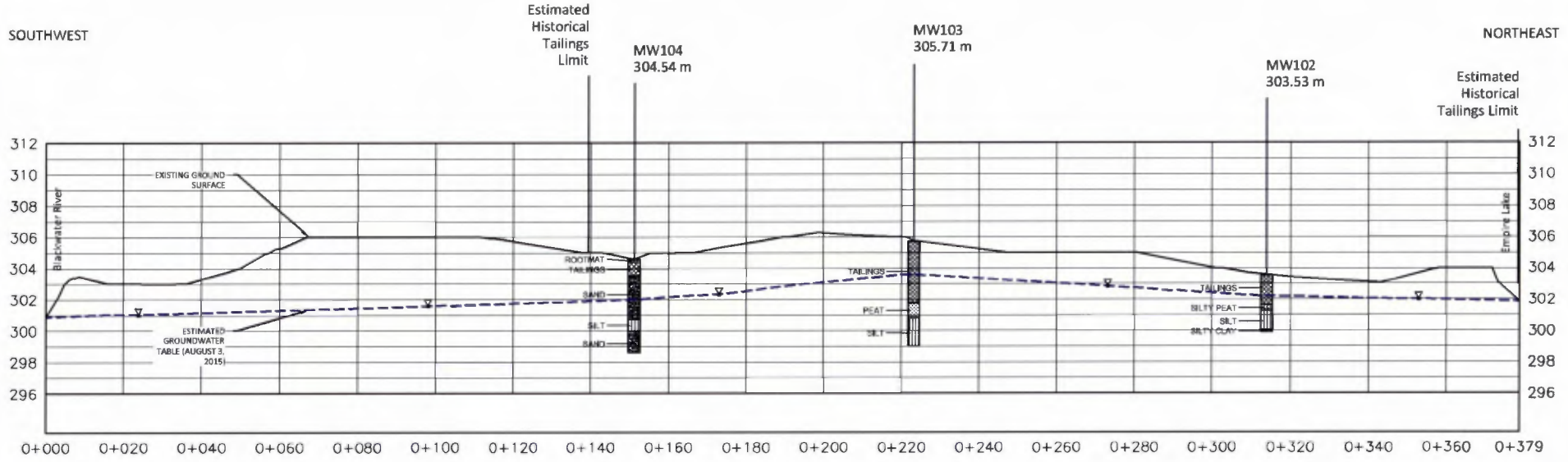
SECTION A-A

HISTORICAL TAILINGS CHARACTERIZATION
NORTHERN EMPIRE MILL - BEARDMORE, ONTARIO
GOLDSTONE RESOURCES INC.

PROJECT NO.:	THB-00015141-AE
H. SCALE: 1:1,000	V. SCALE: 1:250
DRAWN BY:	RM
CHECKED BY:	AM
DATE:	January 29, 2016

NOTES:

1. REFRENCE: EXISTING GROUND SURFACE CONTOURS PROVIDED BY CLIENT.
2. GEODETIC ELEVATIONS AT MONITORING WELLS AND SURFACE WATER LOCATIONS PROVIDED BY DELTA SURVEY LTD. THE SURVEY WAS CONDUCTEO ON AUGUST 3, 2015.
3. BENCHMARK: USING ESTABLISHED BENCHMARK (FLOOR OF PUMPHOUSE SOUTHWEST OF THE POLISHING POND) WITH A GEODETIC ELEVATION OF 312.38 m.
4. SEE FIGURE 5 FOR SECTION LOCATION.



B-B
PROFILE OF HISTORICAL TAILINGS AREA

10 0 10 20
IN METRES

exp.

Thunder Bay, Ontario

FIGURE 7B

SECTION B-B

HISTORICAL TAILINGS CHARACTERIZATION
NORTHERN EMPIRE MILL - BEARDMORE, ONTARIO
GOLDSTONE RESOURCES INC.

PROJECT NO.:	THB-00015141-AE
H. SCALE: 1:1,000	V. SCALE: 1:250
DRAWN BY:	RM
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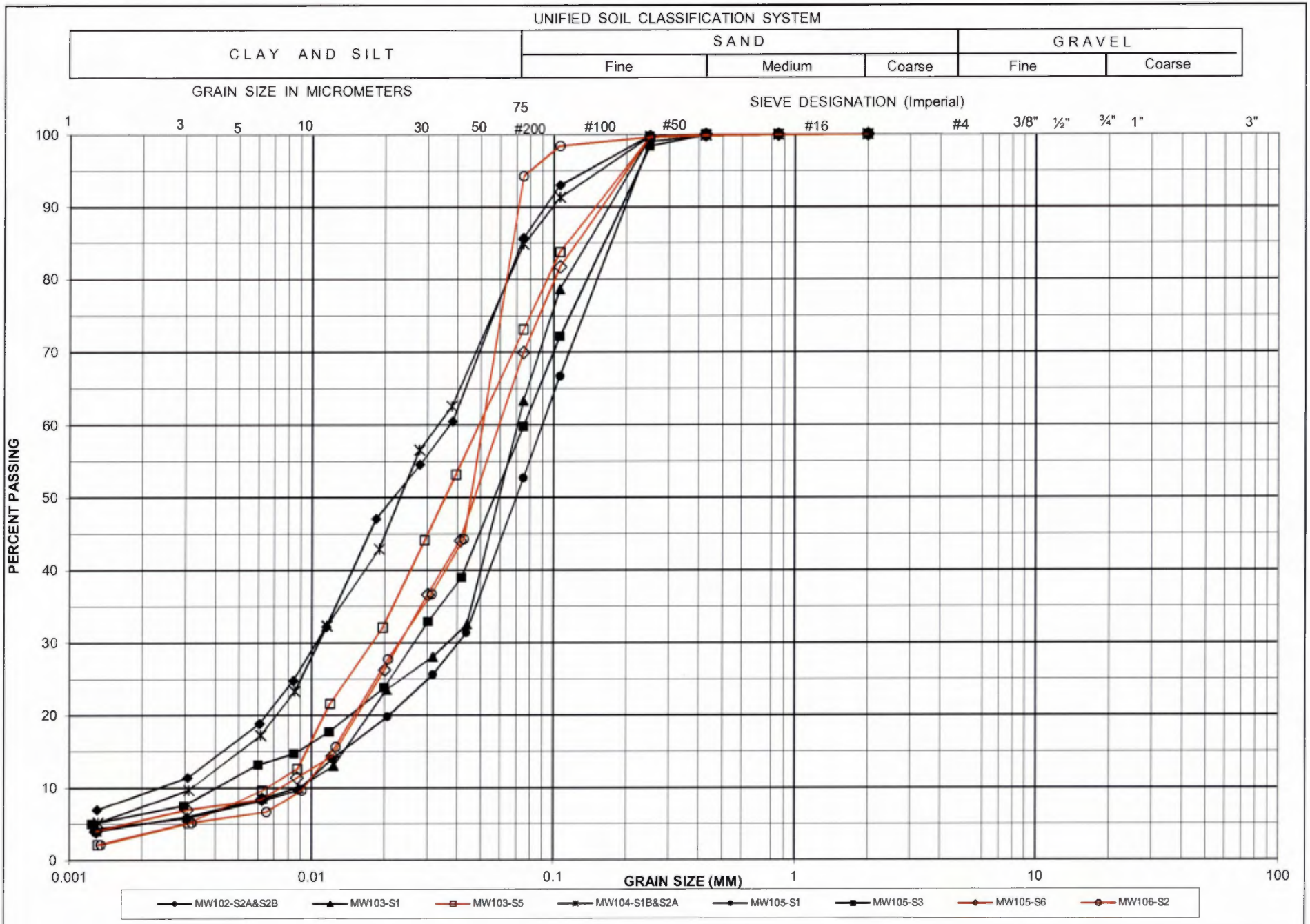


exp.

GRAIN SIZE DISTRIBUTION

Historical Tailings Characterization - Beardmore, ON
Goldstone Resources Inc.

FIGURE No. 8
Ref. No. THB-00015141-AE
DATE January 18, 2016

Appendix B –

BOREHOLE LOGS and MOECC WELL RECORDS

SYMBOLS AND TERMS USED ON THE BOREHOLE AND TEST PIT RECORDS

SOIL DESCRIPTION

Behavioural properties (i.e. plasticity, permeability) take precedence over particle gradation in describing soils.

Terminology describing soil structure:

Desiccated	-	having visible signs of weathering by oxidization of clay minerals, shrinkage cracks, etc.
Fissured	-	having cracks, and hence a blocky structure
Varved	-	composed of regular alternating layers of silt and clay
Stratified	-	composed of alternating layers of different soil types, e.g. silt and sand or slit and clay
Well Graded	-	having wide range in grain sizes and substantial amounts of all intermediate particle sizes.
Uniformly Graded	-	predominantly of one grain size.

Terminology used for describing soil strata based upon the proportion of individual particle sizes present:

Trace, or occasional	less than 10%
Some	10-20%
Adjective (e.g. silty or sandy)	20-35%
And (e.g. silt and sand)	35-50%

The standard terminology to describe cohesionless soils includes the relative density, as determined by laboratory test or by the Standard Penetration Test 'N' – value: the number of blows of 140 pound (64kg) hammer falling 30 inches (760mm), required to drive a 2 inch (50.8mm) O.D. split spoon sample one foot (305mm) into the soil.

Relative Density	'N' Value	Relative Density %
Very Loose	<4	<15
Loose	4-10	15-35
Compact	10-30	35-65
Dense	30-50	65-85
Very Dense	>50	>85

The standard terminology to describe cohesive soils includes the consistency, which is based on undrained shear strength as measured by insitu vane tests, penetrometer tests, unconfined compression tests, or occasionally by standard penetration tests.

Consistency	Undrained Shear Strength		'N' Value
	kips/sq.ft.	kPa	
Very Soft	<0.25	<12.5	<2
Soft	0.25-0.5	12.5-25	2-4
Firm	0.5-1.0	25-50	4-8
Stiff	1.0-2.0	50-100	8-15
Very Stiff	2.0-4.0	100-200	15-30
Hard	>4.0	>200	>30

STRATA PLOT


Gravel & Boulders


Sand


Silt


Clay


Fill

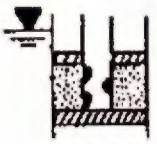

Igneous Bedrock


Sedimentary Bedrock


Metamorphic Bedrock

WATER LEVEL MEASUREMENT


Borehole or Standpipe


Piezometer

SAMPLES

SS...	Split spoon sample (obtained by performing the standard penetration test)
ST...	Shelby tube or thin wall tube
PS...	Piston sample
BS...	Bulk sample
WS...	Wash sample
RC...	Rock core AXT, BXL. etc... Rock core samples obtained with the use of standard diamond drilling bits.

OTHER TESTS

G...	Specific gravity
H...	Hydrometer analysis
S...	Sieve analysis
γ	Unit weight
C....	Consolidation
CD...	Consolidated drained triaxial
CU...	Consolidated undrained triaxial with pore pressure measurements
UU...	Unconsolidated undrained triaxial
DS...	Direct shear
P....	Field permeability

ROCK DESCRIPTION

The description of bedrock is based on the rock quality designation (RQD). The classification is based on a modified core recovery percentage in which all pieces of sound core over 100mm long are counted as recovery. The smaller pieces are considered to be due to close shearing, jointing, faulting, or weathering in the rock mass and are not counted. In most cases RQD is run on NXL core; however, it can be used on different core sizes if the bulk of the fractures caused by drilling stresses are easily distinguishable from normal insitu fractures.

RQD	ROCK QUALITY
90-100	Excellent, intact, very sound
75-90	Good, massive, moderately jointed or sound
50-75	Fair, blocky and seamy, fractured
25-50	Poor, shattered and very seamy or blocky, severely fractured
0-25	Very poor, crushed, very severely fractured

exp.

exp. Thunder Bay Branch

BOREHOLE LOG

MW101

Sheet 1 of 1

PROJECT **Historical Tailings Characterization, Northern Empire Property, Beardmore, ON** PROJECT NO. **THB-00015141-AE**

CLIENT **Goldstone Resources Inc.** DATUM **Geodetic**

DRILL TYPE/METHOD **CME 850 Track Mount / HSA** DATES: Boring **July 22-23, 2015** Water Level **Aug. 3/15**

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)
0	308.99						
	308.74	**SAND** - loose to compact, brown, damp, trace gravel, trace silt, trace rootlets, fine grained	SS	S1A	250	6	
			SS	S1B	80	11	
		SAND & GRAVEL - compact, brown, damp					
1		- becoming very dense at about 0.8 m depth	SS	S2	250	54	
		- some cobbles and boulders at about 1.5 m depth	SS	S3	380	77	
2							
	306.37		SS	S4	200	100	
		COBBLES & BOULDERS - refusal to SPT and auger at about 2.6 m depth					
3	305.33						
		SAND & GRAVEL - dense to very dense, brown, damp	SS		0	37	
4							
			SS	S5	250	58	
5			SS		0	100	
	302.89						
		GRAVEL - very dense to dense, brown, moist	SS	S6	200	100	
6							
		- becoming wet at about 6.9 m depth.	SS	S7	300	36	
7							
			SS	S8	330	46	
8	300.61						
		SAND & GRAVEL - compact, brown, wet	SS	S9	280	26	
9							
			SS	S10	250	21	
10	298.93						
		End of Borehole					

HEADSPACE COMBUSTIBLE VAPOUR LEVEL

▲ HCVL

40 80 ppm

W_P W W_L

● SPT N Value × Dynamic Cone

20 40 60 80

NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) Due to SPT and auger refusal MW101 relocated about 1.0 m away. Advanced to about 3.7 m and continued sampling.

3) 50 mm PVC monitoring well installed upon completion, screened from about 6.7 m to 9.8 m below ground surface.

4) Top of pipe elevation is 309.91 m.

5) GPS coordinates in UTM 16U 432,129 E 5,496,189 N.

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube

▥ Rock Core (eg. BQ, NQ, etc.) ▣ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

exp. Thunder Bay Branch

BOREHOLE LOG

MW102

Sheet 1 of 1

PROJECT **Historical Tailings Characterization, Northern Empire Property, Beardmore, ON** PROJECT NO. **THB-00015141-AE**

CLIENT **Goldstone Resources Inc.** DATUM **Geodetic**

DRILL TYPE/METHOD **CME 850 Track Mount / HSA** DATES: Boring **July 22, 2015** Water Level **Aug. 3/15**

DEPTH (m)	ELEVATION (m) 303.53	STRATA DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)
0		**TAILINGS** - loose to very loose, brown, moist to wet, some roots in upper 0.6 m, trace organics in upper 0.6 m	SS	S1	460	9	
1		- becoming grey at about 0.8 m depth	SS	S2A	150	2	H/G
			SS	S2B	300	3	H/G
		- becoming grey with black striations, some rootlets at about 1.5 m depth	SS	S3A	380	4	
2	301.63		SS	S3B	150	5	
	301.24	**SILTY PEAT** - soft to firm, grey to brown, wet					
		SILT - loose, grey, wet, trace organics, rootlets	SS	S4	460	7	
3		- becoming very loose, some shells at about 3.1 m depth	SS	S5A	150		
	300.02		SS	S5B	300	0	
	299.87	**CLAYEY SILT** - very soft, grey, wet, trace gravel	SS	S5C	150		
4		**End of Borehole**					
5							
6							
7							
8							
9							
10							

HEADSPACE COMBUSTIBLE VAPOUR LEVEL

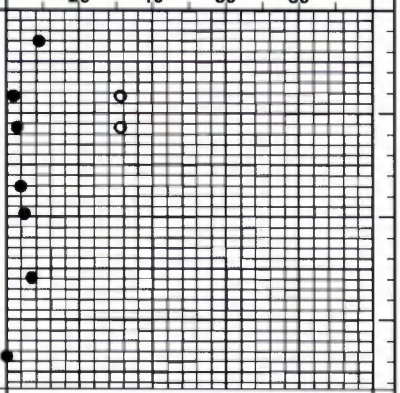
▲ HCVL

40 80 ppm

W_P W W_L

● SPT N Value × Dynamic Cone

20 40 60 80



NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50 mm PVC monitoring well installed upon completion, screened from about 1.1 m to 2.1 m below ground surface.

3) Top of pipe elevation is 304.29 m.

4) GPS coordinates in UTM 16U 432,228 E 5,496,162 N.

5) Sample S2A & S2B, Specific Gravity = 2.72.

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube

◫ Rock Core (eg. BQ, NQ, etc.) ◫ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

exp. Thunder Bay Branch

BOREHOLE LOG

MW103

Sheet 1 of 1

PROJECT **Historical Tailings Characterization, Northern Empire Property, Beardmore, ON** PROJECT NO. **THB-00015141-AE**

CLIENT **Goldstone Resources Inc.** DATUM **Geodetic**

DRILL TYPE/METHOD **CME 850 Track Mount / HSA** DATES: Boring **July 21, 2015** Water Level **Aug. 3/15**

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)
0	305.71	**TAILINGS** - compact to loose, brown, damp, trace rootlets in upper 0.6 m	SS	S1	560	14	H/G
		- becoming moist to wet at about 0.6 m depth					
1			SS	S2	380	6	
		- becoming grey, wet at about 1.5 m depth					
2			SS	S3	410	8	
		- becoming very loose, some rootlets at about 2.3 m depth	SS	S4	460	3	
3							
			SS	S5	410	3	H/G
4	301.75	- trace to some peat at about 3.8 m depth	SS	S6A	150	2	
		PEAT - soft to firm, brown, wet	SS	S6B	460	6	
	300.83	- some wood pieces, strong sulphur odours at about 4.6 m depth	SS	S7A	300	3	
5		**SILT** - loose to very loose, brown, moist, trace to some organics, trace wood pieces	SS	S7B	200	7	
		- becoming grey, wet, trace rootlets, trace shells at about 5.3 m depth	SS	S8	380	3	
6							
	299.00		SS	S9	480	3	
7		**End of Borehole**					
8							
9							
10							

HEADSPACE COMBUSTIBLE VAPOUR LEVEL

▲ HCVL

40 80 ppm

W_P W W_L

● SPT N Value × Dynamic Cone

20 40 60 80

NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50 mm PVC monitoring well installed upon completion, screened from about 1.5 m to 3.4 m below ground surface.

3) Top of pipe elevation is 306.52 m.

4) GPS coordinates in UTM 16U 432,162 E 5,496,101 N.

5) Sample S1, Specific Gravity = 2.75.
Sample S5, Specific Gravity = 2.76.

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube
▣ Rock Core (eg. BQ, NQ, etc.) ▣ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

exp. Thunder Bay Branch

BOREHOLE LOG

MW104

Sheet 1 of 1

PROJECT **Historical Tailings Characterization, Northern Empire Property, Beardmore, ON** PROJECT NO. **THB-00015141-AE**

CLIENT **Goldstone Resources Inc.** DATUM **Geodetic**

DRILL TYPE/METHOD **CME 850 Track Mount / HSA** DATES: Boring **July 22, 2015** Water Level **Aug. 3/15**

DEPTH (m)	ELEVATION (m) 304.54	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)	HEADSPACE COMBUSTIBLE VAPOUR LEVEL ▲ HCVL 40 80 ppm; W_P W W_L; ● SPT N Value × Dynamic Cone 20 40 60 80
0	304.39	**ROOTMAT** - very soft to soft, brown, damp, some tailings			SS	S1A	150	2		
					SS	S1B	460	2	H/G	
		TAILINGS - very loose to loose, brown, damp, some roots and rootlets								
1	303.52				SS	S2A	250	5	H/G	
		SAND - loose to compact, brown, damp, very fine grained			SS	S2B	300	6		
		- trace silt, some oxidation at about 1.5 m depth			SS	S3	510	29		
2										
		- becoming moist to wet at about 2.3 m depth			SS	S4	510	29		
3		- becoming wet, some silt at about 3.0 m depth			SS	S5	430	23		
	300.73									
4		**SILT** - compact, brown, wet, some fine grained sand			SS	S6	480	15		
	299.97									
		SAND - loose, grey, wet, trace silt, fine grained			SS	S7	460	8		
5		- about 1.5 m of blow-up in augers at about 5.3 m depth			SS	S8	480	9		
	298.60									
6		**End of Borehole**								
7										
8										
9										
10										

NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50 mm PVC monitoring well installed upon completion, screened from about 3.1 m to 4.6 m below ground surface.

3) Top of pipe elevation is 305.43 m.

4) GPS coordinates in UTM 16U 432,108 E 5,496,052 N.

5) Sample S1B & S2A, Specific Gravity = 2.71.

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube
▣ Rock Core (eg. BQ, NQ, etc.) ▣ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

exp. Thunder Bay Branch

BOREHOLE LOG

MW105

Sheet 1 of 1

PROJECT **Historical Tailings Characterization, Northern Empire Property, Beardmore, ON** PROJECT NO. **THB-00015141-AE**

CLIENT **Goldstone Resources Inc.** DATUM **Geodetic**

DRILL TYPE/METHOD **CME 850 Track Mount / HSA** DATES: Boring **July 22, 2015** Water Level **Aug. 3/15**

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)
0	307.14	**TAILINGS** - compact, brown, damp, some rootlets in upper 1.5 m			SS	S1	480	20	H/G
1					SS	S2	480	18	
		- becoming brown to grey, damp to moist at about 1.5 m depth			SS	S3	510	19	H/G
2					SS	S4	480	19	
3					SS	S5A	460	10	
		- becoming grey, wet at about 3.5 m depth			SS	S5B	80	10	
4		- becoming loose, trace organics at about 3.8 m depth			SS	S6	430	8	H/G
	302.37				SS	S7A	200		
	302.19	**PEAT** - soft, black, wet, some wood pieces, strong sulphur odours			SS	S7B	180	10	
5					SS	S7C	180		
		SILT - loose to compact, dark brown to grey, moist, some organics, trace wood pieces - becoming wet, black striations, trace organics at about 5.3 m depth			SS	S8	460	20	
6		- trace to some very fine grained sand at about 6.1 m depth			SS	S9	460	25	
	300.43								
7		**End of Borehole**							
8									
9									
10									

HEADSPACE COMBUSTIBLE VAPOUR LEVEL

▲ HCVL

40 80 ppm

W_P W W_L

● SPT N Value × Dynamic Cone

20 40 60 80

NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50 mm PVC monitoring well installed upon completion, screened from about 2.7 m to 4.3 m below ground surface.

3) Top of pipe elevation is 307.86 m.

4) GPS coordinates in UTM 16U 432,172 E 5,496,035 N.

5) Sample S1, Specific Gravity = 2.78. Sample S3, Specific Gravity = 2.84. Sample S6, Specific Gravity = 2.78.

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube

▥ Rock Core (eg. BQ, NQ, etc.) ▥ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

exp. Thunder Bay Branch

BOREHOLE LOG

MW106

Sheet 1 of 1

PROJECT **Historical Tailings Characterization, Northern Empire Property, Beardmore, ON** PROJECT NO. **THB-00015141-AE**

CLIENT **Goldstone Resources Inc.** DATUM **Geodetic**

DRILL TYPE/METHOD **CME 850 Track Mount / HSA** DATES: Boring **July 23, 2015** Water Level **Aug. 3/15**

DEPTH (m)	ELEVATION (m) 302.98	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)	HEADSPACE COMBUSTIBLE VAPOUR LEVEL ▲ HCVL 40 80 ppm; W_P W W_L; ● SPT N Value × Dynamic Cone 20 40 60 80
0		**TAILINGS** - loose, dark brown, moist, some peat to peaty, trace roots and rootlets			SS	S1A	100	1		
		- becoming very loose to loose, brown, trace to some organics at about 0.1 m			SS	S1B	100	3		
1		- becoming brown to grey at about 0.8 m depth			SS	S2	380	9	H/G	
		- becoming compact, grey at about 1.5 m depth			SS	S3	410	16		
2	300.62				SS	S4A	80	3		
		SAND - loose, grey, wet, trace organics			SS	S4B	380	6		
3	299.93									
	299.32	**SILT** - very loose, grey, wet, some very fine grained sand, some organics, some shells			SS	S5	460	0		
4		**End of Borehole**								
5										
6										
7										
8										
9										
10										

NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50 mm PVC monitoring well installed upon completion, screened from about 1.2 m to 2.7 m below ground surface.

3) Top of pipe elevation is 303.73 m.

4) GPS coordinates in UTM 16U 432,270 E 5,496,116 N.

5) Sample S2, Specific Gravity = 2.67.

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube
▯ Rock Core (eg. BQ, NQ, etc.) ▯ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

exp. Thunder Bay Branch

BOREHOLE LOG

MW6

Sheet 1 of 1

PROJECT **Groundwater Monitoring Report, Northern Empire Mill, Beardmore, ON** PROJECT NO. **THB-00012126-CE**

CLIENT **Goldstone Resources Inc.** DATUM **Local**

DRILL TYPE/METHOD **CME 55 Track Mount / HSA** DATES: Boring **April 10, 2014** Water Level **Jun. 5/14**

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	HCVL (ppm)
0	125.44	**PEAT** - soft, brown to black, moist, occasional cobbles, trace gravel, some roots and rootlets, upper 0.2 m frozen			AS	S1			
	124.99	**SANDY SILT** - loose to compact, brown, moist, occasional cobbles, trace gravel			AS	S2			
1	124.47	**BEDROCK** - medium strong to strong, very severely fractured, green with black and white particles, fine grained			HQ	S3	84%	0	
		- becoming fractured at about 1.3 m depth			HQ	S4	84%	73	
2		- becoming very severely fractured at about 1.8 m depth			HQ	S5	96%	0	
		- becoming fractured at about 1.5 m depth			HQ	S6	100%	60	
3		- becoming very severely fractured at about 3.3 m depth			HQ	S7	100%	24	
	121.79								
4		**End of Borehole**							
5									

HEADSPACE COMBUSTIBLE VAPOUR LEVEL

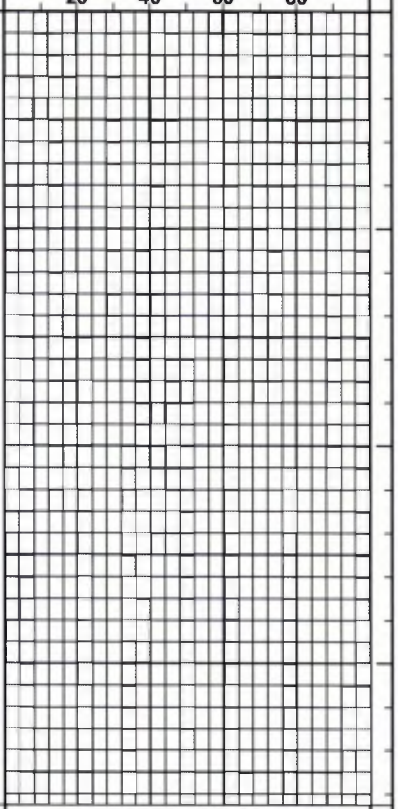
▲ HCVL

40 80 ppm

W_P W W_L

● SPT N Value × Dynamic Cone

20 40 60 80



NOTES

1) For definition of symbols & terms used on logs, see sheets prior to logs.

2) 50 mm PVC monitoring well installed upon completion, screened from about 0.3 m to 3.7 m below ground surface.

3) Top of pipe elevation is 126.22 m.

4) GPS coordinates in UTM 16U 432498 E 5495779 N.

SAMPLE LEGEND

☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube

▣ Rock Core (eg. BQ, NQ, etc.) ▣ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

Ontario — Ministry of the Environment and Climate Change

Well Record for Well Cluster - Part 1 of 3

(Only for Multiple Test Holes or Dewatering Wells)

Regulation 903 Ontario Water Resources Act

All measurements recorded in: ☑ Metric ☐ Imperial

Follow instructions on the front and back of this form. Print or Type

Well Tag No. of Deepest Well: *(Print Well Tag No.)* A147193

Well # on Drawing of Deepest Well:

Well Cluster Location Information

Address of Well Location (Street Number(s)/Name(s), RR, if available)	Lot(s)	Concession(s)	Geographic Township	County/District/Upper Tier Municipality
Northern Empire Mill			Greenstone	Thunder Bay District

City, Town, Village or Hamlet	Province	GPS Unit Make	Model	Unit Mode of Operation
Beardmore	Ontario			☐ Undifferentiated ☐ Averaged ☐ Differentiated, specify:

Mandatory Attachments/Additional Information

☒ Land Owner Consent Form must be attached.

☒ Detailed Drawing of All Well Locations must be attached.

I, the person constructing the well, will promptly submit to the Director, on request, any additional information in my custody or control related to any well in the well cluster that I have constructed.

Signature of Technician/Contractor: [signature] Date (yyyy/mm/dd):

Well Details

Well # on Drawing	Zone	Easting	Northing	Hole Depth (m/ft)	Hole Diameter (cm/in)	Method of Construction	Casing Material; Diameter (cm/in)	Casing From	Casing To	Screen Interval From	Screen Interval To	Annular Space From	Annular Space To	Annular Space Material	Overburden/Bedrock or Abandonment Filing Material Intervals (m/ft)	Static Water Level (m/ft)	Date of Completion (yyyy/mm/dd)
MW 101	16	4[illegible]	54[illegible]92	10.06	20.32	Power Auger	5.08 PVC	+0.8	[illegible]	[illegible]	[illegible]	0	0.15	Auger Cuttings	0 – [illegible] – Sand; [illegible] – [illegible] – Sand and Gravel	[illegible]	2015/07/[illegible]
							10.16 Welded Steel					0.15	2.44	Bentonite	[illegible] – 9.29 – Gravel		
												2.44	[illegible]	Sand	[illegible] – 10.06 – Sand and Gravel		
MW 102	16	[illegible]	[illegible]	2.66	20.32	Power Auger	5.08 PVC	+0.9	1.67	1.67	2.12	0	0.15	Auger Cuttings	0 – 1.92 – Tailings	1.63	2015/07/2[illegible]
							10.16 Welded Steel					0.15	0.76	Bentonite	1.92 – 2.29 – Peat		
												0.76	2.44	Sand	2.29 – 2.51 – Silt		
												2.44	2.66	Bentonite	2.51 – 2.66 – Clayey Silt		

Well Contractor and Well Technician Information

Business Name of Well Contractor	Business Address (Street Number/Name, RR)	Municipality	Province
Cochrane Drilling Inc.	216 [illegible]	Thunder Bay	Ont

Postal Code	Bus. Telephone No.	Well Contractor's Licence No.	Business E-mail Address
[illegible]	807-475-0320	7700	[illegible]

Name of Well Technician (First Name, Last Name)	Well Technician's Licence No.	Signature of Well Technician	Date Submitted (yyyy/mm/dd)
Leonard Britt	T-3813	[signature]	2015/[illegible]/2[illegible]

Date First Well in Cluster Constructed or Abandoned (yyyy/mm/dd)	Date Last Well in Cluster Completed (yyyy/mm/dd)
2015/07/20	2015/07/2[illegible]

Well Abandonment

Person Abandoning the Wells:

Name ______

(Print or Type) - See instruction 11 on the back of this form

Ministry Use Only

Date Received (yyyy/mm/dd):

Audit No. C 29854

Comments:

Contractor's Copy

Ontario

Ministry of the Environment and Climate Change

Well Record for Well Cluster - Part 1 of 3

(Only for Multiple Test Holes or Dewatering Wells)

Regulation 903 Ontario Water Resources Act

All measurements recorded in: ☑ Metric ☐ Imperial

Follow instructions on the front and back of this form. Print or Type

Well Tag No. of Deepest Well: *(Print Well Tag No.)* A147173

Well # on Drawing of Deepest Well:

Well Cluster Location Information

Address of Well Location (Street Number(s)/Name(s), RR, if available)	Lot(s)	Concession(s)	Geographic Township	County/District/Upper Tier Municipality
Northern Empire Mine				

City, Town, Village or Hamlet	Province	GPS Unit Make	Model	Unit Mode of Operation
	Ontario			☐ Undifferentiated ☐ Averaged ☐ Differentiated, specify:

Mandatory Attachments/Additional Information

☒ Land Owner Consent Form must be attached.

☒ Detailed Drawing of All Well Locations must be attached.

I, the person constructing the well, will promptly submit to the Director, on request, any additional information in my custody or control related to any well in the well cluster that I have constructed.

Signature of Technician/Contractor — Date (yyyy/mm/dd)

Well Details

Well # on Drawing	UTM Coordinates Zone	Easting	Northing	Hole Depth (m/ft)	Hole Diameter (cm/in)	Method of Construction	Casing Material; Diameter (cm/in)	Casing (m/ft) From	Casing (m/ft) To	Screen Interval (m/ft) From	Screen Interval (m/ft) To	Annular Space Material (m/ft) From	Annular Space Material (m/ft) To	Annular Space Material: Material	Overburden/Bedrock or Abandonment Filing Material intervals (m/ft)	Static Water Level (m/ft)	Date of Completion (yyyy/mm/dd)
MW 102	16	4[illegible]	5[illegible]9[illegible]	6.10	20.32	Power Auger	5.08 PVC	1.52	3.05	3.05	4.57	0	0.15	Auger cuttings	0 - 3.66 - Tailings	2.07	2015/10/01
							10.16 cm Monument					0.15	1.22	Cement	3.66 - 4.88 - peat		
							Protective Steel					1.22	2.44	Sand	4.88 - 6.10 Silt		
												2.44	4.27	Bentonite			
												4.27	6.10	Sand			
MW 104	16	4[illegible]	5[illegible]	5.79	20.32	Power Auger	5.08 PVC	1.52	3.05	3.05	4.57	0	0.61	Auger cuttings	0 - 0.15 - Overburden		
							10.16 cm Monument					0.61	2.44	Bentonite	0.15 - 1.52 - Tailings		
							Protective Steel					2.44	4.57	Sand	1.52 - 3.81 - Sand		
															3.81 - 4.57 - Silt		
															4.57 - Sand		

Well Contractor and Well Technician Information

Business Name of Well Contractor	Business Address (Street Number/Name, RR)	Municipality	Province

Postal Code	Bus. Telephone No.	Well Contractor's Licence No.	Business E-mail Address

Name of Well Technician (First Name, Last Name)	Well Technician's Licence No.	Signature of Well Technician	Date Submitted (yyyy/mm/dd)

Date First Well in Cluster Constructed or Abandoned (yyyy/mm/dd)	Date Last Well in Cluster Completed (yyyy/mm/dd)

Well Abandonment

Person Abandoning the Wells:

Name _____
(Print or Type) - See instruction 11 on the back of this form

Ministry Use Only

Date Received (yyyy/mm/dd)	Audit No.
	C 29855

Comments:

Contractor's Copy

Ontario

Ministry of the Environment and Climate Change

Well Record for Well Cluster - Part 1 of 3

(Only for Multiple Test Holes or Dewatering Wells)

Regulation 903 Ontario Water Resources Act

All measurements recorded in: ☑ Metric ☐ Imperial

Follow instructions on the front and back of this form. Print or Type

Well Tag No. of Deepest Well: *(Print Well Tag No.)* A147192

Well # on Drawing of Deepest Well:

Well Cluster Location Information

Address of Well Location (Street Number(s)/Name(s), RR, if available)	Lot(s)	Concession(s)	Geographic Township	County/District/Upper Tier Municipality
Northwest Empire Mill				

City, Town, Village or Hamlet	Province	GPS Unit Make	Model	Unit Mode of Operation
	Ontario			☐ Undifferentiated ☐ Averaged ☐ Differentiated, specify:

Mandatory Attachments/Additional Information

☒ Land Owner Consent Form must be attached.

☒ Detailed Drawing of All Well Locations must be attached.

I, the person constructing the well, will promptly submit to the Director, on request, any additional information in my custody or control related to any well in the well cluster that I have constructed

Signature of Technician/Contractor — Date (yyyy/mm/dd)

Well Details

Well # on Drawing	UTM Coordinates Zone	Easting	Northing	Hole Depth (m/ft)	Hole Diameter (cm/in)	Method of Construction	Casing Material; Diameter (cm/in)	Casing (m/ft) From	Casing (m/ft) To	Screen Interval (m/ft) From	Screen Interval (m/ft) To	Annular Space Material (m/ft) From	Annular Space Material (m/ft) To	Annular Space Material: Material:	Overburden/Bedrock or Abandonment Filing Material Intervals (m/ft)	Static Water Level (m/ft)	Date of Completion (yyyy/mm/dd)
NW 106	17	494301	5019616	6.00	6.2	power auger	5.08 SCH 40 PVC	+0.8	2.74	2.74	4.26	0	0.15	bent cuttings	0 - 0.17 Topsoil	3.7	[illegible]
							10-Slot					0.15	0.61	bentonite	0.17 - 2.35 - sand		
							Pre-Packed Screen					0.61	1.83	sand	2.35 - 3.66 - Bedrock		
												1.83	2.44	bentonite	3.66 - 4.11 - sand		
												2.44	4.57	sand			
												4.57	5.18	bentonite			
												5.18	6.71	Bent. cuttings			
NW 106	17	494301	5019616	3.66	6.2	power auger	5.08 SCH 40 PVC	+0.8	1.52	1.52	3.04	0	0.46	bent cuttings	0 - 0.61 Soil	1.52	[illegible]
							10-Slot					0.46	0.77	bentonite	0.61 - 2.35 - Sand		
							Pre-Packed Screen					0.77	3.66	sand	2.35 - 3.66 - Silt		

Well Contractor and Well Technician Information

Business Name of Well Contractor	Business Address (Street Number/Name, RR)	Municipality	Province

Postal Code	Bus. Telephone No.	Well Contractor's Licence No.	Business E-mail Address

Name of Well Technician (First Name, Last Name)	Well Technician's Licence No.	Signature of Well Technician	Date Submitted (yyyy/mm/dd)

Date First Well in Cluster Constructed or Abandoned (yyyy/mm/dd)	Date Last Well in Cluster Completed (yyyy/mm/dd)

Well Abandonment

Person Abandoning the Wells:

Name _____ (Print or Type) - See instruction 11 on the back of this form

Ministry Use Only

Date Received (yyyy/mm/dd)	Audit No.
	C 29857

Comments:

Contractor's Copy

Ontario Ministry of the Environment

Well Record for Well Cluster - Part 2 of 3
Land Owner Consent

This form is to be completed by the person who constructs or abandons test holes or dewatering wells that form all or part of a well cluster. If this form is being used to report any well abandonment, these wells must have been previously reported as part of a single well cluster.

Note: For well cluster records, only the owners of the land on which the wells are situated are to give written consent. If the well purchaser (e.g. a consultant who hires the driller) is not the owner of the land, then the well purchaser cannot sign the consent form.

By signing this form, land owners are providing consent to use one well record to report a well cluster of test holes or dewatering wells in accordance with section 16.4 of Regulation 903 made under the *Ontario Water Resources Act*.

This completed **Well Record for Well Cluster Part 2 - Land Owner Consent** must be attached to Parts 1 and 3.

* Please PRINT if completing by hand.

Well Tag Number: # A147193

"Well Record for Well Cluster" Audit Number: # _____

Well # on Detailed Drawing	Property Location Description	Land Owner's Name	Signature of Land Owner	Date Signed (yyyy/mm/dd)
MW103	TB4928	GOLDSTONE RESOURCES INC.	Paul Bruyn	2015/07/21
MW 105	TB4928	GOLDSTONE RESOURCES INC.	Paul Bruyn	2015/07/22
MW 102	TB4928	GOLDSTONE RESOURCES INC	Paul Bruyn	2015/07/22
MW 101	TB4928	GOLDSTONE RESOURCES INC.	Paul Bruyn	2015/07/22
MW 106	TB5023	GOLDSTONE RESOURCES INC.	Paul Bruyn	2015/07/23
MW 104	TB4928	GOLDSTONE RESOURCES INC.	Paul Bruyn	2015/07/23

Contractor's Copy

Disponible en français

Ontario Ministry of the Environment

Well Record for Well Cluster - Part 3 of 3
Detailed Drawing of All Well Locations

Note: This **Well Record for Well Cluster Part 3 - Detailed Drawing of all Well Locations,** must be attached to Parts 1 and 2. The drawing must include all property boundaries, an arrow indicating the North direction, all named roads and sufficient measurements to locate all wells in the cluster in relation to fixed points. The drawing must show the location of each well and each well must be numbered on the drawing to match number used for that well on the **Well Record for Well Cluster Parts 1 and 2**. The well with the well tag must be clearly identified on the Drawing.
UTM coordinates should appear beside each well, if space permits. Additional comments on wells can be included on the drawing

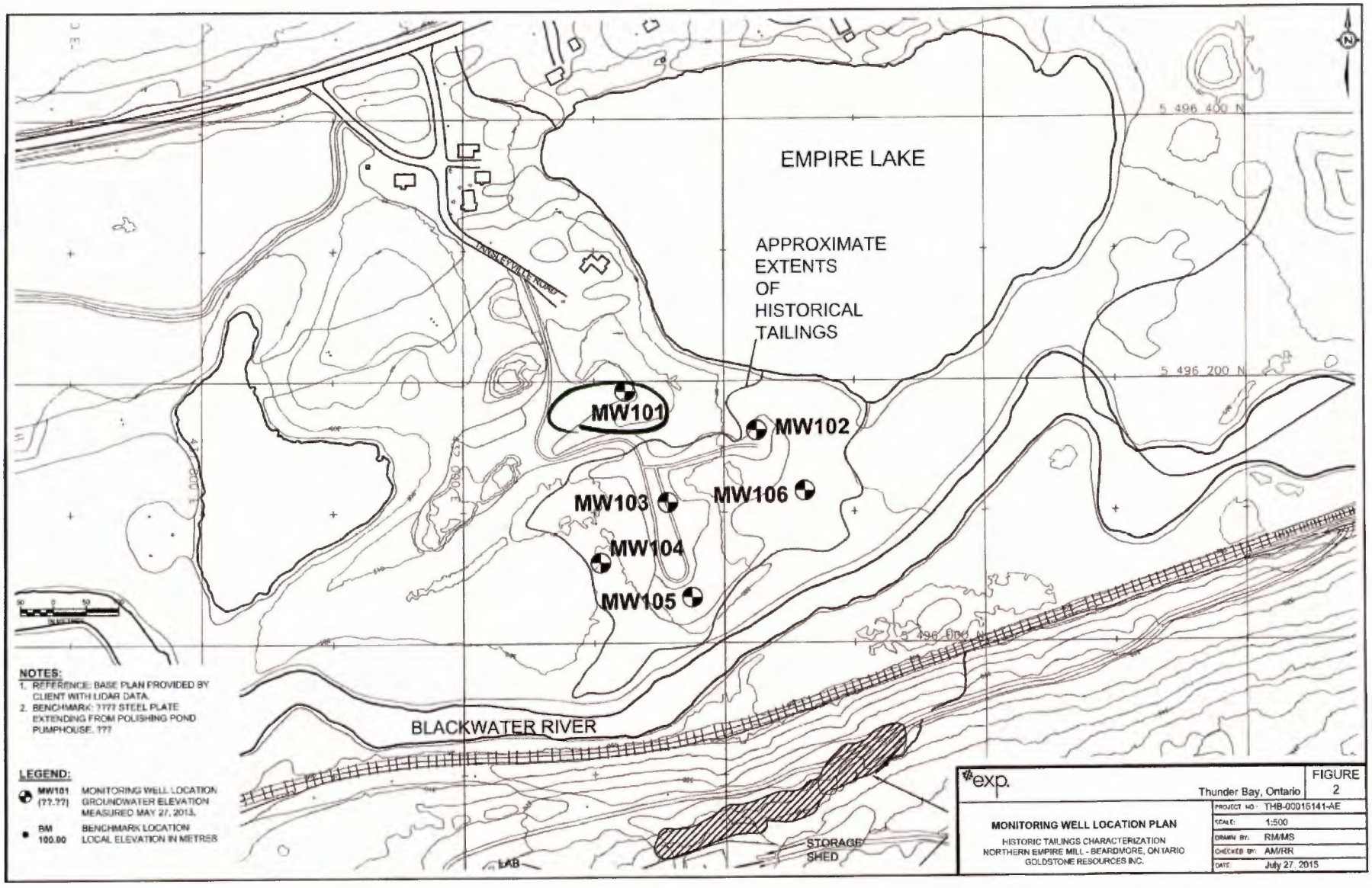
Well Tag Number: # A147193

"Well Record for Well Cluster" Form Audit Number: # _____

Please See Attached Map

Well tag - MW101

  Contractor's Copy


EMPIRE LAKE
APPROXIMATE EXTENTS OF HISTORICAL TAILINGS
MW101
MW102
MW103
MW104
MW105
MW106
5 496 400 N
5 496 200 N
5 496 000 N
BLACKWATER RIVER
LAB
STORAGE SHED
NOTES:
1. REFERENCE: BASE PLAN PROVIDED BY CLIENT WITH LIDAR DATA.
2. BENCHMARK: ??? STEEL PLATE EXTENDING FROM POLISHING POND PUMPHOUSE. ???
LEGEND:
MW101 (??.??) MONITORING WELL LOCATION GROUNDWATER ELEVATION MEASURED MAY 27, 2013.
BM 100.00 BENCHMARK LOCATION LOCAL ELEVATION IN METRES
exp.
Thunder Bay, Ontario
FIGURE 2
MONITORING WELL LOCATION PLAN
HISTORIC TAILINGS CHARACTERIZATION
NORTHERN EMPIRE MILL - BEARDMORE, ONTARIO
GOLDSTONE RESOURCES INC.
PROJECT NO: THB-00015141-AE
SCALE: 1:500
DRAWN BY: RM/MS
CHECKED BY: AM/RR
DATE: July 27, 2015

Appendix C –

Results Tables

List of Tables

Table C-1: Summary of Groundwater Levels and Elevations (m)

Monitoring Well No.	Ground Surfrace Elevation	Top of Pipe Elevation	Depth to Groundwater and Elevations					
			July 22 - 24, 2015[3]		Aug. 3, 2015		Oct. 26 - 29, 2015	
MW6	337.67	338.61	0.86	337.75	1.38	337.23	0.87	337.74
MW101	308.99	309.91	7.72	302.19	7.8	302.11	7.81	302.10
MW102	303.53	304.29	2.17	302.12	2.04	302.25	1.42	302.87
MW103	305.71	306.52	2.87	303.65	2.89	303.63	2.92	303.6
MW104	304.54	305.43	3.34	302.09	3.45	301.98	3.6	301.83
MW105	307.14	307.86	4.5	303.36	4.58	303.28	4.75	303.11
MW106	302.98	303.73	2.35	301.38	2.22	301.51	1.49	302.24

Notes:

1. Ground surface and top of pipe elevations were surveyed by Delta Survey Inc., August 3, 2015.
2. Depths to groundwater measured from top of riser pipe (cap removed).
3. Groundwater measurement for MW101 - MW106 were taken July 22, 23 & 24, 2015 during the monitoring well installations.

Table C-2: Bulk Metal Results for Soils

Parameter	Units	O.Reg 153/04 Table 2 Residential[1]	O.Reg 153/04 Table 2 Industrial[2]	O.Reg 153/04 Table 3 Residential[3]	O.Reg 153/04 Table 3 Industrial[4]	O.Reg 153/04 Table 8[5]	MW102 S2A/S2B Jul. 22, 2015	MW103 S1 Jul. 21, 2015	MW103 S5 Jul. 21, 2015	MW104 S1B/S2A Jul. 22, 2015	MW105 S1 Jul. 22, 2015	MW105 S3 Jul. 22, 2015	MW105 S6 Jul. 22, 2015	MW106 S2 Jul. 23, 2015	MW107[6] S4 Jul. 23, 2015
Antimony	ug/g	7.5	50	7.5	50	1.3	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8
Aluminum	ug/g	--	--	--	--	--	48,000	34,000	50,000	53,000	33,000	44,000	47,000	57,000	43,000
Arsenic	ug/g	18	18	18	18	18	**450**	**210**	**670**	**520**	**260**	**440**	**550**	13	**430**
Barium	ug/g	390	670	390	670	220	140	85	160	290	89	130	130	550	130
Beryllium	ug/g	5	10	5	10	2.5	0.39	0.34	0.37	0.64	0.28	0.42	0.34	1	0.39
Bismuth	ug/g	--	--	--	--	--	0.12	< 0.09	0.12	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Cadmium	ug/g	1.2	1.9	1.2	1.9	1.2	0.37	0.82	0.88	0.77	0.98	0.66	0.87	0.26	0.68
Calcium	ug/g	--	--	--	--	--	54,000	45,000	57,000	37,000	46,000	51,000	55,000	25,000	50,000
Chromium	ug/g	160	160	160	160	70	60	34	69	51	34	46	57	22	47
Cobalt	ug/g	22	100	22	100	22	17	10	17	11	11	22	15	5	22
Copper	ug/g	180	300	180	300	92	22	13	25	16	17	18	19	17	19
Iron	ug/g	--	--	--	--	--	65,000	43,000	61,000	47,000	43,000	58,000	57,000	16,000	57,000
Lead	ug/g	120	120	120	120	120	8.1	8	9.3	11	8.7	7.9	8.4	12	8.1
Lithium	ug/g	--	--	--	--	--	22	15	22	18	15	19	22	10	19
Magnesium	ug/g	--	--	--	--	--	24,000	14,000	23,000	14,000	14,000	21,000	22,000	6,800	20,000
Manganese	ug/g	--	--	--	--	--	1,500	1,400	1,400	1,100	1,500	1,500	1,400	250	1,500
Mercury	ug/g	1.8	20	1.8	20	0.27	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum	ug/g	6.9	40	6.9	40	2	0.3	0.4	0.3	1	0.4	0.5	0.3	0.2	0.8
Nickel	ug/g	130	340	130	340	82	21	15	30	18	16	21	29	15	21
Potassium	ug/g	--	--	--	--	--	5,400	4,200	7,400	12,000	4,200	4,600	6,700	20,000	4,600
Selenium	ug/g	2.4	5.5	2.4	5.5	1.5	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Silver	ug/g	25	50	25	50	0.5	0.21	0.21	0.17	0.21	0.17	0.35	0.18	0.29	0.2
Strontium	ug/g	--	--	--	--	--	77	67	73	144	67	78	67	258	78
Thallium	ug/g	1	3.3	1	3.3	1	2.5	2	2.5	3	1.8	1.4	1.5	**3.6**	1.2
Tin	ug/g	--	--	--	--	--	0.8	0.6	0.7	0.8	0.7	0.7	0.8	0.7	0.6
Titanium	ug/g	--	--	--	--	--	2,400	930	1,800	1,200	1,200	2,700	1,900	1,800	2,700
Uranium	ug/g	23	33	23	33	2.5	0.13	0.042	0.06	0.43	0.046	0.14	0.057	1.1	0.14
Vanadium	ug/g	86	86	86	86	86	**180**	**110**	**160**	**130**	**120**	**150**	**150**	40	**160**
Yttrium	ug/g	--	--	--	--	--	9.9	3.7	6.5	13	4.1	9.5	6.6	12	9.2
Zinc	ug/g	340	340	340	340	290	80	98	120	85	100	100	130	27	100

Notes:

1. Table 2 Soil Criteria are from MOECC *Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* (April 15, 2011) for medium and fine textured soil in a potable groundwater situation (full depth cleanup apporach) at a residential/parkland/institutional property use site. Exceedances are underlined.
2. Table 2 Soil Criteria are from MOECC *Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* (April 15, 2011) for medium and fine textured soil in a potable groundwater situation (full depth cleanup approach) at an industrial/commercial/community property use site. Exceedances are in **bold** type.
3. Table 3 Soil Criteria are from MOECC *Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* (April 15, 2011) for medium and finetextured soil in a non-potable groundwater situation (full depth cleanup apporach) at a residential/parkland/institutional property use site. For reference.
4. Table 3 Soil Criteria are from MOECC *Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* (April 15, 2011) for medium and fine textured soil in a non-potable groundwater situation (full depth cleanup appraoch) at an industrial/commercial/community property use site. For reference.
5. Table 8 Soil Criteria are from MOECC *Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* (April 15, 2011) for medium and fine textured soils with 30 m of a water body in potable groundwater situation (generic) at a residential/parkland/institutional/industrial/commercial/community property site use. For reference.
6. MW107-S4 is a blind duplicate sample of MW105-S3.

Table C-3: Shake Flask Extraction Results for Soil

Parameter	Units	ODWS[1]	PWQO[2]	O.Reg 153/04 Table 2[3]	O.Reg 153/04 Table 3[4]	O.Reg 153/04 Table 8[5]	MW102 S2A/S2B Jul. 22, 2015	MW103 S1 Jul. 21, 2015	MW103 S5 Jul. 21, 2015	MW104 S1B/S2A Jul. 22, 2015	MW105 S1 Jul. 22, 2015	MW105 S3 Jul. 22, 2015	MW105 S6 Jul. 22, 2015	MW106 S2 Jul. 23, 2015	MW107[6] S4 Jul. 23, 2015
General															
Sample weight (g)	g	--	--	--	--	--	250	250	250	250	250	168	250	250	173
Volume D.I. Water (mL)	mL	--	--	--	--	--	750	750	750	750	750	504	750	750	519
Initial pH	--	6.5 - 8.5	6.5 - 8.5	--	--	--	8.97	9.28	9.25	9.11	9.34	9	9.18	8.25	9.06
Final pH	--	6.5 - 8.5	6.5 - 8.5	--	--	--	8.24	8.71	8.42	8.39	8.75	8.57	8.22	7.62	8.58
pH	--	6.5 - 8.5	6.5 - 8.5	--	--	--	8.08	8.09	8.04	7.94	7.98	7.94	7.87	8.67	8.02
Conductivity	uS/cm	--	--	--	--	--	340	105	266	181	98	162	505	176	157
Metals															
Aluminum	ug/L	100	75	--	--	--	28	5	44	29	8	39	40	547	37
Antimony	ug/L	6	20	6	20,000	6	2.4	0.2	3.3	0.7	0.3	0.9	2.3	1.6	0.8
Arsenic	ug/L	25	100 (5)	25	1,900	25	71	1.5	91.3	108	2.7	113	44.9	8.8	107
Barium	ug/L	1,000		1,000	29,000	1,000	0.99	< 0.02	3.3	0.63	< 0.02	0.24	7.23	26.58	0.18
Beryllium	ug/L	--	1,100	4	67	4	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	0.082	< 0.007
Bismuth	ug/L	--	--	--	--	--	0.045	< 0.007	0.021	0.011	< 0.007	< 0.007	0.013	0.011	< 0.007
Boron	ug/L	5,000	200	5,000	45,000	5,000	23.5	8.9	23.5	9.6	4.4	6.7	19.4	87.1	10.3
Cadmium	ug/L	5	0.2 (0.1)	2.7	2.7	2.1	0.006	< 0.003	< 0.003	0.006	< 0.003	< 0.003	0.004	0.032	< 0.003
Calcium	ug/L	--	--	--	--	--	47,200	15,300	35,700	26,600	14,100	21,900	80,900	25,800	22,600
Chromium	ug/L	50	1	50	810	50	0.32	10.4	0.07	0.66	9.58	7.37	0.06	8.14	6.9
Cobalt	ug/L	--	0.9	3.8	66	3.8	1.16	0.191	0.236	0.953	0.04	0.065	0.275	0.6	0.136
Copper	ug/L	1,000	5	87	87	69	4.92	2.44	1.33	21.5	1.44	4.51	0.63	31.1	4.79
Iron	ug/L	300	300	--	--	--	<7	<7	<7	<7	<7	<7	<7	876	<7
Lead	ug/L	10	25 (5)	10	25	10	0.04	0.02	0.01	< 0.01	< 0.01	< 0.01	0.01	1.26	< 0.01
Lithium	ug/L	--	--	--	--	--	4.09	0.802	1.583	0.126	0.693	3.33	3.02	0.572	3.06
Magnesium	ug/L	--	--	--	--	--	11,300	3,030	8,940	6,180	3,020	4,450	12,700	10,100	4,410
Manganese	ug/L	50	--	--	--	--	40.5	0.1	32.2	7.85	0.12	2.77	113	35.5	3.12
Mercury	ug/L	1	--	0.29	0.29	0.29	0.01	< 0.01	0.02	< 0.01	0.01	0.01	< 0.01	0.02	< 0.01
Molybdenum	ug/L	--	40	70	9,200	70	12.4	2.69	7.46	21.7	4.32	12.3	8.05	4.59	11.5
Nickel	ug/L	--	25	100	490	100	1	0.2	1.1	2	< 0.1	0.2	1.5	7.6	0.2
Potassium	ug/L	--	--	--	--	--	2,550	238	2,360	506	201	518	1,890	187	507
Selenium	ug/L	10	100	10	63	10	4.26	0.49	0.67	1.97	0.71	5.33	0.56	2.33	5.23
Silicon	ug/L	--	--	--	--	--	2,980	570	1,990	1,450	570	1,270	1,880	2,690	1,290
Silver	ug/L	--	0.1	1.5	1.5	1.2	0.019	< 0.002	0.007	< 0.002	< 0.002	0.007	0.004	0.008	0.007
Sodium	ug/L	200,000	--	490,000	2,300,000	490,000	2,990	880	1,650	1,930	740	1,270	1,240	8,140	1,190
Strontium	ug/L	--	--	--	--	--	42.2	21.3	42	30.8	14.5	20.2	65.8	26	19.7
Thallium	ug/L	--	0.3	2	510	2	0.037	0.016	0.019	0.025	< 0.005	0.008	< 0.005	0.009	0.01
Tin	ug/L	--	--	--	--	--	0.04	< 0.01	< 0.01	0.04	< 0.01	0.02	< 0.01	0.06	< 0.01
Titanium	ug/L	--	--	--	--	--	< 0.05	< 0.05	0.07	0.08	< 0.05	< 0.05	< 0.05	24.3	0.14
Uranium	ug/L	20	5	20	420	20	0.168	0.002	0.056	0.131	< 0.002	0.011	0.042	0.429	0.022
Vanadium	ug/L	--	6	6.2	250	6.2	0.43	0.03	0.63	0.17	0.03	0.16	0.38	5.29	0.16
Zinc	ug/L	5,000	30 (20)	1,100	1,100	890	<2	<2	<2	<2	<2	<2	<2	<2	<2

Notes:

1. ODWS criteria are from Technical Support Document for Drinking-water Quality Standards, Objectives and Guidelines. Exceedances indicates by underline.
2. PWQO: *MOECC Provincial Water Quality Objectives,* 1994 (updated 1999). Interim criteria are bracketted. For Reference.
3. Table 2 Groundwater Criteria are from MOECC *Soil, Groundwater and Sediment Standards* for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011) for full depth generic site condition standards in a portable groundwater condition. Exceedances are in **bold** type.
4. Table 3 Groundwater Criteria are from MOECC *Soil, Groundwater and Sediment Standards* for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011) for full depth generic site condition standards in a non-potable groundwater condition. For reference.
5. Table 8 Groundwater Criteria are from MOECC *Soil, Groundwater and Sediment Standards* for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011) for generic site condition standards of use within 30 m of a water body in a potable groundwater condition. For reference.
6. MW107-S4 is a blind duplicate sample of MW105-S3.

Table C-4: Modified Acid Based Accounding Results for Soil									
Parameters	MW102 S2A/S2B Jul. 22, 2015	MW103 S1 Jul. 21, 2015	MW103 S5 Jul. 21, 2015	MW104 S1B/S2A Jul. 21, 2015	MW105 S1 Jul. 22, 2015	MW105 S3 Jul. 22, 2015	MW105 S6 Jul. 22, 2015	MW106 S2 Jul. 23, 2015	MW107 S4[1] Jul. 23, 2015
Paste pH	7.8	8.44	8.17	8.32	8.53	8.14	8.07	7.65	8.17
Fizz Rate	4	4	4	4	4	3	4	3	3
Sample weight (g)	2.13	2.02	1.93	2.01	1.93	2.1	2.09	2.02	1.98
HCl Added (mL)	61.6	83.9	88.2	54.4	74.3	60.4	85.7	20	59
HCl (Normality)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NaOH (Normality)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NaOH to (pH=8.3 mL)	18.94	33.82	32.57	22.49	31.95	23.97	28.23	12.95	23.81
Final pH	1.94	1.57	1.64	1.63	1.59	1.64	1.76	1.36	1.65
NP (t CaCO3/1000 t)	100	124	144	80	110	87	138	18	89
AP (CaCO3/1000 t)	1.88	0.62	6.25	0.31	1.25	0.62	6.25	0.31	0.62
Net NP (t CACO3/ 1000 t)	98.2	123	138	79.3	108	86.1	131	17.2	88.3
NP/AP (ratio)	53.4	198	23.1	255	87.8	139	22	56.5	142
Sulphur total (%)	0.134	0.04	0.268	0.021	0.07	0.032	0.268	0.018	0.036
Acid Leachable SO4-S (%)	0.07	0.02	0.07	0.01	0.03	0.01	0.07	0.02	0.02
Sulphide (%)	0.06	0.02	0.2	0.01	0.04	0.02	0.2	<0.01	0.02
Carbon total (%)	1.39	1.56	1.84	1.32	1.61	1.2	1.92	1.77	1.19
Carbonate (%)	6.16	7.64	8.85	4.79	7.89	5.52	9.22	0.919	5.48

Notes:
1. MW107-S4 is a blind duplicate sample of MW105-S3.

Table C-5: Groundwater Results Summary Table

Parameter	Units	ODWS[1]	PWQO[2]	O.Reg 153/04 Table 2[3]	O.Reg 153/04 Table 3[4]	O.Reg 153/04 Table 8[5]	MW6		MW101		MW102		MW103		MW104		MW105		MW106	
							Aug. 4, 2015	Oct. 26, 2015	Aug. 4, 2015	Oct. 28, 2015	Aug. 4, 2015	Oct. 29, 2015	Aug. 4, 2015	Oct. 29, 2015	Aug. 4, 2015	Oct. 29, 2015	Aug. 4, 2015	Oct. 29, 2015	Aug. 4, 2015	Oct. 29, 2015
General																				
pH	--	6.5 - 8.5	6.5 - 8.5	--	--	--	7.57	7.56	8.06	7.98	7.53	7.67 (7.82)[6]	7.67	7.79	7.89	7.9	7.54	7.49	7.3 (7.32)	7.6
Field pH	--	6.5 - 8.5	6.5 - 8.5	--	--	--	7.26	7.4	7.97	8.07	7	7.32	7.27	7.54	7.57	7.55	6.99	--	6.83	6.96
Conductivity	uS/cm	--	--	--	--	--	340	330	370	370	1,200	1,200 (1,200)	1,100	1,200	1,100	1,100	2,900	3,100	1,600 (1,500)	1,600
Field Conductivity	uS/cm	--	--	--	--	--	368	378	384	399	1,268	1,178	1,076	1,172	1,148	1,122	2,763	--	1,622	1,568
Field Temperature	°C	15	--	--	--	--	10.2	2.6	8.6	8.2	13.3	8.5	11.6	3.5	8.3	3.6	11.2	--	8.8	5.9
Hardness	mg/L	80 - 100	--	--	--	--	140	190	170	210	720	800 (770)	540	580	690	710	1,800	2,000	990 (1,000)	1,000
Dissolved Hardness	mg/L	80 - 100	--	--	--	--	--	192	--	210	--	740 (674)	--	539	--	645	--	1,830	--	983
Total Hardness	mg/L	80 - 100	--	--	--	--	--	181	--	243	--	728 (770)	--	985	--	979	--	5,970	--	1,010
Total Suspended Solids	mg/L	--	--	--	--	--	1,200	80	1,400	83	3,600	470 (570)	6,000	2,300	7,000	850	15,000	96,000	11,000 (4,100)	83
Inorganics																				
Acidity	mg/L	--	--	--	--	--	32	31	17	<10	101	54 (51)	58	44	103	50	255	89	175 (192)	187
Alkalinity	mg/L	30 - 500	--	--	--	--	170	170	170	180	620	680 (680)	520	520	590	600	470	430	680 (670)	680
Total Ammonia	mg/L	--	20	--	--	--	<0.05	<0.05	<0.05	<0.05	2	0.49 (0.49)	0.71	0.61	<0.05	<0.05	2.1	2.7	1.1 (1.1)	0.93
Total Cyanide	mg/L	--	5	66	66	0.1	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005 (<0.005)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005 (<0.005)	<0.005
Dissolved Sulphate	mg/L	500	--	--	--	--	13	11	5.1	7.3	130	26 (29)	97	160	86	56	1,400	1,600	310 (280)	280
Dissolved Metals																				
Aluminum	ug/L	100	--	--	--	--	9.2	10.7	5.1	15.4	5.1	16 (9.8)	<5	11.6	<5	8.3	<5	15.3	18 (20)	38.9
Arsenic	ug/L	25	--	25	1,900	25	<1	0.14	2.2	2.33	**46**	**254 (260)**	**170**	**359**	<0.1	0.22	**98**	**38.7**	15 (16)	**26.6**
Calcium	ug/L	--	--	--	--	--	55,000	74,100	49,000	61,400	140,000	137,000 (125,000)	70,000	74,800	130,000	126,000	480,000	511,000	230,000 (240,000)	238,000
Cadmium	ug/L	5	--	2.7	2.7	2.1	<0.1	<0.01	<0.1	<0.01	<0.1	<0.01 (<0.01)	<0.1	0.016	<0.1	<0.01	<0.1	0.038	<0.1 (<0.1)	0.013
Copper	ug/L	1,000	--	87	87	6.9	4.6	4.06	1.7	1.7	<1	0.61 (0.28)	<1	0.84	1.4	1.29	<1	0.27	<1 (<1)	0.57
Iron	ug/L	300	--	--	--	--	<100	11.9	<100	10.2	1,400	1,200 (1,480)	2,200	3,270	<100	9.4	3,500	8,080	12,000 (13,000)	19,700
Lead	ug/L	10	--	10	25	10	<0.5	<0.2	<0.5	<0.2	<0.5	<0.2 (<0.2)	<0.5	<0.2	<0.5	<0.2	<0.5	<0.2	<0.5 (<0.5)	<0.2
Mercury by CVAA	ug/L	1	--	0.29	0.29	0.29	<0.1	<0.1	<0.1	0.011	<0.1	<0.1 (<0.1)	<0.1	<0.1	<0.1	0.02	<0.1	<0.1	<0.1 (<0.1)	<0.1
Mercury by CRC ICPMS	ug/L	1	--	0.29	0.29	0.29	--	<0.05	--	<0.05	--	<0.05	--	<0.05	--	<0.05	--	<0.05	--	<0.05
Molybdenum	ug/L	--	--	70	9,200	70	2	<1	4.1	2.9	2.7	<1 (<1)	4.7	5.7	10	6.9	3.4	1.9	0.73 (0.68)	<0.1
Nickel	ug/L	--	--	100	490	100	<1	<1	<1	<1	1.6	2 (1.7)	<1	1.6	<1	<1	4.9	6.7	<1 (<1)	1.1
Sodium	ug/L	200,000	--	490,000	2,300,000	490,000	--	2,580	--	5,760	--	3,730 (5,120)	--	70,400	--	8,720	--	106,000	--	11,900
Zinc	ug/L	5	--	1,100	1,100	890	<5	<5	<5	6.9	<5	8.11 (<5)	<5	8.5	<5	<5	<10	12.6	<5 (<5)	7.6
Total Metals																				
Aluminum	ug/L	--	75	--	--	--	14,000	1,420	28,000	1,590	33,000	1,560 (1,650)	27,000	33,800	40,000	2,860	730,000	215,000	21,000 (27,000)	292
Arsenic	ug/L	--	100 (5)	--	--	--	11	1.76	310	18.1	850	313 (337)	2,300	2,410	48	4.2	56,000	22,300	170 (200)	29.2
Calcium	ug/L	--	--	--	--	--	74,000	68,200	240,000	67,200	500,000	139,000 (134,000)	140,000	181,000	980,000	215,000	4,200,000	1,560,000	730,000 (810,000)	237,000
Cadmium	ug/L	--	0.2 (0.5)	--	--	--	0.1	0.023	0.96	0.052	1	0.029 (0.032)	<1	1.14	0.78	0.085	56	146	0.0011 (<1)	0.018
Copper	ug/L	--	5	--	--	--	130	18.4	520	24.2	120	3.31 (3.91)	90	88.5	140	11	1,700	573	130 (150)	1.25
Iron	ug/L	--	--	--	--	--	17,000	2,460	81,000	4,230	84,000	4,770 (4,690)	74,000	61,900	73,000	5,300	2,500,000	760,000	62,000 (74,000)	22,600
Lead	ug/L	--	25 (5)	--	--	--	10	0.68	110	4.72	33	1.24 (1.56)	28	31.8	45	3.6	760	309	23 (28)	0.27
Mercury by CVAF	ug/L	--	0.2	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 (<0.1)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 (<0.1)	<0.1
Mercury by CVAA	ug/L	--	0.2	--	--	--	--	11	--	<0.1	--	<0.1 (<0.1)	--	<0.1	--	0.02	--	<0.1	--	<0.1
Molybdenum	ug/L	--	40	--	--	--	1.8	<1	7.1	2.6	4.6	<1 (<1)	4.2	8.1	9.9	8	23	9	2.6 (<5)	<1
Nickel	ug/L	--	25	--	--	--	29	4.1	340	16.6	77	2.9 (3.4)	38	44.4	85	5.6	1,400	406	55 (74)	1.5
Sodium	ug/L	--	--	--	--	--	--	5,110	--	5,920	--	3,780 (4,270)	--	79,300	--	10,700	--	121,000	--	13,200
Zinc	ug/L	--	30 (20)	--	--	--	51	6.2	290	14.9	180	8.5 (8.7)	130	159	150	10.4	7,400	1,880	120 (170)	<5

Notes:

1. ODWS criteria are from Technical Support Document for Drinking-water Quality Standards, Objectives and Guidelines. Exceedances indicated by underline.
2. PWQO: *MOECC Provincial Water Quality Objectives*, 1994 (updated 1999). Interim criteria are bracketed. For Reference.
3. Table 2 Groundwater Criteria are from MOECC *Soil, Groundwater and Sediment Standards* for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011) for full depth generic site condition standards in a portable groundwater condition. Exceedances are in **bold** type.
4. Table 3 Groundwater Criteria are from MOECC *Soil, Groundwater and Sediment Standards* for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011) for full depth generic site condition standards in a non-potable groundwater condition. For reference.
5. Table 8 Groundwater Criteria are from MOECC *Soil, Groundwater and Sediment Standards* for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011) for generic site condition standards of use within 30 m of a water body in a potable groundwater condition. For reference.
6. Bracketed results represent blind duplicate samples.

Table C-6: Surface Water Results Summary Table

Parameters	Units	PWQO	EL1					EL2				
			Aug. 15, 2014	Nov. 10, 2014	May 28, 2015	Aug. 10, 2015	Oct. 19, 2015	Aug. 15, 2014	Nov. 10, 2014	May 28, 2015	Aug. 10, 2015	Oct. 19, 2015
General												
pH	--	6.5 - 8.5	8.07	7.85	7.9	8.16	8.06	8.13	7.88	7.91	8.17	8.07
Conductivity	uS/cm	--	494	426	326	462	482	496	463	328	466	483
Hardness	mg/L	--	161	150	102	143	155	158	155	102	156	152
Total Suspended Solids	mg/L	--	<2	<2	--	<2	<2	<2	<2	--	<2	<2
Total Dissolved Solids	mg/L	--	271	263	183	253	271	285	273	186	260	276
Acidity	mg/L	--	<2	6.3	2.8	<2	<2	<2	5.5	2.6	<2	<2
Alkalinity	mg/L	--	145	140	104	145	161	146	145	105	145	162
Weak Acid Dissolved Cyanide	mg/L	--	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Total Cyanide	mg/L	--	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Dissolved Cyanide	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Metals												
Aluminum	ug/L	75	5.8	8.4	20.7	**136**	<3	<5	6.4	20.6	5.8	3.8
Arsenic	ug/L	100 (5)	2.2	1.47	1.08	43.6	1.73	2.1	1.54	1.04	1.91	1.71
Cadmium	ug/L	0.02 (0.05)	<0.017	<0.01	--	0.005	<0.005	<0.017	<0.01	--	0.00109	<0.005
Calcium	ug/L	--	51,900	49,200	33,300	46,100	49,900	50,600	50,500	33,200	50,200	49,000
Copper	ug/L	5	1.2	1.05	1.62	**458**	1.05	1.1	1	1.83	1.35	1.02
Iron	ug/L	300	26	25	42	**1,950**	15	170	20	48	21	14
Lead	ug/L	25 (5)	<1	<5	<0.05	<0.05	<0.05	<1	<5	<0.05	<0.05	<0.05
Magnesium	ug/L	--	--	--	4,680	6,800	7,340	--	--	4,680	7,430	7,230
Mercury	ug/L	0.2	<0.01	<0.01	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.005	<0.005
Molybdenum	ug/L	40	<1	0.143	0.143	2.69	0.177	<1	0.136	0.143	0.202	0.166
Nickel	ug/L	25	<2	<0.5	700	116	<0.5	<2	<0.5	0.69	0.59	<0.5
Sodium	ug/L	--	--	--	--	64.1	44	--	--	--	38900	44100
Zinc	ug/L	30 (20)	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3

Notes:

1. PWQO: *MOECC Provincial Water Quality Objectives*, 1994 (updated 1999). Exceedances indicated in **bold** type. Interim criteria are bracketted. Interim exceedances are underlined.

Parameters	Units	PWQO	EL3					BWR1a		BWR1b	
			Aug. 14, 2014	Nov. 10, 2014	May 29, 2015	Aug. 10, 2015	Oct. 19, 2015	Aug. 10, 2015	Oct. 19, 2015	Aug. 10, 2015	Oct. 19, 2015
General											
pH	--	6.5 - 8.5	8.14	7.91	7.93	8.21	8.08	7.85	7.86	7.82	7.77
Conductivity	uS/cm	--	502	488	327	464	486	200	160	202	162
Hardness	mg/L	--	162	152	100	157	159	102	82.4	103	83.7
Total Suspended Solids	mg/L	--	<2	<2	--	<2	<2	<2	<2	3.3	<2
Total Dissolved Solids	mg/L	--	289	279	192	259	277	125	117	127	115
Acidity	mg/L	--	<2	5.3	2.5	<2	<2	2	<2	2.1	<2
Alkalinity	mg/L	--	152	157	104	143	159	98.1	85	94.8	86.8
Weak Acid Dissolved Cyanide	mg/L	--	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Total Cyanide	mg/L	--	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Dissolved Cyanide	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Metals											
Aluminum	ug/L	75	36.7	22.6	21	3.2	3.4	31.6	30.7	**324**	30.8
Arsenic	ug/L	100 (5)	2.4	1.46	1.17	2.31	1.77	1.17	1	1.36	10.6
Cadmium	ug/L	0.2 (0.5)	<0.017	<0.01	--	<0.005	<0.005	0.005	<0.005	<0.005	<0.005
Calcium	ug/L	--	52,100	50,100	32,500	50,900	51,300	32,700	25,900	32,900	26,000
Copper	ug/L	5	1.6	1.05	1.4	1.19	1.07	1.06	1.04	1	0.85
Iron	ug/L	300	144	18	40	17	14	119	156	120	143
Lead	ug/L	25 (5)	<1	<0.5	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05
Magnesium	ug/L	--	--	--	4,620	7,150	7,600	4,960	4,270	5,100	4,570
Mercury	ug/L	0.2	<0.01	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005
Molybdenum	ug/L	40	<1	0.141	0.151	0.192	0.168	0.108	0.077	0.137	0.083
Nickel	ug/L	25	<2	<0.5	0.71	0.52	<0.5	0.68	0.69	0.65	0.82
Sodium	ug/L	--	--	--	--	38,900	45,600	4,920	4,460	5,120	4,570
Zinc	ug/L	30 (20)	<3	<3	<3	<3	<3	5.8	<3	6	<3

Notes:

1. PWQO: *MOECC Provincial Water Quality Objectives*, 1994 (updated 1999). Exceedances indicated in **bold** type. Interim criteria are bracketted. Interim exceedances are underlined.
2. Samples Collected by Goldstone personnel.

Table C-7: Tansleyville Residents' Water Quality Results

Parameter	Units	ODWS[1]	O.Reg 153/04 Table 2[2]	O.Reg 153/04 Table 3[3]	O.Reg 153/04 Table 8[4]	Fred Checkley					Myron Nelson					Tom Nelson			Madeline Turbide					Veilleux		
						Sep. 22, 2014	Nov. 17, 2014	May 27, 2015	Aug. 10, 2015	Oct. 20, 2015	Sep. 22, 2014	Nov. 17, 2014	May 27, 2015	Aug. 10, 2015	Oct. 20, 2015	Jun. 18, 2015	Aug. 10, 2015	Oct. 29, 2015	Sep. 22, 2014	Nov. 17, 2014	May 27, 2015	Aug. 10, 2015	Oct. 20, 2015	Sep. 22, 2014	Aug. 10, 2015	Oct. 20, 2015
General																										
pH	–	6.5 - 8.5	–	–	–	7.90	7.69	8.06	8.07	7.96	7.93	7.84	8.16	8.09	8.12	8.07	7.91	7.63	7.91	7.60	8.11	8.02	8.06	7.79	8.04	8.02
Dissolved Metals																										
Mercury	ug/L	1	0.29	0.29	0.29	–	–	<0.1	<0.1	<0.1	–	–	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	–	–	<0.1	<0.1	<0.1	–	<0.1	<0.1
Total Metals																										
Aluminum	ug/L	100	–	–	–	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	5.2	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Antimony	ug/L	6	6	20,000	6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.1	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Arsenic	ug/L	25	25	1,900	25	<1	1.1	<1.0	1.0	1.1	<1	1.1	1.1	<1	<1	0.2	<1	<1	1.2	1.2	<1	1.1	1.1	<1	<1	<1
Barium	ug/L	1,000	1,000	29,000	1,000	<10	<10	<10	<10	<10	16	11	<10	10	15	13.3	17	15	<10	<10	<10	<10	<10	<10	<10	<10
Beryllium	ug/L	–	4	67	4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bismuth	ug/L	–	–	–	–	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.05	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Boron	ug/L	5,000	5,000	45,000	5,000	<50	<50	<80	<80	<50	<50	<50	<50	<50	<50	16	<50	<80	<80	<50	<50	<50	<50	<50	<50	<80
Cadmium	ug/L	5	2.7	2.7	2.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.041	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/L	–	–	–	–	59,400	53,000	57,100	60,100	57,400	83,400	49,500	38,500	53,200	71,700	75,900	89,600	84,100	53,100	45,200	60,500	52,600	54,700	53,200	51,300	70,400
Chromium	ug/L	50	50	610	56	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.33	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt	ug/L	–	3.8	66	3.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.22	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper	ug/L	1,000	97	97	69	1.7	1.1	1.1	1.6	1	4.2	5.5	8	4.7	13	61.4	36.4	18.4	4.9	6.4	12.1	37.3	7.5	12.6	31.4	11.9
Iron	ug/L	300	–	–	–	56	97	68	79	109	61	<50	<50	<56	54	131	1,140	61	104	<50	116	71	100	497	1,230	2,070
Lead	ug/L	10	10	25	10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.25	1.1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Lithium	ug/L	–	–	–	–	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	1.7	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Magnesium	ug/L	–	–	–	–	8.01	7.95	7.75	6.1	7.89	11.4	7.41	5.16	7.16	9.39	11.2	13.5	11.6	7.77	8.98	9.52	7.76	7.92	7.41	6.95	9.26
Manganese	ug/L	50	–	–	–	41.4	44.1	41.6	41.1	41	<1	<1	<1	1.1	<1	11.4	9.9	<1	5.8	1.4	8.5	1.9	2.6	422	880	1,310
Mercury	ug/L	1	0.29	0.29	0.29	<0.1	<0.1	–	–	–	<0.1	<0.1	–	–	–	–	–	–	<0.1	<0.1	–	–	–	<0.1	–	–
Molybdenum	ug/L	–	70	9,200	70	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.257	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Nickel	ug/L	–	100	490	100	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	2.21	<2	<2	<2	<2	<2	<2	<2	2.7	2.7	4
Potassium	ug/L	–	–	–	–	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	1,060	1,200	1,300	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	1,100
Selenium	ug/L	10	10	63	10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.12	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Silver	ug/L	–	1.5	1.5	1.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/L	200,000	490,000	2,300,000	490,000	26,700	28,800	30,100	29,200	27,900	161,000	136,000	142,000	116,000	159,000	87,300	83,400	119,00	56,000	48,900	33,200	45,700	43,600	23,600	15,600	82,200
Strontium	ug/L	–	–	–	–	104	97.6	102	105	97.2	117	73.7	58.4	76.4	97.8	104	116	95.6	79.5	70.7	64.2	79.0	76.7	90.4	93.1	130
Tellurium	ug/L					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	–	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Thallium	ug/L	–	2	510	2	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.01	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Tin	ug/L	–	–	–	–	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Titanium	ug/L	–	–	–	–	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.3	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Tungsten	ug/L		–	–	–	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<0.1	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Uranium	ug/L	20	20	420	20	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.188	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Vanadium	ug/L	–	6.2	280	6.2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	ug/L	5,000	1,100	1,100	890	70.6	94.3	125	140	140	13.2	7	7.5	10.8	13.5	140	184	40.1	<3	<3	3.6	193	<3	9.7	88.7	37.6
Zirconium	ug/L		–	–	–	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	3.11	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4

Notes:

1. ODWS criteria are from Technical Support Document for Drinking-water Quality Standards, Objectives and Guidelines. Exceedances indicated by underline.
2. Table 2 Groundwater Criteria are from MOECC *Soil, Groundwater and Sediment Standards* for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011) for full depth generic site condition standards in a potable groundwater condition. Exceedances are in **bold** type.
3. Table 3 Groundwater Criteria are from MOECC *Soil, Groundwater and Sediment Standards* for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011) for full depth generic site condition standards in a non-potable groundwater condition. For reference.
4. Table 8 Groundwater Criteria are from MOECC *Soil, Groundwater and Sediment Standards* for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011) for generic site condition standards of use within 30 m of a water body in a potable groundwater condition. For reference.
5. Samples gathered by Goldstone personnel.

Table C-8: Specific Gravity Results	
Sample No.	Specific Gravity (Gs)
MW102-S2A & S2B	2.715
MW103-S1	2.753
MW103-S5	2.764
MW104-S1B & S2A	2.713
MW105-S1	2.779
MW105-S3	2.843
MW105-S6	2.784
MW106-S2	2.668

Appendix D –

LABORATORY CERTIFICATES OF ANALYSIS

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10-August-2015

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Date Rec. : 29 July 2015
LR Report: **CA15499-JUL15**
Reference: T4B-00015141-AE Goldstone

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CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: MW102-S2A/52B	6: MW103-S1	7: MW103-S5	8: MW104-S1B/S2A	9: MW105-S1	10: MW105-S3	11: MW105-S6	12: MW106-S2	13: MW107-S4
Sample Date & Time			22-Jul-15 15:00	21-Jul-15 16:00	21-Jul-15 18:00	22-Jul-15 11:30	22-Jul-15 07:30	22-Jul-15 09:00	22-Jul-15 10:00	23-Jul-15 11:15	23-Jul-15 15:00
Mercury [µg/g]	06-Aug-15	10:04	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Silver [µg/g]	05-Aug-15	10:50	0.21	0.21	0.17	0.21	0.17	0.35	0.18	0.29	0.20
Aluminum [µg/g]	31-Jul-15	15:18	48000	34000	50000	53000	33000	44000	47000	57000	43000
Arsenic [µg/g]	05-Aug-15	10:50	450	210	670	520	260	440	550	13	430
Barium [µg/g]	05-Aug-15	10:50	140	85	160	290	89	130	130	550	130
Beryllium [µg/g]	05-Aug-15	10:50	0.39	0.34	0.37	0.64	0.28	0.42	0.34	1.0	0.39
Bismuth [µg/g]	05-Aug-15	10:50	0.12	< 0.09	0.12	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Calcium [µg/g]	31-Jul-15	15:19	54000	45000	57000	37000	46000	51000	55000	25000	50000
Cadmium [µg/g]	05-Aug-15	10:50	0.37	0.82	0.88	0.77	0.98	0.66	0.87	0.26	0.68
Cobalt [µg/g]	05-Aug-15	10:50	17	10	17	11	11	22	15	5.4	22
Chromium [µg/g]	05-Aug-15	10:50	60	34	69	51	34	46	57	22	47
Copper [µg/g]	05-Aug-15	10:50	22	13	25	16	17	18	19	17	19
Iron [µg/g]	31-Jul-15	15:19	65000	43000	61000	47000	43000	58000	57000	16000	57000
Potassium [µg/g]	31-Jul-15	15:19	5400	4200	7400	12000	4200	4600	6700	20000	4600
Lithium [µg/g]	05-Aug-15	10:50	22	15	22	18	15	19	22	10	19
Magnesium [µg/g]	31-Jul-15	15:19	24000	14000	23000	14000	14000	21000	22000	6800	20000
Manganese [µg/g]	05-Aug-15	10:50	1500	1400	1400	1100	1500	1500	1400	250	1500
Molybdenum [µg/g]	05-Aug-15	10:50	0.3	0.4	0.3	1.0	0.4	0.5	0.3	0.2	0.8
Nickel [µg/g]	05-Aug-15	10:50	21	15	30	18	16	21	29	15	21
Lead [µg/g]	05-Aug-15	10:50	8.1	8.0	9.3	11	8.7	7.9	8.4	12	8.1

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Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: MW102-S2A/52B	6: MW103-S1	7: MW103-S5	8: MW104-S1B/S2A	9: MW105-S1	10: MW105-S3	11: MW105-S6	12: MW106-S2	13: MW107-S4
Antimony [µg/g]	05-Aug-15	10:51	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8
Selenium [µg/g]	05-Aug-15	10:51	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Tin [µg/g]	05-Aug-15	10:51	0.8	0.6	0.7	0.8	0.7	0.7	0.8	0.7	0.6
Strontium [µg/g]	05-Aug-15	10:51	77	67	73	144	67	78	67	258	78
Titanium [µg/g]	05-Aug-15	10:51	2400	930	1800	1200	1200	2700	1900	1800	2700
Thallium [µg/g]	05-Aug-15	10:51	2.5	2.0	2.5	3.0	1.8	1.4	1.5	3.6	1.2
Uranium [µg/g]	05-Aug-15	10:51	0.13	0.042	0.060	0.43	0.046	0.14	0.057	1.1	0.14
Vanadium [µg/g]	05-Aug-15	10:51	180	110	160	130	120	150	150	40	160
Yttrium [µg/g]	05-Aug-15	10:51	9.9	3.7	6.5	13	4.1	9.5	6.6	12	9.2
Zinc [µg/g]	05-Aug-15	10:51	80	98	120	85	100	100	130	27	100

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Reference: T4B-00015141-AE Goldstone

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CERTIFICATE OF ANALYSIS
Final Report

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Sample Date & Time			22-Jul-15 15:00	21-Jul-15 16:00	21-Jul-15 18:00	22-Jul-15 11:30	22-Jul-15 07:30	22-Jul-15 09:00	22-Jul-15 10:00	23-Jul-15 11:15	23-Jul-15 15:00
Sample weight [g]	13-Aug-15	09:12	250	250	250	250	250	168	250	250	173
Volume D.I. Water [mL]	13-Aug-15	09:12	750	750	750	750	750	504	750	750	519
Initial pH	13-Aug-15	09:12	8.97	9.28	9.25	9.11	9.34	9.00	9.18	8.25	9.06
Final pH	13-Aug-15	09:12	8.24	8.71	8.42	8.39	8.75	8.57	8.22	7.62	8.58
pH [no unit]	17-Aug-15	13:53	8.08	8.09	8.04	7.94	7.98	7.94	7.87	8.67	8.02
Conductivity [uS/cm]	17-Aug-15	13:53	340	105	266	181	98	162	505	176	157
Mercury [mg/L]	17-Aug-15	08:39	0.00001	< 0.00001	0.00002	< 0.00001	0.00001	0.00001	< 0.00001	0.00002	< 0.00001
Silver [mg/L]	18-Aug-15	11:14	0.000019	< 0.000002	0.000007	< 0.000002	< 0.000002	0.000007	0.000004	0.000008	0.000007
Aluminum [mg/L]	18-Aug-15	11:14	0.028	0.005	0.044	0.029	0.008	0.039	0.040	0.547	0.037
Arsenic [mg/L]	18-Aug-15	11:14	0.0710	0.0015	0.0913	0.108	0.0027	0.113	0.0449	0.0088	0.107
Barium [mg/L]	18-Aug-15	11:14	0.00099	< 0.00002	0.00330	0.00063	< 0.00002	0.00024	0.00723	0.02658	0.00018
Boron [mg/L]	18-Aug-15	11:14	0.0235	0.0089	0.0235	0.0096	0.0044	0.0067	0.0194	0.0871	0.0103
Beryllium [mg/L]	18-Aug-15	11:14	< 0.000007	< 0.000007	< 0.000007	< 0.000007	< 0.000007	< 0.000007	< 0.000007	0.000082	< 0.000007
Bismuth [mg/L]	18-Aug-15	11:14	0.000045	< 0.000007	0.000021	0.000011	< 0.000007	< 0.000007	0.000013	0.000011	< 0.000007
Calcium [mg/L]	18-Aug-15	11:14	47.2	15.3	35.7	26.6	14.1	21.9	80.9	25.8	22.6
Cadmium [mg/L]	18-Aug-15	11:14	0.000006	< 0.000003	< 0.000003	0.000006	< 0.000003	< 0.000003	0.000004	0.000032	< 0.000003
Cobalt [mg/L]	18-Aug-15	11:14	0.00116	0.000191	0.000236	0.000953	0.000040	0.000065	0.000275	0.000600	0.000136
Chromium [mg/L]	18-Aug-15	11:14	0.00032	0.0104	0.00007	0.00066	0.00958	0.00737	0.00006	0.00814	0.00690
Copper [mg/L]	18-Aug-15	11:14	0.00492	0.00244	0.00133	0.0215	0.00144	0.00451	0.00063	0.0311	0.00479
Iron [mg/L]	18-Aug-15	11:14	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	0.876	< 0.007

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Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: MW102-S2A/52B	6: MW103-S1	7: MW103-S5	8: MW104-S1B/S2A	9: MW105-S1	10: MW105-S3	11: MW105-S6	12: MW106-S2	13: MW107-S4
Potassium [mg/L]	18-Aug-15	11:14	2.55	0.238	2.36	0.506	0.201	0.518	1.89	0.187	0.507
Lithium [mg/L]	18-Aug-15	11:14	0.00409	0.000802	0.001583	0.000126	0.000693	0.00333	0.00302	0.000572	0.00306
Magnesium [mg/L]	18-Aug-15	11:14	11.3	3.03	8.94	6.16	3.02	4.45	12.7	10.1	4.41
Manganese [mg/L]	18-Aug-15	11:14	0.0405	0.00010	0.0322	0.00785	0.00012	0.00277	0.113	0.0355	0.00312
Molybdenum [mg/L]	18-Aug-15	11:14	0.0124	0.00269	0.00746	0.0217	0.00432	0.0123	0.00605	0.00459	0.0115
Sodium [mg/L]	18-Aug-15	11:14	2.99	0.86	1.65	1.93	0.74	1.27	1.24	8.14	1.19
Nickel [mg/L]	18-Aug-15	11:14	0.0010	0.0002	0.0011	0.0020	< 0.0001	0.0002	0.0015	0.0076	0.0002
Lead [mg/L]	18-Aug-15	11:14	0.00004	0.00002	0.00001	< 0.00001	< 0.00001	< 0.00001	0.00001	0.00126	< 0.00001
Antimony [mg/L]	18-Aug-15	11:14	0.0024	0.0002	0.0033	0.0007	0.0003	0.0009	0.0023	0.0016	0.0008
Selenium [mg/L]	18-Aug-15	11:14	0.00426	0.00049	0.00087	0.00197	0.00071	0.00533	0.00056	0.00233	0.00523
Silicon [mg/L]	18-Aug-15	11:14	2.98	0.57	1.99	1.45	0.57	1.27	1.88	2.69	1.29
Tin [mg/L]	18-Aug-15	11:14	0.00004	< 0.00001	< 0.00001	0.00004	< 0.00001	0.00002	< 0.00001	0.00006	< 0.00001
Strontium [mg/L]	18-Aug-15	11:14	0.0422	0.0213	0.0420	0.0308	0.0145	0.0202	0.0658	0.0280	0.0197
Titanium [mg/L]	18-Aug-15	11:14	< 0.00005	< 0.00005	0.00007	0.00008	< 0.00005	< 0.00005	< 0.00005	0.0243	0.00014
Thallium [mg/L]	18-Aug-15	11:14	0.000037	0.000018	0.000019	0.000025	< 0.000005	0.000008	< 0.000005	0.000009	0.000010
Uranium [mg/L]	18-Aug-15	11:14	0.000168	0.000002	0.000058	0.000131	< 0.000002	0.000011	0.000042	0.000429	0.000022
Vanadium [mg/L]	18-Aug-15	11:14	0.00043	0.00003	0.00063	0.00017	0.00003	0.00016	0.00038	0.00529	0.00016
Zinc [mg/L]	18-Aug-15	11:14	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002

Brian Graham B.Sc.
Project Specialist
Environmental Services, Analytical

OnLine LIMS

000048426

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

10-August-2015

EXP Services Inc
Attn : Michael Suslyk

1142 Roland Street
Thunder Bay, ON
,

Phone: 819-762-2888
Fax:819-762-4814

Date Rec. : 29 July 2015
LR Report: **CA15500-JUL15**
Reference: T4B-00015141-AE Goldstone

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: MW102-S2A/52B	6: MW103-S1	7: MW103-S5	8: MW104-S1B/S2A	9: MW105-S1	10: MW105-S3	11: MW105-S6	12: MW106-S2	13: MW107-S4
Sample Date & Time			22-Jul-15 15:00	21-Jul-15 16:00	21-Jul-15 18:00	22-Jul-15 11:30	22-Jul-15 07:30	22-Jul-15 09:00	22-Jul-15 10:00	23-Jul-15 11:15	23-Jul-15 15:00
Paste pH	10-Aug-15	09:33	7.80	8.44	8.17	8.32	8.53	8.14	8.07	7.65	8.17
Fizz Rate [---]	10-Aug-15	09:33	4	4	4	4	4	3	4	3	3
Sample weight [g]	10-Aug-15	09:33	2.13	2.02	1.93	2.01	1.93	2.10	2.09	2.02	1.98
HCl Added [mL]	10-Aug-15	09:33	61.60	83.90	88.20	54.50	74.30	60.40	85.70	20.00	59.00
HCl [Normality]	10-Aug-15	09:33	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
NaOH [Normality]	10-Aug-15	09:33	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
NaOH to [pH=8.3 mL]	10-Aug-15	09:33	18.94	33.82	32.57	22.49	31.95	23.97	28.23	12.95	23.81
Final pH	10-Aug-15	09:33	1.94	1.57	1.64	1.63	1.59	1.64	1.76	1.36	1.65
NP [t CaCO3/1000 t]	10-Aug-15	09:33	100	124	144	80	110	87	138	18	89
AP [t CaCO3/1000 t]	---	---	1.88	0.62	6.25	0.31	1.25	0.62	6.25	0.31	0.62
Net NP [t CaCO3/1000 t]	---	---	98.2	123	138	79.3	108	86.1	131	17.2	88.3
NP/AP [ratio]	---	---	53.4	198	23.1	255	87.8	139	22.0	56.5	142
Sulphur (total) [%]	05-Aug-15	11:21	0.134	0.040	0.268	0.021	0.070	0.032	0.268	0.018	0.036
Acid Leachable SO4-S [%]	---	---	0.07	0.02	0.07	0.01	0.03	0.01	0.07	0.02	0.02
Sulphide [%]	05-Aug-15	11:21	0.06	0.02	0.20	0.01	0.04	0.02	0.20	< 0.01	0.02
Carbon (total) [%]	05-Aug-15	11:21	1.39	1.56	1.84	1.32	1.61	1.20	1.92	1.77	1.19
Carbonate [%]	05-Aug-15	11:21	6.16	7.64	8.85	4.79	7.89	5.52	9.22	0.919	5.48

OnLine LIMS

00004769277

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Report : CA15500-JUL15

*NP (Neutralization Potential)

$$= \frac{50 \times (\text{N of HCL} \times \text{Total HCL added} - \text{N NaOH} \times \text{NaOH added})}{\text{Weight of Sample}}$$

*AP (Acid Potential) = % Sulphide Sulphur x 31.25
*Net NP (Net Neutralization Potential) = NP-AP
NP/AP Ratio = NP/AP
*Results expressed as tonnes CaCO3 equivalent/1000 tonnes of material
Samples with a % Sulphide value of <0.01 will be calculated using a 0.01 value.

Brian Graham B.Sc.
Project Specialist
Environmental Services, Analytical

OnLine LIMS

0000476927

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Success Through Science®

Your Project #: THB-00015141-AE
Site Location: Historical Tailings Site-Beardmore
Your C.O.C. #: 524098-01-01

Attention:Michael Suslyk

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
P7B 5M4

Report Date: 2015/08/17
Report #: R3630319
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5F4028
Received: 2015/08/05, 11:05

Sample Matrix: Water
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Acidity as CaCO3 in liquid (1, 2)	8	2015/08/06	2015/08/11	SLA SOP-00100	APHA SM2310B (Mod)
Dissolved Aluminum (0.2 u, clay free)	5	N/A	2015/08/07	CAM SOP-00447	EPA 6020 m
Dissolved Aluminum (0.2 u, clay free)	3	N/A	2015/08/10	CAM SOP-00447	EPA 6020 m
Alkalinity	4	N/A	2015/08/06	CAM SOP-00448	SM 22 2320 B m
Alkalinity	4	N/A	2015/08/07	CAM SOP-00448	SM 22 2320 B m
Conductivity	4	N/A	2015/08/06	CAM SOP-00414	SM 22 2510 m
Conductivity	4	N/A	2015/08/07	CAM SOP-00414	SM 22 2510 m
Total Cyanide	8	2015/08/06	2015/08/07	CAM SOP-00457	OMOE E3015 2.1 m
Hardness (calculated as CaCO3)	8	N/A	2015/08/10	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Mercury in Water by CVAA	8	2015/08/07	2015/08/10	CAM SOP-00453	EPA 7470A m
Mercury in Water by CVAA	8	2015/08/07	2015/08/10	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	7	N/A	2015/08/10	CAM SOP-00447	EPA 6020A m
Dissolved Metals by ICPMS	1	N/A	2015/08/11	CAM SOP-00447	EPA 6020A m
Total Metals Analysis by ICPMS	7	N/A	2015/08/10	CAM SOP-00447	EPA 6020A m
Total Metals Analysis by ICPMS	1	N/A	2015/08/13	CAM SOP-00447	EPA 6020A m
Total Ammonia-N	8	N/A	2015/08/10	CAM SOP-00441	EPA GS I-2522-90 m
pH	4	N/A	2015/08/06	CAM SOP-00413	SM 4500H+ B m
pH	4	N/A	2015/08/07	CAM SOP-00413	SM 4500H+ B m
Sulphate by Automated Colourimetry	2	N/A	2015/08/07	CAM SOP-00464	EPA 375.4 m
Sulphate by Automated Colourimetry	6	N/A	2015/08/10	CAM SOP-00464	EPA 375.4 m
Total Suspended Solids	4	N/A	2015/08/06	CAM SOP-00428	SM 22 2540D m
Total Suspended Solids	4	N/A	2015/08/07	CAM SOP-00428	SM 22 2540D m

Remarks:

Maxxam Analytics has performed all analytical testing herein in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act.

Maxxam Analytics is accredited for all specific parameters as required by Ontario Regulation 153/04. Maxxam Analytics is limited in liability to the actual

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
A Bureau Veritas Group Company

Success Through Science®

Your Project #: THB-00015141-AE
Site Location: Historical Tailings Site-Beardmore
Your C.O.C. #: 524098-01-01

Attention:Michael Suslyk

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
P7B 5M4

Report Date: 2015/08/17
Report #: R3630319
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5F4028
Received: 2015/08/05, 11:05

cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

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) This test was performed by Maxxam Sladeview Petrochemical

(2) Sample(s) analyzed using methodologies that have not been subjected to Maxxam's standard validation process for the submitted matrix and is not an Accredited method. Analysis performed with client consent, however results should be viewed with discretion

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Hina Siddiqui, Project Manager –Environmental Customer Service
Email: HSiddiqui@maxxam.ca
Phone# (905) 817-5700

==========

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 #: B5F4028
Report Date: 2015/08/17

exp Services Inc
Client Project #: THB-00015141-AE
Site Location: Historical Tailings Site-Beardmore
Sampler Initials: MS

RESULTS OF ANALYSES OF WATER

Maxxam ID		ATA322		ATA323		ATA324		
Sampling Date		2015/08/04 11:15		2015/08/04 10:30		2015/08/04 09:24		
COC Number		524098-01-01		524098-01-01		524098-01-01		
	UNITS	**MW6**	**QC Batch**	**MW101**	**QC Batch**	**MW102**	**RDL**	**QC Batch**
Calculated Parameters								
Hardness (CaCO3)	mg/L	140	4134012	170	4134012	720	1.0	4134012
Inorganics								
Acidity as CaC03	mg/L	32	4136965	17	4136965	101	10	4136965
Total Ammonia-N	mg/L	<0.050	4138585	<0.050	4138585	2.0	0.050	4138585
Conductivity	umho/cm	340	4137811	370	4137811	1200	1.0	4137335
pH	pH	7.57	4137810	8.06	4137810	7.53	N/A	4137336
Total Suspended Solids	mg/L	1200	4136695	1400	4136462	3600	50	4136695
Dissolved Sulphate (SO4)	mg/L	13	4137321	5.1	4137321	130	1.0	4137321
Total Cyanide (CN)	mg/L	<0.0050	4136756	<0.0050	4136756	<0.0050	0.0050	4136756
Alkalinity (Total as CaCO3)	mg/L	170	4137806	170	4137806	620	1.0	4137330

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam ID		ATA325	ATA325		ATA326		ATA327		
Sampling Date		2015/08/04 09:05	2015/08/04 09:05		2015/08/04 08:30		2015/08/04 08:02		
COC Number		524098-01-01	524098-01-01		524098-01-01		524098-01-01		
	UNITS	**MW103**	**MW103 Lab-Dup**	**QC Batch**	**MW104**	**RDL**	**MW105**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L	540		4134012	690	1.0	1800	1.0	4134012
Inorganics									
Acidity as CaC03	mg/L	58		4136965	103	10	255	10	4136965
Total Ammonia-N	mg/L	0.71	0.73	4138585	<0.050	0.050	2.1	0.050	4138585
Conductivity	umho/cm	1100		4137335	1100	1.0	2900	1.0	4137811
pH	pH	7.67		4137336	7.89	N/A	7.54	N/A	4137810
Total Suspended Solids	mg/L	8000		4136462	7000	100	15000	500	4136462
Dissolved Sulphate (SO4)	mg/L	97		4137321	86	1.0	1400	5.0	4137321
Total Cyanide (CN)	mg/L	<0.0050		4136756	<0.0050	0.0050	<0.0050	0.0050	4136756
Alkalinity (Total as CaCO3)	mg/L	520		4137330	590	1.0	470	1.0	4137806

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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Maxxam Job #: B5F4028
Report Date: 2015/08/17

exp Services Inc
Client Project #: THB-00015141-AE
Site Location: Historical Tailings Site-Beardmore
Sampler Initials: MS

RESULTS OF ANALYSES OF WATER

Maxxam ID		ATA328	ATA329	ATA329		
Sampling Date		2015/08/04 09:45	2015/08/04 10:05	2015/08/04 10:05		
COC Number		524098-01-01	524098-01-01	524098-01-01		
	UNITS	**MW106**	**MW107**	**MW107 Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters						
Hardness (CaCO3)	mg/L	990	1000		1.0	4134012
Inorganics						
Acidity as CaC03	mg/L	175	192	171	10	4136965
Total Ammonia-N	mg/L	1.1	1.1		0.050	4138585
Conductivity	umho/cm	1600	1500		1.0	4137335
pH	pH	7.30	7.32		N/A	4137336
Total Suspended Solids	mg/L	11000	4100		50	4136695
Dissolved Sulphate (SO4)	mg/L	310	280		1.0	4137522
Total Cyanide (CN)	mg/L	<0.0050	<0.0050		0.0050	4136756
Alkalinity (Total as CaCO3)	mg/L	680	670		1.0	4137330

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

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Maxxam Job #: B5F4028
Report Date: 2015/08/17

exp Services Inc
Client Project #: THB-00015141-AE
Site Location: Historical Tailings Site-Beardmore
Sampler Initials: MS

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		ATA322	ATA322		ATA323	ATA323		
Sampling Date		2015/08/04 11:15	2015/08/04 11:15		2015/08/04 10:30	2015/08/04 10:30		
COC Number		524098-01-01	524098-01-01		524098-01-01	524098-01-01		
	UNITS	**MW6**	**MW6 Lab-Dup**	**RDL**	**MW101**	**MW101 Lab-Dup**	**RDL**	**QC Batch**
Metals								
Dissolved (0.2u) Aluminum (Al)	ug/L	11		5	6		5	4136920
Mercury (Hg)	mg/L	<0.00010		0.00010	<0.00010	<0.00010	0.00010	4137866
Dissolved Mercury (Hg)	ug/L	<0.10		0.10	<0.10		0.10	4137939
Dissolved Aluminum (Al)	ug/L	9.2	8.9	5.0	5.1		5.0	4140898
Total Aluminum (Al)	ug/L	14000		5.0	28000		25	4138244
Dissolved Arsenic (As)	ug/L	<1.0	<1.0	1.0	2.2		1.0	4140898
Total Arsenic (As)	ug/L	11		1.0	310		1.0	4138244
Dissolved Cadmium (Cd)	ug/L	<0.10	<0.10	0.10	<0.10		0.10	4140898
Total Cadmium (Cd)	ug/L	0.10		0.10	0.93		0.10	4138244
Dissolved Calcium (Ca)	ug/L	55000	53000	200	49000		200	4140898
Total Calcium (Ca)	ug/L	74000		200	240000		200	4138244
Dissolved Copper (Cu)	ug/L	4.6	4.9	1.0	1.7		1.0	4140898
Total Copper (Cu)	ug/L	130		1.0	520		1.0	4138244
Dissolved Iron (Fe)	ug/L	<100	<100	100	<100		100	4140898
Total Iron (Fe)	ug/L	17000		100	81000		100	4138244
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	0.50	<0.50		0.50	4140898
Total Lead (Pb)	ug/L	10		0.50	110		0.50	4138244
Dissolved Molybdenum (Mo)	ug/L	2.0	1.9	0.50	4.1		0.50	4140898
Total Molybdenum (Mo)	ug/L	1.8		0.50	7.1		0.50	4138244
Dissolved Nickel (Ni)	ug/L	<1.0	<1.0	1.0	<1.0		1.0	4140898
Total Nickel (Ni)	ug/L	29		1.0	340		1.0	4138244
Dissolved Zinc (Zn)	ug/L	<5.0	<5.0	5.0	<5.0		5.0	4140898
Total Zinc (Zn)	ug/L	51		5.0	290		5.0	4138244

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

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Maxxam Job #: B5F4028
Report Date: 2015/08/17

exp Services Inc
Client Project #: THB-00015141-AE
Site Location: Historical Tailings Site-Beardmore
Sampler Initials: MS

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		ATA324		ATA325		ATA326	ATA326		
Sampling Date		2015/08/04 09:24		2015/08/04 09:05		2015/08/04 08:30	2015/08/04 08:30		
COC Number		524098-01-01		524098-01-01		524098-01-01	524098-01-01		
	UNITS	**MW102**	**RDL**	**MW103**	**RDL**	**MW104**	**MW104 Lab-Dup**	**RDL**	**QC Batch**
Metals									
Dissolved (0.2u) Aluminum (Al)	ug/L	5	5	<5	5	<5		5	4136920
Mercury (Hg)	mg/L	<0.00010	0.00010	<0.00010	0.00010	<0.00010		0.00010	4137866
Dissolved Mercury (Hg)	ug/L	<0.10	0.10	<0.10	0.10	<0.10	<0.10	0.10	4137939
Dissolved Aluminum (Al)	ug/L	5.1	5.0	<5.0	5.0	<5.0		5.0	4140898
Total Aluminum (Al)	ug/L	33000	25	27000	50	40000		25	4138244
Dissolved Arsenic (As)	ug/L	46	1.0	170	1.0	<1.0		1.0	4140898
Total Arsenic (As)	ug/L	850	5.0	2300	10	48		5.0	4138244
Dissolved Cadmium (Cd)	ug/L	<0.10	0.10	<0.10	0.10	<0.10		0.10	4140898
Total Cadmium (Cd)	ug/L	1.0	0.50	<1.0	1.0	0.78		0.50	4138244
Dissolved Calcium (Ca)	ug/L	140000	200	70000	200	130000		200	4140898
Total Calcium (Ca)	ug/L	500000	1000	140000	200	980000		1000	4138244
Dissolved Copper (Cu)	ug/L	<1.0	1.0	<1.0	1.0	1.4		1.0	4140898
Total Copper (Cu)	ug/L	120	5.0	90	1.0	140		5.0	4138244
Dissolved Iron (Fe)	ug/L	1400	100	2200	100	<100		100	4140898
Total Iron (Fe)	ug/L	84000	500	74000	100	73000		500	4138244
Dissolved Lead (Pb)	ug/L	<0.50	0.50	<0.50	0.50	<0.50		0.50	4140898
Total Lead (Pb)	ug/L	33	2.5	28	0.50	45		2.5	4138244
Dissolved Molybdenum (Mo)	ug/L	2.7	0.50	4.7	0.50	10		0.50	4140898
Total Molybdenum (Mo)	ug/L	4.6	2.5	4.2	0.50	9.9		2.5	4138244
Dissolved Nickel (Ni)	ug/L	1.6	1.0	<1.0	1.0	<1.0		1.0	4140898
Total Nickel (Ni)	ug/L	77	5.0	38	1.0	85		5.0	4138244
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	<5.0	5.0	<5.0		5.0	4140898
Total Zinc (Zn)	ug/L	180	25	130	5.0	150		25	4138244

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

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Maxxam Job #: B5F4028
Report Date: 2015/08/17

exp Services Inc
Client Project #: THB-00015141-AE
Site Location: Historical Tailings Site-Beardmore
Sampler Initials: MS

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		ATA327			ATA328	ATA328		
Sampling Date		2015/08/04 08:02			2015/08/04 09:45	2015/08/04 09:45		
COC Number		524098-01-01			524098-01-01	524098-01-01		
	UNITS	**MW105**	**RDL**	**QC Batch**	**MW106**	**MW106 Lab-Dup**	**RDL**	**QC Batch**
Metals								
Dissolved (0.2u) Aluminum (Al)	ug/L	<5	5	4136920	14		5	4136920
Mercury (Hg)	mg/L	<0.00010	0.00010	4137866	<0.00010		0.00010	4137866
Dissolved Mercury (Hg)	ug/L	<0.10	0.10	4137939	<0.10		0.10	4137939
Dissolved Aluminum (Al)	ug/L	<5.0	5.0	4140898	18	19	5.0	4143367
Total Aluminum (Al)	ug/L	730000	250	4138244	21000		25	4146301
Dissolved Arsenic (As)	ug/L	98	1.0	4140898	15	16	1.0	4143367
Total Arsenic (As)	ug/L	56000	200	4138244	170		5.0	4146301
Dissolved Cadmium (Cd)	ug/L	<0.10	0.10	4140898	<0.10	<0.10	0.10	4143367
Total Cadmium (Cd)	ug/L	56	1.0	4138244	1.1		0.50	4146301
Dissolved Calcium (Ca)	ug/L	480000	200	4140898	230000	230000	200	4143367
Total Calcium (Ca)	ug/L	4200000	2000	4138244	730000		1000	4146301
Dissolved Copper (Cu)	ug/L	<1.0	1.0	4140898	<1.0	<1.0	1.0	4143367
Total Copper (Cu)	ug/L	1700	10	4138244	130		5.0	4146301
Dissolved Iron (Fe)	ug/L	3500	100	4140898	12000	13000	100	4143367
Total Iron (Fe)	ug/L	2500000	5000	4138244	62000		500	4146301
Dissolved Lead (Pb)	ug/L	<0.50	0.50	4140898	<0.50	<0.50	0.50	4143367
Total Lead (Pb)	ug/L	760	5.0	4138244	23		2.5	4146301
Dissolved Molybdenum (Mo)	ug/L	3.4	0.50	4140898	0.73	0.67	0.50	4143367
Total Molybdenum (Mo)	ug/L	23	5.0	4138244	2.6		2.5	4146301
Dissolved Nickel (Ni)	ug/L	4.9	2.0	4140898	<1.0	<1.0	1.0	4143367
Total Nickel (Ni)	ug/L	1400	20	4138244	55		5.0	4146301
Dissolved Zinc (Zn)	ug/L	<10 (1)	10	4140898	<5.0	<5.0	5.0	4143367
Total Zinc (Zn)	ug/L	7400	50	4138244	120		25	4146301

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
(1) Detection Limit was raised due to matrix interferences.

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Maxxam Job #: B5F4028
Report Date: 2015/08/17

exp Services Inc
Client Project #: THB-00015141-AE
Site Location: Historical Tailings Site-Beardmore
Sampler Initials: MS

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		ATA329		
Sampling Date		2015/08/04 10:05		
COC Number		524098-01-01		
	UNITS	**MW107**	**RDL**	**QC Batch**
Metals				
Dissolved (0.2u) Aluminum (Al)	ug/L	12	5	4136920
Mercury (Hg)	mg/L	<0.00010	0.00010	4137866
Dissolved Mercury (Hg)	ug/L	<0.10	0.10	4137939
Dissolved Aluminum (Al)	ug/L	20	5.0	4140898
Total Aluminum (Al)	ug/L	27000	50	4138244
Dissolved Arsenic (As)	ug/L	16	1.0	4140898
Total Arsenic (As)	ug/L	200	10	4138244
Dissolved Cadmium (Cd)	ug/L	<0.10	0.10	4140898
Total Cadmium (Cd)	ug/L	<1.0	1.0	4138244
Dissolved Calcium (Ca)	ug/L	240000	200	4140898
Total Calcium (Ca)	ug/L	810000	2000	4138244
Dissolved Copper (Cu)	ug/L	<1.0	1.0	4140898
Total Copper (Cu)	ug/L	150	10	4138244
Dissolved Iron (Fe)	ug/L	13000	100	4140898
Total Iron (Fe)	ug/L	74000	1000	4138244
Dissolved Lead (Pb)	ug/L	<0.50	0.50	4140898
Total Lead (Pb)	ug/L	28	5.0	4138244
Dissolved Molybdenum (Mo)	ug/L	0.68	0.50	4140898
Total Molybdenum (Mo)	ug/L	<5.0	5.0	4138244
Dissolved Nickel (Ni)	ug/L	<1.0	1.0	4140898
Total Nickel (Ni)	ug/L	74	10	4138244
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	4140898
Total Zinc (Zn)	ug/L	170	50	4138244

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B5F4028
Report Date: 2015/08/17

exp Services Inc
Client Project #: THB-00015141-AE
Site Location: Historical Tailings Site-Beardmore
Sampler Initials: MS

TEST SUMMARY

Maxxam ID: ATA322
Sample ID: MW6
Matrix: Water

Collected: 2015/08/04
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity as CaC03 in liquid		4136965	2015/08/06	2015/08/11	Grace Sison
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	4136920	N/A	2015/08/07	Arefa Dabhad
Alkalinity	AT	4137806	N/A	2015/08/07	Neil Dassanayake
Conductivity	AT	4137811	N/A	2015/08/07	Neil Dassanayake
Total Cyanide	TECH/CN	4136756	2015/08/06	2015/08/07	Xuanhong Qiu
Hardness (calculated as CaCO3)		4134012	N/A	2015/08/10	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	4137939	2015/08/07	2015/08/10	Magdalena Carlos
Mercury in Water by CVAA	CV/AA	4137866	2015/08/07	2015/08/10	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	4140898	N/A	2015/08/10	Kevin Comerford
Total Metals Analysis by ICPMS	ICP/MS	4138244	N/A	2015/08/10	Arefa Dabhad
Total Ammonia-N	LACH/NH4	4138585	N/A	2015/08/10	Charles Opoku-Ware
pH	AT	4137810	N/A	2015/08/07	Neil Dassanayake
Sulphate by Automated Colourimetry	KONE	4137321	N/A	2015/08/10	Alina Dobreanu
Total Suspended Solids	BAL	4136695	N/A	2015/08/06	Alpa Patel

Maxxam ID: ATA322 Dup
Sample ID: MW6
Matrix: Water

Collected: 2015/08/04
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	4140898	N/A	2015/08/10	Kevin Comerford

Maxxam ID: ATA323
Sample ID: MW101
Matrix: Water

Collected: 2015/08/04
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity as CaC03 in liquid		4136965	2015/08/06	2015/08/11	Grace Sison
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	4136920	N/A	2015/08/07	Arefa Dabhad
Alkalinity	AT	4137806	N/A	2015/08/07	Neil Dassanayake
Conductivity	AT	4137811	N/A	2015/08/07	Neil Dassanayake
Total Cyanide	TECH/CN	4136756	2015/08/06	2015/08/07	Xuanhong Qiu
Hardness (calculated as CaCO3)		4134012	N/A	2015/08/10	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	4137939	2015/08/07	2015/08/10	Magdalena Carlos
Mercury in Water by CVAA	CV/AA	4137866	2015/08/07	2015/08/10	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	4140898	N/A	2015/08/10	Kevin Comerford
Total Metals Analysis by ICPMS	ICP/MS	4138244	N/A	2015/08/10	Arefa Dabhad
Total Ammonia-N	LACH/NH4	4138585	N/A	2015/08/10	Charles Opoku-Ware
pH	AT	4137810	N/A	2015/08/07	Neil Dassanayake
Sulphate by Automated Colourimetry	KONE	4137321	N/A	2015/08/10	Alina Dobreanu
Total Suspended Solids	BAL	4136462	N/A	2015/08/07	Alpa Patel

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Maxxam Job #: B5F4028
Report Date: 2015/08/17

exp Services Inc
Client Project #: THB-00015141-AE
Site Location: Historical Tailings Site-Beardmore
Sampler Initials: MS

TEST SUMMARY

Maxxam ID: ATA323 Dup
Sample ID: MW101
Matrix: Water

Collected: 2015/08/04
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Water by CVAA	CV/AA	4137866	2015/08/07	2015/08/10	Magdalena Carlos

Maxxam ID: ATA324
Sample ID: MW102
Matrix: Water

Collected: 2015/08/04
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity as CaC03 in liquid		4136965	2015/08/06	2015/08/11	Grace Sison
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	4136920	N/A	2015/08/07	Arefa Dabhad
Alkalinity	AT	4137330	N/A	2015/08/06	Neil Dassanayake
Conductivity	AT	4137335	N/A	2015/08/06	Neil Dassanayake
Total Cyanide	TECH/CN	4136756	2015/08/06	2015/08/07	Xuanhong Qiu
Hardness (calculated as CaCO3)		4134012	N/A	2015/08/10	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	4137939	2015/08/07	2015/08/10	Magdalena Carlos
Mercury in Water by CVAA	CV/AA	4137866	2015/08/07	2015/08/10	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	4140898	N/A	2015/08/10	Kevin Comerford
Total Metals Analysis by ICPMS	ICP/MS	4138244	N/A	2015/08/10	Arefa Dabhad
Total Ammonia-N	LACH/NH4	4138585	N/A	2015/08/10	Charles Opoku-Ware
pH	AT	4137336	N/A	2015/08/06	Neil Dassanayake
Sulphate by Automated Colourimetry	KONE	4137321	N/A	2015/08/10	Alina Dobreanu
Total Suspended Solids	BAL	4136695	N/A	2015/08/06	Alpa Patel

Maxxam ID: ATA325
Sample ID: MW103
Matrix: Water

Collected: 2015/08/04
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity as CaC03 in liquid		4136965	2015/08/06	2015/08/11	Grace Sison
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	4136920	N/A	2015/08/10	Arefa Dabhad
Alkalinity	AT	4137330	N/A	2015/08/06	Neil Dassanayake
Conductivity	AT	4137335	N/A	2015/08/06	Neil Dassanayake
Total Cyanide	TECH/CN	4136756	2015/08/06	2015/08/07	Xuanhong Qiu
Hardness (calculated as CaCO3)		4134012	N/A	2015/08/10	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	4137939	2015/08/07	2015/08/10	Magdalena Carlos
Mercury in Water by CVAA	CV/AA	4137866	2015/08/07	2015/08/10	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	4140898	N/A	2015/08/10	Kevin Comerford
Total Metals Analysis by ICPMS	ICP/MS	4138244	N/A	2015/08/10	Arefa Dabhad
Total Ammonia-N	LACH/NH4	4138585	N/A	2015/08/10	Charles Opoku-Ware
pH	AT	4137336	N/A	2015/08/06	Neil Dassanayake
Sulphate by Automated Colourimetry	KONE	4137321	N/A	2015/08/10	Alina Dobreanu
Total Suspended Solids	BAL	4136462	N/A	2015/08/07	Alpa Patel

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Maxxam Job #: B5F4028
Report Date: 2015/08/17

exp Services Inc
Client Project #: THB-00015141-AE
Site Location: Historical Tailings Site-Beardmore
Sampler Initials: MS

TEST SUMMARY

Maxxam ID: ATA325 Dup
Sample ID: MW103
Matrix: Water

Collected: 2015/08/04
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	4138585	N/A	2015/08/10	Charles Opoku-Ware

Maxxam ID: ATA326
Sample ID: MW104
Matrix: Water

Collected: 2015/08/04
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity as CaC03 in liquid		4136965	2015/08/06	2015/08/11	Grace Sison
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	4136920	N/A	2015/08/10	Arefa Dabhad
Alkalinity	AT	4137806	N/A	2015/08/07	Neil Dassanayake
Conductivity	AT	4137811	N/A	2015/08/07	Neil Dassanayake
Total Cyanide	TECH/CN	4136756	2015/08/06	2015/08/07	Xuanhong Qiu
Hardness (calculated as CaCO3)		4134012	N/A	2015/08/10	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	4137939	2015/08/07	2015/08/10	Magdalena Carlos
Mercury in Water by CVAA	CV/AA	4137866	2015/08/07	2015/08/10	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	4140898	N/A	2015/08/10	Kevin Comerford
Total Metals Analysis by ICPMS	ICP/MS	4138244	N/A	2015/08/10	Arefa Dabhad
Total Ammonia-N	LACH/NH4	4138585	N/A	2015/08/10	Charles Opoku-Ware
pH	AT	4137810	N/A	2015/08/07	Neil Dassanayake
Sulphate by Automated Colourimetry	KONE	4137321	N/A	2015/08/10	Alina Dobreanu
Total Suspended Solids	BAL	4136462	N/A	2015/08/07	Alpa Patel

Maxxam ID: ATA326 Dup
Sample ID: MW104
Matrix: Water

Collected: 2015/08/04
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Mercury in Water by CVAA	CV/AA	4137939	2015/08/07	2015/08/10	Magdalena Carlos

Maxxam ID: ATA327
Sample ID: MW105
Matrix: Water

Collected: 2015/08/04
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity as CaC03 in liquid		4136965	2015/08/06	2015/08/11	Grace Sison
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	4136920	N/A	2015/08/07	Arefa Dabhad
Alkalinity	AT	4137806	N/A	2015/08/07	Neil Dassanayake
Conductivity	AT	4137811	N/A	2015/08/07	Neil Dassanayake
Total Cyanide	TECH/CN	4136756	2015/08/06	2015/08/07	Xuanhong Qiu
Hardness (calculated as CaCO3)		4134012	N/A	2015/08/10	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	4137939	2015/08/07	2015/08/10	Magdalena Carlos
Mercury in Water by CVAA	CV/AA	4137866	2015/08/07	2015/08/10	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	4140898	N/A	2015/08/10	Kevin Comerford
Total Metals Analysis by ICPMS	ICP/MS	4138244	N/A	2015/08/10	Arefa Dabhad

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exp Services Inc
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Sampler Initials: MS

TEST SUMMARY

Maxxam ID: ATA327
Sample ID: MW105
Matrix: Water

Collected: 2015/08/04
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	4138585	N/A	2015/08/10	Charles Opoku-Ware
pH	AT	4137810	N/A	2015/08/07	Neil Dassanayake
Sulphate by Automated Colourimetry	KONE	4137321	N/A	2015/08/10	Alina Dobreanu
Total Suspended Solids	BAL	4136462	N/A	2015/08/07	Alpa Patel

Maxxam ID: ATA328
Sample ID: MW106
Matrix: Water

Collected: 2015/08/04
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity as CaC03 in liquid		4136965	2015/08/06	2015/08/11	Grace Sison
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	4136920	N/A	2015/08/10	Arefa Dabhad
Alkalinity	AT	4137330	N/A	2015/08/06	Neil Dassanayake
Conductivity	AT	4137335	N/A	2015/08/06	Neil Dassanayake
Total Cyanide	TECH/CN	4136756	2015/08/06	2015/08/07	Xuanhong Qiu
Hardness (calculated as CaCO3)		4134012	N/A	2015/08/10	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	4137939	2015/08/07	2015/08/10	Magdalena Carlos
Mercury in Water by CVAA	CV/AA	4137866	2015/08/07	2015/08/10	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	4143367	N/A	2015/08/11	Kevin Comerford
Total Metals Analysis by ICPMS	ICP/MS	4146301	N/A	2015/08/13	Arefa Dabhad
Total Ammonia-N	LACH/NH4	4138585	N/A	2015/08/10	Charles Opoku-Ware
pH	AT	4137336	N/A	2015/08/06	Neil Dassanayake
Sulphate by Automated Colourimetry	KONE	4137522	N/A	2015/08/07	Alina Dobreanu
Total Suspended Solids	BAL	4136695	N/A	2015/08/06	Alpa Patel

Maxxam ID: ATA328 Dup
Sample ID: MW106
Matrix: Water

Collected: 2015/08/04
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	4143367	N/A	2015/08/11	Kevin Comerford

Maxxam ID: ATA329
Sample ID: MW107
Matrix: Water

Collected: 2015/08/04
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity as CaC03 in liquid		4136965	2015/08/06	2015/08/11	Grace Sison
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	4136920	N/A	2015/08/07	Arefa Dabhad
Alkalinity	AT	4137330	N/A	2015/08/06	Neil Dassanayake
Conductivity	AT	4137335	N/A	2015/08/06	Neil Dassanayake
Total Cyanide	TECH/CN	4136756	2015/08/06	2015/08/07	Xuanhong Qiu
Hardness (calculated as CaCO3)		4134012	N/A	2015/08/10	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	4137939	2015/08/07	2015/08/10	Magdalena Carlos

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Maxxam Job #: B5F4028
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exp Services Inc
Client Project #: THB-00015141-AE
Site Location: Historical Tailings Site-Beardmore
Sampler Initials: MS

TEST SUMMARY

Maxxam ID: ATA329
Sample ID: MW107
Matrix: Water

Collected: 2015/08/04
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Water by CVAA	CV/AA	4137866	2015/08/07	2015/08/10	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	4140898	N/A	2015/08/10	Kevin Comerford
Total Metals Analysis by ICPMS	ICP/MS	4138244	N/A	2015/08/10	Arefa Dabhad
Total Ammonia-N	LACH/NH4	4138585	N/A	2015/08/10	Charles Opoku-Ware
pH	AT	4137336	N/A	2015/08/06	Neil Dassanayake
Sulphate by Automated Colourimetry	KONE	4137522	N/A	2015/08/07	Alina Dobreanu
Total Suspended Solids	BAL	4136695	N/A	2015/08/06	Alpa Patel

Maxxam ID: ATA329 Dup
Sample ID: MW107
Matrix: Water

Collected: 2015/08/04
Shipped:
Received: 2015/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity as CaC03 in liquid		4136965	2015/08/06	2015/08/11	Grace Sison

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Maxxam Job #: B5F4028
Report Date: 2015/08/17

exp Services Inc
Client Project #: THB-00015141-AE
Site Location: Historical Tailings Site-Beardmore
Sampler Initials: MS

GENERAL COMMENTS

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

Package 1	0.3°C
Package 2	1.0°C

Sample ATA324-01 : Metal Analysis:Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample ATA327-01 : Metal Analysis:Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample ATA328-01 : Metal Analysis:Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample ATA329-01 : Metal Analysis:Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Results relate only to the items tested.

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 #: B5F4028
Report Date: 2015/08/17

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: THB-00015141-AE
Site Location: Historical Tailings Site-Beardmore
Sampler Initials: MS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4136462	Total Suspended Solids	2015/08/07					<10	mg/L	NC	25	99	85 - 115
4136695	Total Suspended Solids	2015/08/06					<10	mg/L	NC	25	99	85 - 115
4136756	Total Cyanide (CN)	2015/08/07	103	80 - 120	106	80 - 120	<0.0050	mg/L	NC	20		
4136920	Dissolved (0.2u) Aluminum (Al)	2015/08/07	103	80 - 120	101	80 - 120	<5	ug/L	NC	20		
4136965	Acidity as CaC03	2015/08/11					<10	mg/L	12	25		
4137321	Dissolved Sulphate (SO4)	2015/08/10	89	75 - 125	103	80 - 120	<1.0	mg/L	NC	20		
4137330	Alkalinity (Total as CaCO3)	2015/08/07			96	85 - 115	1.6, RDL=1.0	mg/L	0.62	25		
4137335	Conductivity	2015/08/07			101	85 - 115	<1.0	umho/cm	0	25		
4137336	pH	2015/08/07			102	98 - 103			0.21	N/A		
4137522	Dissolved Sulphate (SO4)	2015/08/07	NC	75 - 125	101	80 - 120	<1.0	mg/L	0.53	20		
4137806	Alkalinity (Total as CaCO3)	2015/08/07			97	85 - 115	<1.0	mg/L	0.47	25		
4137810	pH	2015/08/07			102	98 - 103			0.11	N/A		
4137811	Conductivity	2015/08/07			102	85 - 115	<1.0	umho/cm	0	25		
4137866	Mercury (Hg)	2015/08/10	110	75 - 125	106	80 - 120	<0.00010	mg/L	NC	20		
4137939	Dissolved Mercury (Hg)	2015/08/10	108	75 - 125	103	80 - 120	<0.10	ug/L	NC	20		
4138244	Total Aluminum (Al)	2015/08/10	NC	80 - 120	103	80 - 120	<5.0	ug/L	1.9	20		
4138244	Total Arsenic (As)	2015/08/10	103	80 - 120	101	80 - 120	<1.0	ug/L				
4138244	Total Cadmium (Cd)	2015/08/10	101	80 - 120	99	80 - 120	<0.10	ug/L				
4138244	Total Calcium (Ca)	2015/08/10	NC	80 - 120	106	80 - 120	<200	ug/L				
4138244	Total Copper (Cu)	2015/08/10	99	80 - 120	100	80 - 120	<1.0	ug/L	2.2	20		
4138244	Total Iron (Fe)	2015/08/10	102	80 - 120	101	80 - 120	<100	ug/L				
4138244	Total Lead (Pb)	2015/08/10	100	80 - 120	100	80 - 120	<0.50	ug/L				
4138244	Total Molybdenum (Mo)	2015/08/10	NC	80 - 120	101	80 - 120	<0.50	ug/L				
4138244	Total Nickel (Ni)	2015/08/10	100	80 - 120	101	80 - 120	<1.0	ug/L				
4138244	Total Zinc (Zn)	2015/08/10	101	80 - 120	103	80 - 120	<5.0	ug/L	2.9	20		
4138585	Total Ammonia-N	2015/08/10	91	80 - 120	98	85 - 115	<0.050	mg/L	1.6	20		
4140898	Dissolved Aluminum (Al)	2015/08/10	103	80 - 120	102	80 - 120	<5.0	ug/L	NC	20		
4140898	Dissolved Arsenic (As)	2015/08/10	105	80 - 120	103	80 - 120	<1.0	ug/L	NC	20		
4140898	Dissolved Cadmium (Cd)	2015/08/10	108	80 - 120	104	80 - 120	<0.10	ug/L	NC	20		

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Maxxam Job #: B5F4028
Report Date: 2015/08/17

QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc
Client Project #: THB-00015141-AE
Site Location: Historical Tailings Site-Beardmore
Sampler Initials: MS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4140898	Dissolved Calcium (Ca)	2015/08/10	NC	80 - 120	101	80 - 120	<200	ug/L	2.7	20		
4140898	Dissolved Copper (Cu)	2015/08/10	101	80 - 120	99	80 - 120	<1.0	ug/L	NC	20		
4140898	Dissolved Iron (Fe)	2015/08/10	105	80 - 120	104	80 - 120	<100	ug/L	NC	20		
4140898	Dissolved Lead (Pb)	2015/08/10	103	80 - 120	101	80 - 120	<0.50	ug/L	NC	20		
4140898	Dissolved Molybdenum (Mo)	2015/08/10	110	80 - 120	104	80 - 120	<0.50	ug/L	NC	20		
4140898	Dissolved Nickel (Ni)	2015/08/10	102	80 - 120	101	80 - 120	<1.0	ug/L	NC	20		
4140898	Dissolved Zinc (Zn)	2015/08/10	101	80 - 120	100	80 - 120	<5.0	ug/L	NC	20		
4143367	Dissolved Aluminum (Al)	2015/08/11	97	80 - 120	98	80 - 120	<5.0	ug/L	NC	20		
4143367	Dissolved Arsenic (As)	2015/08/11	104	80 - 120	99	80 - 120	<1.0	ug/L	5.1	20		
4143367	Dissolved Cadmium (Cd)	2015/08/11	102	80 - 120	99	80 - 120	<0.10	ug/L	NC	20		
4143367	Dissolved Calcium (Ca)	2015/08/11	NC	80 - 120	98	80 - 120	<200	ug/L	1.4	20		
4143367	Dissolved Copper (Cu)	2015/08/11	96	80 - 120	98	80 - 120	<1.0	ug/L	NC	20		
4143367	Dissolved Iron (Fe)	2015/08/11	100	80 - 120	97	80 - 120	<100	ug/L	2.6	20		
4143367	Dissolved Lead (Pb)	2015/08/11	96	80 - 120	99	80 - 120	<0.50	ug/L	NC	20		
4143367	Dissolved Molybdenum (Mo)	2015/08/11	108	80 - 120	101	80 - 120	<0.50	ug/L	NC	20		
4143367	Dissolved Nickel (Ni)	2015/08/11	96	80 - 120	99	80 - 120	<1.0	ug/L	NC	20		
4143367	Dissolved Zinc (Zn)	2015/08/11	97	80 - 120	96	80 - 120	<5.0	ug/L	NC	20		
4146301	Total Aluminum (Al)	2015/08/13	NC	80 - 120	99	80 - 120	<5.0	ug/L	3.5	20		
4146301	Total Arsenic (As)	2015/08/13	97	80 - 120	98	80 - 120	<1.0	ug/L	NC	20		
4146301	Total Cadmium (Cd)	2015/08/13	98	80 - 120	100	80 - 120	<0.10	ug/L	NC	20		
4146301	Total Calcium (Ca)	2015/08/13	NC	80 - 120	100	80 - 120	<200	ug/L	0.79	20		
4146301	Total Copper (Cu)	2015/08/13	96	80 - 120	98	80 - 120	<1.0	ug/L	NC	20		
4146301	Total Iron (Fe)	2015/08/13	98	80 - 120	98	80 - 120	<100	ug/L	4.3	20		
4146301	Total Lead (Pb)	2015/08/13	96	80 - 120	99	80 - 120	<0.50	ug/L	NC	20		
4146301	Total Molybdenum (Mo)	2015/08/13	98	80 - 120	101	80 - 120	<0.50	ug/L	NC	20		
4146301	Total Nickel (Ni)	2015/08/13	97	80 - 120	98	80 - 120	<1.0	ug/L	NC	20		

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Maxxam Job #: B5F4028
Report Date: 2015/08/17

QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc
Client Project #: THB-00015141-AE
Site Location: Historical Tailings Site-Beardmore
Sampler Initials: MS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4146301	Total Zinc (Zn)	2015/08/13	98	80 - 120	99	80 - 120	<5.0	ug/L	NC	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 #: B5F4028
Report Date: 2015/08/17

exp Services Inc
Client Project #: THB-00015141-AE
Site Location: Historical Tailings Site-Beardmore
Sampler Initials: MS

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

Grace Sison, B.Sc., C.Chem, Senior Project Manager - Petroleum Division

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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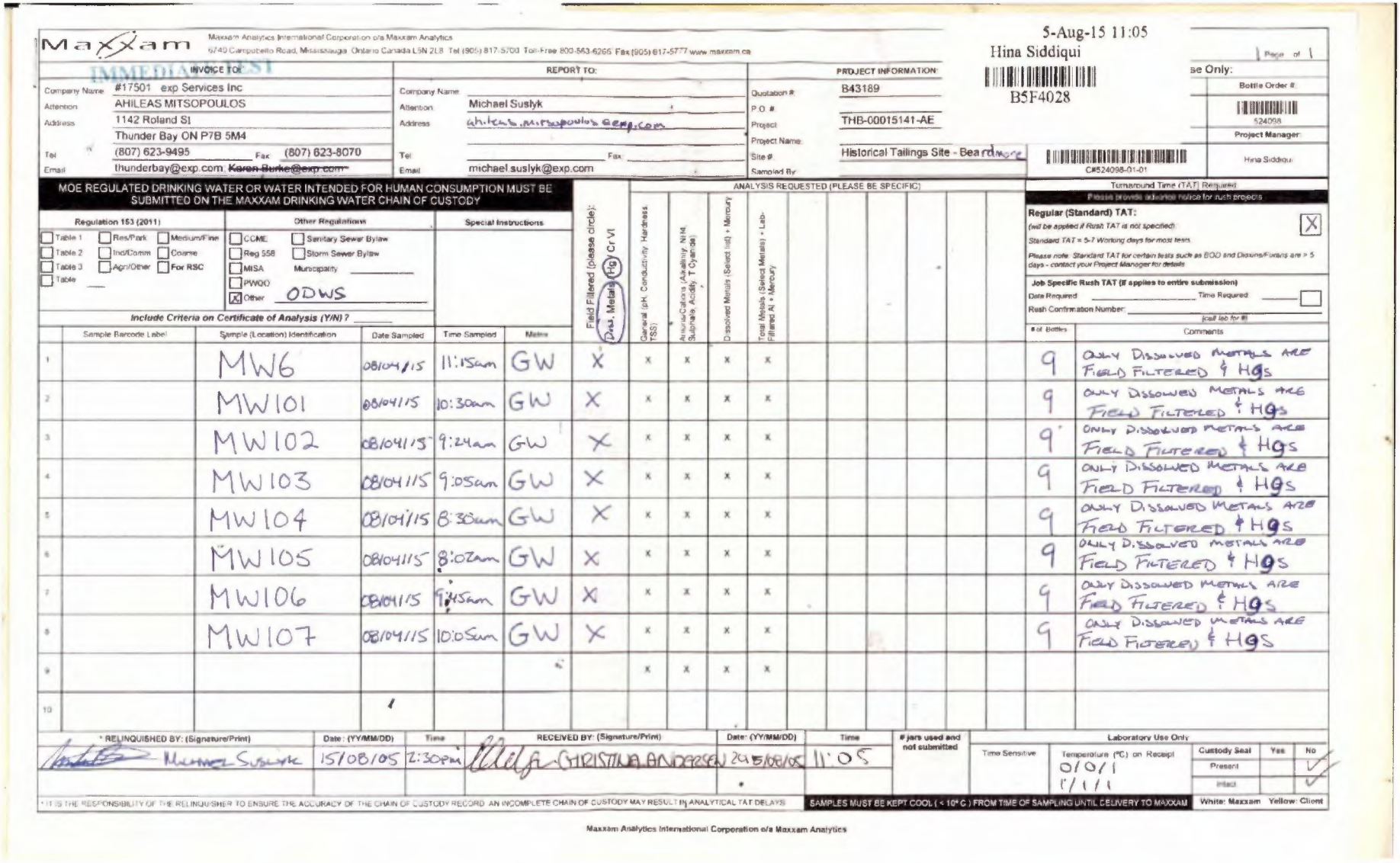

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5-Aug-15 11:05
Hina Siddiqui
B5F4028

Page of

Use Only:
Bottle Order #: 524098
Project Manager: Hina Siddiqui
C#524098-01-01

IMMEDIATEST

INVOICE TO:
Company Name: #17501 exp Services Inc
Attention: AHILEAS MITSOPOULOS
Address: 1142 Roland St, Thunder Bay ON P7B 5M4
Tel: (807) 623-9495 Fax: (807) 623-8070
Email: thunderbay@exp.com; ~~Karen.Burke@exp.com~~

REPORT TO:
Company Name:
Attention: Michael Suslyk
Address: ahileas.mitsopoulos@exp.com
Tel: Fax:
Email: michael.suslyk@exp.com

PROJECT INFORMATION:
Quotation #: B43189
P.O. #:
Project: THB-00015141-AE
Project Name:
Site #: Historical Tailings Site - Beardmore
Sampled By:

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality: ☐ PWQO ☒ Other ODWS

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ___

Turnaround Time (TAT) Required
Please provide advance notice for rush projects
Regular (Standard) TAT: [X]
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details
Job Specific Rush TAT (if applies to entire submission)
Date Required: Time Required: ☐
Rush Confirmation Number: *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): (Diss. Metals / Hg / Cr VI)	General (pH, Conductivity, Hardness, TSS)	Anions/Cations (Alkalinity, NH4, Sulphate, Acidity, T.Cyanide)	Dissolved Metals (Select list) + Mercury	Total Metals (Select Metals) + Lab-Filtered Al + Mercury	# of Bottles	Comments
1		MW6	08/04/15	11:15am	GW	X	x	x	x	x	9	ONLY DISSOLVED METALS ARE FIELD FILTERED & Hgs
2		MW101	08/04/15	10:30am	GW	X	x	x	x	x	9	ONLY DISSOLVED METALS ARE FIELD FILTERED & Hgs
3		MW102	08/04/15	9:24am	GW	X	x	x	x	x	9	ONLY DISSOLVED METALS ARE FIELD FILTERED & Hgs
4		MW103	08/04/15	9:05am	GW	X	x	x	x	x	9	ONLY DISSOLVED METALS ARE FIELD FILTERED & Hgs
5		MW104	08/04/15	8:30am	GW	X	x	x	x	x	9	ONLY DISSOLVED METALS ARE FIELD FILTERED & Hgs
6		MW105	08/04/15	8:02am	GW	X	x	x	x	x	9	ONLY DISSOLVED METALS ARE FIELD FILTERED & Hgs
7		MW106	08/04/15	9:45am	GW	X	x	x	x	x	9	ONLY DISSOLVED METALS ARE FIELD FILTERED & Hgs
8		MW107	08/04/15	10:05am	GW	X	x	x	x	x	9	ONLY DISSOLVED METALS ARE FIELD FILTERED & Hgs
9							x	x	x	x		
10												

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Michael Suslyk	15/08/05	2:30pm	CHRISTINA ANDERSEN	15/08/05	11:05	

Laboratory Use Only
Time Sensitive
Temperature (°C) on Receipt: 0/0/1 1/1/1
Custody Seal: Present ✓ Intact ✓ — Yes — No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

Your Project #: THB-00014151-AE
Site Location: GOLDSTONE - HISTORICAL TAILING
Your C.O.C. #: 532027-01-01

Attention:Ahileas Mitsopoulos/Michael S

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
P7B 5M4

Report Date: 2015/11/12
Report #: R3764434
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5M4720
Received: 2015/11/03, 09:45

Sample Matrix: Water
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Acidity as CaC03 in liquid (1, 2)	8	2015/11/04	2015/11/09	SLA SOP-00100	APHA SM2310B (Mod)
Alkalinity	6	N/A	2015/11/05	CAM SOP-00448	SM 22 2320 B m
Alkalinity	2	N/A	2015/11/06	CAM SOP-00448	SM 22 2320 B m
Conductivity	6	N/A	2015/11/05	CAM SOP-00414	SM 22 2510 m
Conductivity	2	N/A	2015/11/06	CAM SOP-00414	SM 22 2510 m
Total Cyanide	7	2015/11/04	2015/11/05	CAM SOP-00457	OMOE E3015 2.1 m
Total Cyanide	1	2015/11/04	2015/11/06	CAM SOP-00457	OMOE E3015 2.1 m
Hardness (calculated as CaCO3)	8	N/A	2015/11/09	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Mercury in Water by CVAA	8	2015/11/06	2015/11/06	CAM SOP-00453	EPA 7470A m
Mercury in Water by CVAA	8	2015/11/07	2015/11/09	CAM SOP-00453	EPA 7470A m
Total Ammonia-N	8	N/A	2015/11/07	CAM SOP-00441	EPA GS I-2522-90 m
pH	6	N/A	2015/11/05	CAM SOP-00413	SM 4500H+ B m
pH	2	N/A	2015/11/06	CAM SOP-00413	SM 4500H+ B m
Sulphate by Automated Colourimetry	8	N/A	2015/11/05	CAM SOP-00464	EPA 375.4 m
Total Suspended Solids	3	N/A	2015/11/06	CAM SOP-00428	SM 22 2540D m
Total Suspended Solids	5	N/A	2015/11/07	CAM SOP-00428	SM 22 2540D m

Remarks:

Maxxam Analytics has performed all analytical testing herein in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act.

Maxxam Analytics is accredited for all specific parameters as required by Ontario Regulation 153/04. Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

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) This test was performed by Maxxam Sladeview Petrochemical

(2) Sample(s) analyzed using methodologies that have not been subjected to Maxxam's standard validation process for the submitted matrix and is not an Accredited method. Analysis performed with client consent, however results should be viewed with discretion

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Maxxam
A Bureau Veritas Group Company

Your Project #: THB-00014151-AE
Site Location: GOLDSTONE - HISTORICAL TAILING
Your C.O.C. #: 532027-01-01

Attention:Ahileas Mitsopoulos/Michael S

exp Services Inc
Thunder Bay Branch
1142 Roland St
Thunder Bay, ON
P7B 5M4

Report Date: 2015/11/12
Report #: R3764434
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5M4720
Received: 2015/11/03, 09:45

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Hina Siddiqui, Project Manager –Environmental Customer Service
Email: HSiddiqui@maxxam.ca
Phone# (905) 817-5700

==========

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

Maxxam Job #: B5M4720
Report Date: 2015/11/12

exp Services Inc
Client Project #: THB-00014151-AE
Site Location: GOLDSTONE - HISTORICAL TAILING
Sampler Initials: MS

RESULTS OF ANALYSES OF WATER

Maxxam ID		BGW179	BGW179		BGW180		BGW181		
Sampling Date		2015/10/28 12:20	2015/10/28 12:20		2015/10/29 02:45		2015/10/29 08:30		
COC Number		532027-01-01	532027-01-01		532027-01-01		532027-01-01		
	UNITS	**MW101**	**MW101 Lab-Dup**	**QC Batch**	**MW102**	**RDL**	**MW103**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L	210		4256875	800	1.0	580	1.0	4256875
Inorganics									
Acidity as CaC03	mg/L	<10		4258801	54	10	44	10	4258801
Total Ammonia-N	mg/L	<0.050	<0.050	4262715	0.49	0.050	0.81	0.050	4262092
Conductivity	umho/cm	370		4259211	1200	1.0	1200	1.0	4259226
pH	pH	7.98		4259213	7.67	N/A	7.79	N/A	4259230
Total Suspended Solids	mg/L	83		4259974	470	10	2300	20	4259974
Dissolved Sulphate (SO4)	mg/L	7.3		4259231	28	1.0	160	1.0	4259231
Total Cyanide (CN)	mg/L	<0.0050		4258817	<0.0050	0.0050	<0.0050	0.0050	4258817
Alkalinity (Total as CaCO3)	mg/L	180		4259207	680	1.0	520	1.0	4259222

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Maxxam ID		BGW182			BGW183			BGW184		
Sampling Date		2015/10/29 05:15			2015/10/29 04:45			2015/10/29 04:15		
COC Number		532027-01-01			532027-01-01			532027-01-01		
	UNITS	**MW104**	**RDL**	**QC Batch**	**MW105**	**RDL**	**QC Batch**	**MW106**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	710	1.0	4256875	2000	1.0	4256875	1000	1.0	4256875
Inorganics										
Acidity as CaC03	mg/L	50	10	4258801	89	10	4258801	187	10	4258801
Total Ammonia-N	mg/L	<0.050	0.050	4262092	2.7	0.050	4262092	0.93	0.050	4263284
Conductivity	umho/cm	1100	1.0	4259226	3100	1.0	4259226	1600	1.0	4259211
pH	pH	7.90	N/A	4259230	7.49	N/A	4259230	7.60	N/A	4259213
Total Suspended Solids	mg/L	850	10	4260264	96000	500	4259974	83	10	4260264
Dissolved Sulphate (SO4)	mg/L	56	1.0	4259231	1600	5.0	4259231	280	1.0	4259231
Total Cyanide (CN)	mg/L	<0.0050	0.0050	4258817	<0.0050	0.0050	4258817	<0.0050	0.0050	4259357
Alkalinity (Total as CaCO3)	mg/L	600	1.0	4259222	430	1.0	4259222	680	1.0	4259207

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B5M4720
Report Date: 2015/11/12

exp Services Inc
Client Project #: THB-00014151-AE
Site Location: GOLDSTONE - HISTORICAL TAILING
Sampler Initials: MS

RESULTS OF ANALYSES OF WATER

Maxxam ID		BGW185	BGW185		BGW186	BGW186		
Sampling Date		2015/10/29 02:45	2015/10/29 02:45		2015/10/26 01:20	2015/10/26 01:20		
COC Number		532027-01-01	532027-01-01		532027-01-01	532027-01-01		
	UNITS	**MW107**	**MW107 Lab-Dup**	**QC Batch**	**MW6**	**MW6 Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters								
Hardness (CaCO3)	mg/L	770		4256875	190		1.0	4256875
Inorganics								
Acidity as CaC03	mg/L	51		4258801	31	32	10	4258801
Total Ammonia-N	mg/L	0.49		4262092	<0.050		0.050	4263284
Conductivity	umho/cm	1200		4259226	330		1.0	4259226
pH	pH	7.82		4259230	7.56		N/A	4259230
Total Suspended Solids	mg/L	570		4260264	80		10	4259974
Dissolved Sulphate (SO4)	mg/L	29	29	4259231	11		1.0	4259231
Total Cyanide (CN)	mg/L	<0.0050		4258817	<0.0050		0.0050	4258817
Alkalinity (Total as CaCO3)	mg/L	680		4259222	170		1.0	4259222

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

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		BGW179	BGW179	BGW180	BGW181		BGW182		
Sampling Date		2015/10/28 12:20	2015/10/28 12:20	2015/10/29 02:45	2015/10/29 08:30		2015/10/29 05:15		
COC Number		532027-01-01	532027-01-01	532027-01-01	532027-01-01		532027-01-01		
	UNITS	**MW101**	**MW101 Lab-Dup**	**MW102**	**MW103**	**QC Batch**	**MW104**	**RDL**	**QC Batch**
Metals									
Mercury (Hg)	mg/L	<0.00010		<0.00010	<0.00010	4263321	<0.00010	0.00010	4263315
Dissolved Mercury (Hg)	ug/L	<0.10	<0.10	<0.10	<0.10	4261371	<0.10	0.10	4261371

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

Maxxam ID		BGW183	BGW184	BGW185		BGW186		
Sampling Date		2015/10/29 04:45	2015/10/29 04:15	2015/10/29 02:45		2015/10/26 01:20		
COC Number		532027-01-01	532027-01-01	532027-01-01		532027-01-01		
	UNITS	**MW105**	**MW106**	**MW107**	**QC Batch**	**MW6**	**RDL**	**QC Batch**
Metals								
Mercury (Hg)	mg/L	<0.00010	<0.00010	<0.00010	4263321	<0.00010	0.00010	4263315
Dissolved Mercury (Hg)	ug/L	<0.10	<0.10	<0.10	4261371	<0.10	0.10	4261371

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B5M4720
Report Date: 2015/11/12

exp Services Inc
Client Project #: THB-00014151-AE
Site Location: GOLDSTONE - HISTORICAL TAILING
Sampler Initials: MS

TEST SUMMARY

Maxxam ID: BGW179
Sample ID: MW101
Matrix: Water

Collected: 2015/10/28
Shipped:
Received: 2015/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity as CaC03 in liquid		4258801	2015/11/04	2015/11/09	Grace Sison
Alkalinity	AT	4259207	N/A	2015/11/06	Surinder Rai
Conductivity	AT	4259211	N/A	2015/11/06	Surinder Rai
Total Cyanide	TECH/CN	4258817	2015/11/04	2015/11/05	Christine Pham
Hardness (calculated as CaCO3)		4256875	N/A	2015/11/09	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	4261371	2015/11/06	2015/11/06	Magdalena Carlos
Mercury in Water by CVAA	CV/AA	4263321	2015/11/07	2015/11/09	Magdalena Carlos
Total Ammonia-N	LACH/NH4	4262715	N/A	2015/11/07	Charles Opoku-Ware
pH	AT	4259213	N/A	2015/11/06	Surinder Rai
Sulphate by Automated Colourimetry	KONE	4259231	N/A	2015/11/05	Deonarine Ramnarine
Total Suspended Solids	BAL	4259974	N/A	2015/11/07	Gurpreet Kaur

Maxxam ID: BGW179 Dup
Sample ID: MW101
Matrix: Water

Collected: 2015/10/28
Shipped:
Received: 2015/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Mercury in Water by CVAA	CV/AA	4261371	2015/11/06	2015/11/06	Magdalena Carlos
Total Ammonia-N	LACH/NH4	4262715	N/A	2015/11/07	Charles Opoku-Ware

Maxxam ID: BGW180
Sample ID: MW102
Matrix: Water

Collected: 2015/10/29
Shipped:
Received: 2015/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity as CaC03 in liquid		4258801	2015/11/04	2015/11/09	Grace Sison
Alkalinity	AT	4259222	N/A	2015/11/05	Surinder Rai
Conductivity	AT	4259226	N/A	2015/11/05	Surinder Rai
Total Cyanide	TECH/CN	4258817	2015/11/04	2015/11/05	Christine Pham
Hardness (calculated as CaCO3)		4256875	N/A	2015/11/09	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	4261371	2015/11/06	2015/11/06	Magdalena Carlos
Mercury in Water by CVAA	CV/AA	4263321	2015/11/07	2015/11/09	Magdalena Carlos
Total Ammonia-N	LACH/NH4	4262092	N/A	2015/11/07	Charles Opoku-Ware
pH	AT	4259230	N/A	2015/11/05	Surinder Rai
Sulphate by Automated Colourimetry	KONE	4259231	N/A	2015/11/05	Deonarine Ramnarine
Total Suspended Solids	BAL	4259974	N/A	2015/11/07	Gurpreet Kaur

Maxxam ID: BGW181
Sample ID: MW103
Matrix: Water

Collected: 2015/10/29
Shipped:
Received: 2015/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity as CaC03 in liquid		4258801	2015/11/04	2015/11/09	Grace Sison
Alkalinity	AT	4259222	N/A	2015/11/05	Surinder Rai

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Maxxam Job #: B5M4720
Report Date: 2015/11/12

exp Services Inc
Client Project #: THB-00014151-AE
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Sampler Initials: MS

TEST SUMMARY

Maxxam ID: BGW181
Sample ID: MW103
Matrix: Water

Collected: 2015/10/29
Shipped:
Received: 2015/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	4259226	N/A	2015/11/05	Surinder Rai
Total Cyanide	TECH/CN	4258817	2015/11/04	2015/11/05	Christine Pham
Hardness (calculated as CaCO3)		4256875	N/A	2015/11/09	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	4261371	2015/11/06	2015/11/06	Magdalena Carlos
Mercury in Water by CVAA	CV/AA	4263321	2015/11/07	2015/11/09	Magdalena Carlos
Total Ammonia-N	LACH/NH4	4262092	N/A	2015/11/07	Charles Opoku-Ware
pH	AT	4259230	N/A	2015/11/05	Surinder Rai
Sulphate by Automated Colourimetry	KONE	4259231	N/A	2015/11/05	Deonarine Ramnarine
Total Suspended Solids	BAL	4259974	N/A	2015/11/07	Gurpreet Kaur

Maxxam ID: BGW182
Sample ID: MW104
Matrix: Water

Collected: 2015/10/29
Shipped:
Received: 2015/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity as CaC03 in liquid		4258801	2015/11/04	2015/11/09	Grace Sison
Alkalinity	AT	4259222	N/A	2015/11/05	Surinder Rai
Conductivity	AT	4259226	N/A	2015/11/05	Surinder Rai
Total Cyanide	TECH/CN	4258817	2015/11/04	2015/11/05	Christine Pham
Hardness (calculated as CaCO3)		4256875	N/A	2015/11/09	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	4261371	2015/11/06	2015/11/06	Magdalena Carlos
Mercury in Water by CVAA	CV/AA	4263315	2015/11/07	2015/11/09	Magdalena Carlos
Total Ammonia-N	LACH/NH4	4262092	N/A	2015/11/07	Charles Opoku-Ware
pH	AT	4259230	N/A	2015/11/05	Surinder Rai
Sulphate by Automated Colourimetry	KONE	4259231	N/A	2015/11/05	Deonarine Ramnarine
Total Suspended Solids	BAL	4260264	N/A	2015/11/06	Alpa Patel

Maxxam ID: BGW183
Sample ID: MW105
Matrix: Water

Collected: 2015/10/29
Shipped:
Received: 2015/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity as CaC03 in liquid		4258801	2015/11/04	2015/11/09	Grace Sison
Alkalinity	AT	4259222	N/A	2015/11/05	Surinder Rai
Conductivity	AT	4259226	N/A	2015/11/05	Surinder Rai
Total Cyanide	TECH/CN	4258817	2015/11/04	2015/11/05	Christine Pham
Hardness (calculated as CaCO3)		4256875	N/A	2015/11/09	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	4261371	2015/11/06	2015/11/06	Magdalena Carlos
Mercury in Water by CVAA	CV/AA	4263321	2015/11/07	2015/11/09	Magdalena Carlos
Total Ammonia-N	LACH/NH4	4262092	N/A	2015/11/07	Charles Opoku-Ware
pH	AT	4259230	N/A	2015/11/05	Surinder Rai
Sulphate by Automated Colourimetry	KONE	4259231	N/A	2015/11/05	Deonarine Ramnarine
Total Suspended Solids	BAL	4259974	N/A	2015/11/07	Gurpreet Kaur

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Maxxam Job #: B5M4720
Report Date: 2015/11/12

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Client Project #: THB-00014151-AE
Site Location: GOLDSTONE - HISTORICAL TAILING
Sampler Initials: MS

TEST SUMMARY

Maxxam ID: BGW184
Sample ID: MW106
Matrix: Water

Collected: 2015/10/29
Shipped:
Received: 2015/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity as CaC03 in liquid		4258801	2015/11/04	2015/11/09	Grace Sison
Alkalinity	AT	4259207	N/A	2015/11/06	Surinder Rai
Conductivity	AT	4259211	N/A	2015/11/06	Surinder Rai
Total Cyanide	TECH/CN	4259357	2015/11/04	2015/11/06	Christine Pham
Hardness (calculated as CaCO3)		4256875	N/A	2015/11/09	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	4261371	2015/11/06	2015/11/06	Magdalena Carlos
Mercury in Water by CVAA	CV/AA	4263321	2015/11/07	2015/11/09	Magdalena Carlos
Total Ammonia-N	LACH/NH4	4263284	N/A	2015/11/07	Charles Opoku-Ware
pH	AT	4259213	N/A	2015/11/06	Surinder Rai
Sulphate by Automated Colourimetry	KONE	4259231	N/A	2015/11/05	Deonarine Ramnarine
Total Suspended Solids	BAL	4260264	N/A	2015/11/06	Alpa Patel

Maxxam ID: BGW185
Sample ID: MW107
Matrix: Water

Collected: 2015/10/29
Shipped:
Received: 2015/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity as CaC03 in liquid		4258801	2015/11/04	2015/11/09	Grace Sison
Alkalinity	AT	4259222	N/A	2015/11/05	Surinder Rai
Conductivity	AT	4259226	N/A	2015/11/05	Surinder Rai
Total Cyanide	TECH/CN	4258817	2015/11/04	2015/11/05	Christine Pham
Hardness (calculated as CaCO3)		4256875	N/A	2015/11/09	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	4261371	2015/11/06	2015/11/06	Magdalena Carlos
Mercury in Water by CVAA	CV/AA	4263321	2015/11/07	2015/11/09	Magdalena Carlos
Total Ammonia-N	LACH/NH4	4262092	N/A	2015/11/07	Charles Opoku-Ware
pH	AT	4259230	N/A	2015/11/05	Surinder Rai
Sulphate by Automated Colourimetry	KONE	4259231	N/A	2015/11/05	Deonarine Ramnarine
Total Suspended Solids	BAL	4260264	N/A	2015/11/06	Alpa Patel

Maxxam ID: BGW185 Dup
Sample ID: MW107
Matrix: Water

Collected: 2015/10/29
Shipped:
Received: 2015/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sulphate by Automated Colourimetry	KONE	4259231	N/A	2015/11/05	Deonarine Ramnarine

Maxxam ID: BGW186
Sample ID: MW6
Matrix: Water

Collected: 2015/10/26
Shipped:
Received: 2015/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity as CaC03 in liquid		4258801	2015/11/04	2015/11/09	Grace Sison
Alkalinity	AT	4259222	N/A	2015/11/05	Surinder Rai
Conductivity	AT	4259226	N/A	2015/11/05	Surinder Rai

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Site Location: GOLDSTONE - HISTORICAL TAILING
Sampler Initials: MS

TEST SUMMARY

Maxxam ID: BGW186
Sample ID: MW6
Matrix: Water

Collected: 2015/10/26
Shipped:
Received: 2015/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Cyanide	TECH/CN	4258817	2015/11/04	2015/11/05	Christine Pham
Hardness (calculated as CaCO3)		4256875	N/A	2015/11/09	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	4261371	2015/11/06	2015/11/06	Magdalena Carlos
Mercury in Water by CVAA	CV/AA	4263315	2015/11/07	2015/11/09	Magdalena Carlos
Total Ammonia-N	LACH/NH4	4263284	N/A	2015/11/07	Charles Opoku-Ware
pH	AT	4259230	N/A	2015/11/05	Surinder Rai
Sulphate by Automated Colourimetry	KONE	4259231	N/A	2015/11/05	Deonarine Ramnarine
Total Suspended Solids	BAL	4259974	N/A	2015/11/07	Gurpreet Kaur

Maxxam ID: BGW186 Dup
Sample ID: MW6
Matrix: Water

Collected: 2015/10/26
Shipped:
Received: 2015/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity as CaC03 in liquid		4258801	2015/11/04	2015/11/09	Grace Sison

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GENERAL COMMENTS

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

Package 1	2.7°C
Package 2	2.0°C

Acidity as CaCO3: Samples are with headspace as received; analysis was performed with client consent.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: THB-00014151-AE
Site Location: GOLDSTONE - HISTORICAL TAILING
Sampler Initials: MS

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4258801	Acidity as CaC03	2015/11/09					<10	mg/L	NC	25		
4258817	Total Cyanide (CN)	2015/11/05	96	80 - 120	98	80 - 120	<0.0050	mg/L	NC	20		
4259207	Alkalinity (Total as CaCO3)	2015/11/06			94	85 - 115	<1.0	mg/L	0.90	25		
4259211	Conductivity	2015/11/06			102	85 - 115	<1.0	umho/cm	0.15	25		
4259213	pH	2015/11/06			101	98 - 103			0.079	N/A		
4259222	Alkalinity (Total as CaCO3)	2015/11/05			94	85 - 115	<1.0	mg/L	0.69	25		
4259226	Conductivity	2015/11/05			102	85 - 115	<1.0	umho/cm	0.59	25		
4259230	pH	2015/11/05			101	98 - 103			0.076	N/A		
4259231	Dissolved Sulphate (SO4)	2015/11/05	NC	75 - 125	102	80 - 120	<1.0	mg/L	0.42	20		
4259357	Total Cyanide (CN)	2015/11/06	96	80 - 120	102	80 - 120	<0.0050	mg/L	NC	20		
4259974	Total Suspended Solids	2015/11/07					<10	mg/L	NC	25	97	85 - 115
4260264	Total Suspended Solids	2015/11/06					<10	mg/L	2.6	25	97	85 - 115
4261371	Dissolved Mercury (Hg)	2015/11/06	108	75 - 125	96	80 - 120	<0.10	ug/L	NC	20		
4262092	Total Ammonia-N	2015/11/07	97	80 - 120	101	85 - 115	<0.050	mg/L	NC	20		
4262715	Total Ammonia-N	2015/11/07	101	80 - 120	104	85 - 115	<0.050	mg/L	NC	20		
4263284	Total Ammonia-N	2015/11/07	100	80 - 120	100	85 - 115	<0.050	mg/L	NC	20		
4263315	Mercury (Hg)	2015/11/09	104	75 - 125	105	80 - 120	<0.00010	mg/L	NC	20		
4263321	Mercury (Hg)	2015/11/09	103	75 - 125	103	80 - 120	<0.00010	mg/L	NC	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 #: B5M4720
Report Date: 2015/11/12

exp Services Inc
Client Project #: THB-00014151-AE
Site Location: GOLDSTONE - HISTORICAL TAILING
Sampler Initials: MS

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

Grace Sison, B.Sc., C.Chem, Senior Project Manager - Petroleum Division

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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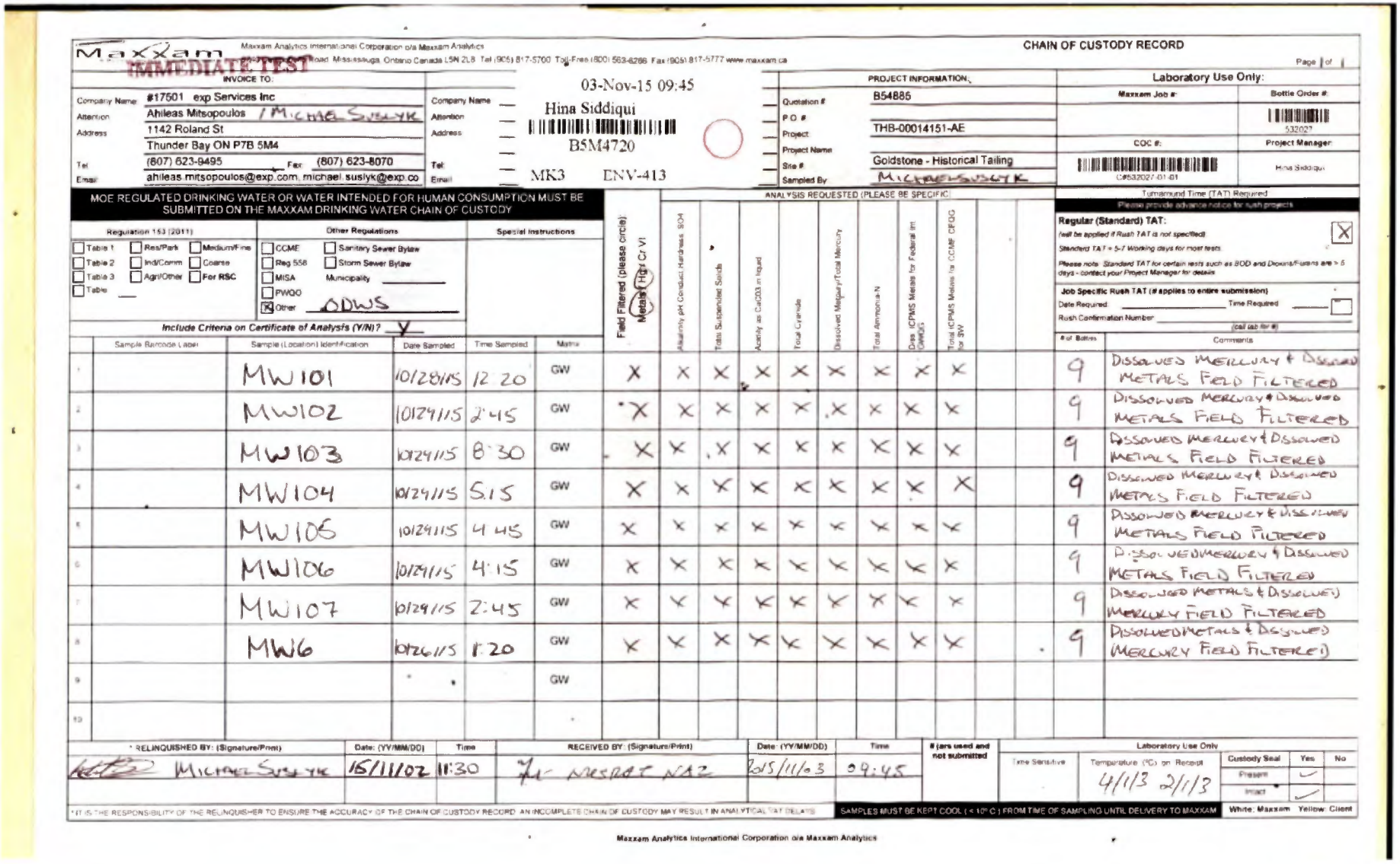

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CHAIN OF CUSTODY RECORD

IMMEDIATE TEST

Page 1 of 1

INVOICE TO:

Company Name: #17501 exp Services Inc
Attention: Ahileas Mitsopoulos / MICHAEL SUSLYK
Address: 1142 Roland St, Thunder Bay ON P7B 5M4
Tel: (807) 623-9495 Fax: (807) 623-8070
Email: ahileas.mitsopoulos@exp.com, michael.suslyk@exp.co

Company Name:
Attention:
Address:
Tel:
Email:

03-Nov-15 09:45
Hina Siddiqui
B5M4720
MK3 ENV-413

PROJECT INFORMATION:

Quotation #: B54885
P.O. #:
Project: THB-00014151-AE
Project Name:
Site #: Goldstone - Historical Tailing
Sampled By: MICHAEL SUSLYK

Laboratory Use Only:

Maxxam Job #:
Bottle Order #: 532027
COC #: C#532027-01-01
Project Manager: Hina Siddiqui

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1, Table 2, Table 3, Table ___; Res/Park, Ind/Comm, Agri/Other; Medium/Fine, Coarse, For RSC
Other Regulations: CCME, Reg 558, MISA, PWQO, Other ODWS; Sanitary Sewer Bylaw, Storm Sewer Bylaw, Municipality
Special Instructions
Include Criteria on Certificate of Analysis (Y/N)? Y

Turnaround Time (TAT) Required
Please provide advance notice for rush projects
Regular (Standard) TAT: X
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.
Job Specific Rush TAT (if applies to entire submission)
Date Required: Time Required:
Rush Confirmation Number: (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC):

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Alkalinity pH Conduct. Hardness SOA	Total Suspended Solids	Acidity as CaCO3 in liquid	Total Cyanide	Dissolved Mercury/Total Mercury	Total Ammonia-N	Diss. ICPMS Metals for Federal Int. Guidelines	Total ICPMS Metals for CCME CEQG for SW			# of Bottles	Comments
1		MW101	10/28/15	12:20	GW	X	X	X	X	X	X	X	X	X			9	DISSOLVED MERCURY & DISSOLVED METALS FIELD FILTERED
2		MW102	10/29/15	2:45	GW	X	X	X	X	X	X	X	X	X			9	DISSOLVED MERCURY & DISSOLVED METALS FIELD FILTERED
3		MW103	10/29/15	8:30	GW	X	X	X	X	X	X	X	X	X			9	DISSOLVED MERCURY & DISSOLVED METALS FIELD FILTERED
4		MW104	10/29/15	5:15	GW	X	X	X	X	X	X	X	X	X			9	DISSOLVED MERCURY & DISSOLVED METALS FIELD FILTERED
5		MW105	10/29/15	4:45	GW	X	X	X	X	X	X	X	X	X			9	DISSOLVED MERCURY & DISSOLVED METALS FIELD FILTERED
6		MW106	10/29/15	4:15	GW	X	X	X	X	X	X	X	X	X			9	DISSOLVED MERCURY & DISSOLVED METALS FIELD FILTERED
7		MW107	10/29/15	2:45	GW	X	X	X	X	X	X	X	X	X			9	DISSOLVED METALS & DISSOLVED MERCURY FIELD FILTERED
8		MW6	10/26/15	1:20	GW	X	X	X	X	X	X	X	X	X			9	DISSOLVED METALS & DISSOLVED MERCURY FIELD FILTERED
9					GW													
10																		

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
MICHAEL SUSLYK	15/11/02	11:30	[illegible] NAZ	2015/11/03	09:45	

Laboratory Use Only: Time Sensitive; Temperature (°C) on Receipt: 4/1/3 2/1/3; Custody Seal: Present ✓, Intact ✓

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

Success Through Science®

Your Project #: MB5M4720
Your C.O.C. #: 8413350

Attention:SUB CONTRACTOR

MAXXAM ANALYTICS
CAMPOBELLO
6740 CAMPOBELLO ROAD
MISSISSAUGA, ON
CANADA L5N 2L8

Report Date: 2015/11/10
Report #: R2075865
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B599153
Received: 2015/11/05, 10:40

Sample Matrix: Water
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Hardness Total (calculated as CaCO3)	8	N/A	2015/11/10	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO3)	7	N/A	2015/11/09	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO3)	1	N/A	2015/11/10	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Total) by CVAF	8	2015/11/10	2015/11/10	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	7	N/A	2015/11/09	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2015/11/10	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (dissolved)	8	N/A	2015/11/07	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	8	2015/11/06	2015/11/10	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (total)	8	2015/11/06	2015/11/09	BBY7SOP-00002	EPA 6020A R1 m
Filter and HNO3 Preserve for Metals	5	N/A	2015/11/07	BBY7 WI-00004	BCMOE Reqs 08/14
Filter and HNO3 Preserve for Metals	3	N/A	2015/11/10	BBY7 WI-00004	BCMOE Reqs 08/14

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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Amandeep Nagra, Account Specialist
Email: ANagra@maxxam.ca
Phone# (604)639-2602

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This report has been generated and distributed using a secure automated process.
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 #: B599153
Report Date: 2015/11/10

MAXXAM ANALYTICS
Client Project #: MB5M4720

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		NO8369	NO8370	NO8371	NO8372	NO8373	
Sampling Date		2015/10/28 12:20	2015/10/29 02:45	2015/10/29 08:30	2015/10/29 05:15	2015/10/29 04:45	
COC Number		8413350	8413350	8413350	8413350	8413350	
	UNITS	MW101(BGW179)	MW102(BGW180)	MW103(BGW181)	MW104(BGW182)	MW105(BGW183)	QC Batch
Calculated Parameters							
Filter and HNO3 Preservation	N/A	FIELD	FIELD	FIELD	FIELD	FIELD	ONSITE

Maxxam ID		NO8374	NO8375	NO8376	
Sampling Date		2015/10/29 04:15	2015/10/29 02:45	2015/10/26 01:20	
COC Number		8413350	8413350	8413350	
	UNITS	MW106(BGW184)	MW107(BGW185)	MW6(BGW186)	QC Batch
Calculated Parameters					
Filter and HNO3 Preservation	N/A	FIELD	FIELD	FIELD	ONSITE

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Maxxam Job #: B599153
Report Date: 2015/11/10

MAXXAM ANALYTICS
Client Project #: MB5M4720

CCME TOTAL METALS IN WATER (WATER)

Maxxam ID		NO8369	NO8370	NO8371	NO8372		
Sampling Date		2015/10/28 12:20	2015/10/29 02:45	2015/10/29 08:30	2015/10/29 05:15		
COC Number		8413350	8413350	8413350	8413350		
	UNITS	MW101(BGW179)	MW102(BGW180)	MW103(BGW181)	MW104(BGW182)	RDL	QC Batch
Calculated Parameters							
Total Hardness (CaCO3)	mg/L	243	728	985	979	0.50	8104216
Elements							
Total Mercury (Hg)	ug/L	0.011	<0.010	<0.010	0.020	0.010	8108786
Total Metals by ICPMS							
Total Aluminum (Al)	ug/L	1590	1560	33800	2860	3.0	8105014
Total Antimony (Sb)	ug/L	<0.50	<0.50	1.33	<0.50	0.50	8105014
Total Arsenic (As)	ug/L	18.1	313	2410	4.20	0.10	8105014
Total Barium (Ba)	ug/L	27.6	39.7	44.7	30.0	1.0	8105014
Total Beryllium (Be)	ug/L	<0.10	<0.10	0.34	<0.10	0.10	8105014
Total Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	8105014
Total Boron (B)	ug/L	<50	63	<50	<50	50	8105014
Total Cadmium (Cd)	ug/L	0.052	0.029	1.14	0.065	0.010	8105014
Total Chromium (Cr)	ug/L	8.3	6.4	145	8.0	1.0	8105014
Total Cobalt (Co)	ug/L	6.27	1.71	37.5	3.09	0.50	8105014
Total Copper (Cu)	ug/L	24.2	3.31	88.5	11.0	0.50	8105014
Total Iron (Fe)	ug/L	4230	4770	81900	5300	10	8105014
Total Lead (Pb)	ug/L	4.72	1.24	31.8	3.60	0.20	8105014
Total Lithium (Li)	ug/L	5.3	5.6	65.4	<5.0	5.0	8105014
Total Manganese (Mn)	ug/L	229	571	3220	148	1.0	8105014
Total Molybdenum (Mo)	ug/L	2.8	<1.0	8.1	8.0	1.0	8105014
Total Nickel (Ni)	ug/L	16.6	2.9	44.4	5.6	1.0	8105014
Total Selenium (Se)	ug/L	0.12	<0.10	0.84	14.7	0.10	8105014
Total Silicon (Si)	ug/L	7250	17300	49500	9440	100	8105014
Total Silver (Ag)	ug/L	0.054	<0.020	0.189	0.063	0.020	8105014
Total Strontium (Sr)	ug/L	107	168	332	212	1.0	8105014
Total Thallium (Tl)	ug/L	0.055	<0.050	0.089	0.078	0.050	8105014
Total Tin (Sn)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	8105014
Total Titanium (Ti)	ug/L	114	22.4	665	234	5.0	8105014
Total Uranium (U)	ug/L	1.15	0.29	5.98	1.83	0.10	8105014
Total Vanadium (V)	ug/L	5.2	7.6	157	8.4	5.0	8105014
Total Zinc (Zn)	ug/L	14.9	6.5	159	10.4	5.0	8105014
Total Zirconium (Zr)	ug/L	1.75	<0.50	1.72	4.79	0.50	8105014
Total Calcium (Ca)	mg/L	67.2	139	181	215	0.050	8104219
Total Magnesium (Mg)	mg/L	18.2	92.3	129	107	0.050	8104219
Total Potassium (K)	mg/L	4.04	3.53	3.85	0.933	0.050	8104219
Total Sodium (Na)	mg/L	5.92	3.78	79.3	10.7	0.050	8104219
RDL = Reportable Detection Limit							

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Maxxam Job #: B599153
Report Date: 2015/11/10

MAXXAM ANALYTICS
Client Project #: MB5M4720

CCME TOTAL METALS IN WATER (WATER)

Maxxam ID		NO8369	NO8370	NO8371	NO8372		
Sampling Date		2015/10/28 12:20	2015/10/29 02:45	2015/10/29 08:30	2015/10/29 05:15		
COC Number		8413350	8413350	8413350	8413350		
	UNITS	MW101(BGW179)	MW102(BGW180)	MW103(BGW181)	MW104(BGW182)	RDL	QC Batch
Total Sulphur (S)	mg/L	4.9	10.6	64.2	22.5	3.0	8104219
RDL = Reportable Detection Limit							

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CCME TOTAL METALS IN WATER (WATER)

Maxxam ID		NO8373	NO8374	NO8375	NO8376		
Sampling Date		2015/10/29 04:45	2015/10/29 04:15	2015/10/29 02:45	2015/10/26 01:20		
COC Number		8413350	8413350	8413350	8413350		
	UNITS	MW105(BGW183)	MW106(BGW184)	MW107(BGW185)	MW6(BGW186)	RDL	QC Batch
Calculated Parameters							
Total Hardness (CaCO3)	mg/L	5970	1010	770	181	0.50	8104216
Elements							
Total Mercury (Hg)	ug/L	<0.010	<0.010	<0.010	<0.010	0.010	8108786
Total Metals by ICPMS							
Total Aluminum (Al)	ug/L	215000	292	1650	1420	3.0	8105014
Total Antimony (Sb)	ug/L	2.02	<0.50	<0.50	<0.50	0.50	8105014
Total Arsenic (As)	ug/L	22300	29.2	337	1.76	0.10	8105014
Total Barium (Ba)	ug/L	538	126	41.0	24.6	1.0	8105014
Total Beryllium (Be)	ug/L	6.25	<0.10	<0.10	<0.10	0.10	8105014
Total Bismuth (Bi)	ug/L	5.6	<1.0	<1.0	<1.0	1.0	8105014
Total Boron (B)	ug/L	148	<50	65	<50	50	8105014
Total Cadmium (Cd)	ug/L	14.8	0.018	0.032	0.023	0.010	8105014
Total Chromium (Cr)	ug/L	1370	2.1	7.3	3.2	1.0	8105014
Total Cobalt (Co)	ug/L	273	1.05	1.92	1.27	0.50	8105014
Total Copper (Cu)	ug/L	573	1.25	3.91	18.4	0.50	8105014
Total Iron (Fe)	ug/L	760000	22600	4690	2460	10	8105014
Total Lead (Pb)	ug/L	309	0.27	1.56	0.88	0.20	8105014
Total Lithium (Li)	ug/L	399	<5.0	6.2	<5.0	5.0	8105014
Total Manganese (Mn)	ug/L	36100	1240	634	54.7	1.0	8105014
Total Molybdenum (Mo)	ug/L	9.0	<1.0	<1.0	<1.0	1.0	8105014
Total Nickel (Ni)	ug/L	406	1.5	3.4	4.1	1.0	8105014
Total Selenium (Se)	ug/L	4.55	0.15	<0.10	0.12	0.10	8105014
Total Silicon (Si)	ug/L	134000	9760	19500	5640	100	8105014
Total Silver (Ag)	ug/L	2.71	0.067	0.044	0.504	0.020	8105014
Total Strontium (Sr)	ug/L	1880	236	179	34.3	1.0	8105014
Total Thallium (Tl)	ug/L	0.715	<0.050	<0.050	<0.050	0.050	8105014
Total Tin (Sn)	ug/L	12.3	<5.0	<5.0	<5.0	5.0	8105014
Total Titanium (Ti)	ug/L	1830	11.7	43.1	39.4	5.0	8105014
Total Uranium (U)	ug/L	20.7	1.50	0.29	0.80	0.10	8105014
Total Vanadium (V)	ug/L	1230	<5.0	8.9	<5.0	5.0	8105014
Total Zinc (Zn)	ug/L	1880	<5.0	8.7	6.2	5.0	8105014
Total Zirconium (Zr)	ug/L	20.6	1.32	<0.50	<0.50	0.50	8105014
Total Calcium (Ca)	mg/L	1560	237	134	68.2	0.050	8104219
Total Magnesium (Mg)	mg/L	501	102	106	2.67	0.050	8104219
Total Potassium (K)	mg/L	11.7	3.07	4.01	0.574	0.050	8104219
Total Sodium (Na)	mg/L	121	13.2	4.27	5.11	0.050	8104219

RDL = Reportable Detection Limit

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Maxxam Job #: B599153
Report Date: 2015/11/10

MAXXAM ANALYTICS
Client Project #: MB5M4720

CCME TOTAL METALS IN WATER (WATER)

Maxxam ID		NO8373	NO8374	NO8375	NO8376		
Sampling Date		2015/10/29 04:45	2015/10/29 04:15	2015/10/29 02:45	2015/10/26 01:20		
COC Number		8413350	8413350	8413350	8413350		
	UNITS	MW105(BGW183)	MW106(BGW184)	MW107(BGW185)	MW6(BGW186)	RDL	QC Batch
Total Sulphur (S)	mg/L	669	99.8	10.2	<3.0	3.0	8104219
RDL = Reportable Detection Limit							

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Maxxam Job #: B599153
Report Date: 2015/11/10

MAXXAM ANALYTICS
Client Project #: MB5M4720

CSR DISSOLVED METALS IN WATER (WATER)

Maxxam ID		NO8369	NO8370	NO8371	NO8372		
Sampling Date		2015/10/28 12:20	2015/10/29 02:45	2015/10/29 08:30	2015/10/29 05:15		
COC Number		8413350	8413350	8413350	8413350		
	UNITS	MW101(BGW179)	MW102(BGW180)	MW103(BGW181)	MW104(BGW182)	RDL	QC Batch
Misc. Inorganics							
Dissolved Hardness (CaCO3)	mg/L	210	740	539	645	0.50	8104217
Dissolved Metals by ICPMS							
Dissolved Aluminum (Al)	ug/L	15.4	16.0	11.6	8.3	3.0	8104506
Dissolved Antimony (Sb)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	8104506
Dissolved Arsenic (As)	ug/L	2.33	254	350	0.22	0.10	8104506
Dissolved Barium (Ba)	ug/L	15.6	38.0	14.5	11.4	1.0	8104506
Dissolved Beryllium (Be)	ug/L	<0.10	<0.10	<0.10	<0.10	0.10	8104506
Dissolved Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	8104506
Dissolved Boron (B)	ug/L	<50	63	<50	<50	50	8104506
Dissolved Cadmium (Cd)	ug/L	<0.010	<0.010	0.016	<0.010	0.010	8104506
Dissolved Chromium (Cr)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	8104506
Dissolved Cobalt (Co)	ug/L	<0.50	0.95	0.93	<0.50	0.50	8104506
Dissolved Copper (Cu)	ug/L	1.70	0.61	0.84	1.29	0.20	8104506
Dissolved Iron (Fe)	ug/L	10.2	1200	3270	9.4	5.0	8104506
Dissolved Lead (Pb)	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	8104506
Dissolved Lithium (Li)	ug/L	<5.0	<5.0	24.2	<5.0	5.0	8104506
Dissolved Manganese (Mn)	ug/L	3.1	451	221	<1.0	1.0	8104506
Dissolved Mercury (Hg)	ug/L	<0.050	<0.050	<0.050	<0.050	0.050	8104506
Dissolved Molybdenum (Mo)	ug/L	2.9	<1.0	5.7	6.9	1.0	8104506
Dissolved Nickel (Ni)	ug/L	<1.0	2.0	1.6	<1.0	1.0	8104506
Dissolved Selenium (Se)	ug/L	<0.10	<0.10	0.17	12.6	0.10	8104506
Dissolved Silicon (Si)	ug/L	5200	15200	10700	3230	100	8104506
Dissolved Silver (Ag)	ug/L	<0.020	<0.020	<0.020	<0.020	0.020	8104506
Dissolved Strontium (Sr)	ug/L	89.1	168	183	146	1.0	8104506
Dissolved Thallium (Tl)	ug/L	<0.050	<0.050	<0.050	<0.050	0.050	8104506
Dissolved Tin (Sn)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	8104506
Dissolved Titanium (Ti)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	8104506
Dissolved Uranium (U)	ug/L	0.99	0.26	4.51	1.46	0.10	8104506
Dissolved Vanadium (V)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	8104506
Dissolved Zinc (Zn)	ug/L	6.9	8.1	8.5	<5.0	5.0	8104506
Dissolved Zirconium (Zr)	ug/L	<0.50	<0.50	<0.50	0.99	0.50	8104506
Dissolved Calcium (Ca)	mg/L	61.4	137	74.8	126	0.050	8104218
Dissolved Magnesium (Mg)	mg/L	13.7	97.0	85.6	80.4	0.050	8104218
Dissolved Potassium (K)	mg/L	3.43	3.39	2.81	0.374	0.050	8104218
Dissolved Sodium (Na)	mg/L	5.76	3.73	70.4	8.72	0.050	8104218
Dissolved Sulphur (S)	mg/L	<3.0	6.9	51.2	20.8	3.0	8104218

RDL = Reportable Detection Limit

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CSR DISSOLVED METALS IN WATER (WATER)

Maxxam ID		NO8373	NO8374		NO8375		
Sampling Date		2015/10/29 04:45	2015/10/29 04:15		2015/10/29 02:45		
COC Number		8413350	8413350		8413350		
	UNITS	MW105(BGW183)	MW106(BGW184)	QC Batch	MW107(BGW185)	RDL	QC Batch
Misc. Inorganics							
Dissolved Hardness (CaCO3)	mg/L	1830	983	8104217	674	0.50	8108384
Dissolved Metals by ICPMS							
Dissolved Aluminum (Al)	ug/L	15.3	38.9	8104506	9.8	3.0	8104506
Dissolved Antimony (Sb)	ug/L	0.84	<0.50	8104506	0.52	0.50	8104506
Dissolved Arsenic (As)	ug/L	38.7	26.6	8104506	260	0.10	8104506
Dissolved Barium (Ba)	ug/L	76.8	110	8104506	34.7	1.0	8104506
Dissolved Beryllium (Be)	ug/L	<0.10	<0.10	8104506	<0.10	0.10	8104506
Dissolved Bismuth (Bi)	ug/L	<1.0	<1.0	8104506	<1.0	1.0	8104506
Dissolved Boron (B)	ug/L	80	<50	8104506	61	50	8104506
Dissolved Cadmium (Cd)	ug/L	0.038	0.013	8104506	<0.010	0.010	8104506
Dissolved Chromium (Cr)	ug/L	<1.0	<1.0	8104506	<1.0	1.0	8104506
Dissolved Cobalt (Co)	ug/L	2.13	0.76	8104506	0.92	0.50	8104506
Dissolved Copper (Cu)	ug/L	0.27	0.57	8104506	0.28	0.20	8104506
Dissolved Iron (Fe)	ug/L	8080	19700	8104506	1480	5.0	8104506
Dissolved Lead (Pb)	ug/L	<0.20	<0.20	8104506	<0.20	0.20	8104506
Dissolved Lithium (Li)	ug/L	39.9	<5.0	8104506	<5.0	5.0	8104506
Dissolved Manganese (Mn)	ug/L	4180	1130	8104506	467	1.0	8104506
Dissolved Mercury (Hg)	ug/L	<0.050	<0.050	8104506	<0.050	0.050	8104506
Dissolved Molybdenum (Mo)	ug/L	1.9	<1.0	8104506	<1.0	1.0	8104506
Dissolved Nickel (Ni)	ug/L	6.7	1.1	8104506	1.7	1.0	8104506
Dissolved Selenium (Se)	ug/L	0.12	0.10	8104506	<0.10	0.10	8104506
Dissolved Silicon (Si)	ug/L	11700	9710	8104506	19200	100	8104506
Dissolved Silver (Ag)	ug/L	<0.020	<0.020	8104506	<0.020	0.020	8104506
Dissolved Strontium (Sr)	ug/L	729	206	8104506	171	1.0	8104506
Dissolved Thallium (Tl)	ug/L	<0.050	<0.050	8104506	<0.050	0.050	8104506
Dissolved Tin (Sn)	ug/L	<5.0	<5.0	8104506	<5.0	5.0	8104506
Dissolved Titanium (Ti)	ug/L	<5.0	<5.0	8104506	<5.0	5.0	8104506
Dissolved Uranium (U)	ug/L	4.32	1.22	8104506	0.26	0.10	8104506
Dissolved Vanadium (V)	ug/L	<5.0	<5.0	8104506	<5.0	5.0	8104506
Dissolved Zinc (Zn)	ug/L	12.6	7.6	8104506	<5.0	5.0	8104506
Dissolved Zirconium (Zr)	ug/L	<0.50	0.68	8104506	<0.50	0.50	8104506
Dissolved Calcium (Ca)	mg/L	511	238	8104218	125	0.050	8108385
Dissolved Magnesium (Mg)	mg/L	135	94.5	8104218	88.3	0.050	8108385
Dissolved Potassium (K)	mg/L	5.49	2.66	8104218	3.78	0.050	8108385
Dissolved Sodium (Na)	mg/L	106	11.9	8104218	5.12	0.050	8108385
Dissolved Sulphur (S)	mg/L	542	90.9	8104218	9.9	3.0	8108385
RDL = Reportable Detection Limit							

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CSR DISSOLVED METALS IN WATER (WATER)

Maxxam ID		NO8376		
Sampling Date		2015/10/26 01:20		
COC Number		8413350		
	UNITS	MW6(BGW186)	RDL	QC Batch
Misc. Inorganics				
Dissolved Hardness (CaCO3)	mg/L	192	0.50	8104217
Dissolved Metals by ICPMS				
Dissolved Aluminum (Al)	ug/L	10.7	3.0	8104506
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	8104506
Dissolved Arsenic (As)	ug/L	0.14	0.10	8104506
Dissolved Barium (Ba)	ug/L	15.0	1.0	8104506
Dissolved Beryllium (Be)	ug/L	<0.10	0.10	8104506
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	8104506
Dissolved Boron (B)	ug/L	<50	50	8104506
Dissolved Cadmium (Cd)	ug/L	0.010	0.010	8104506
Dissolved Chromium (Cr)	ug/L	<1.0	1.0	8104506
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	8104506
Dissolved Copper (Cu)	ug/L	4.06	0.20	8104506
Dissolved Iron (Fe)	ug/L	11.9	5.0	8104506
Dissolved Lead (Pb)	ug/L	<0.20	0.20	8104506
Dissolved Lithium (Li)	ug/L	<5.0	5.0	8104506
Dissolved Manganese (Mn)	ug/L	4.4	1.0	8104506
Dissolved Mercury (Hg)	ug/L	<0.050	0.050	8104506
Dissolved Molybdenum (Mo)	ug/L	<1.0	1.0	8104506
Dissolved Nickel (Ni)	ug/L	<1.0	1.0	8104506
Dissolved Selenium (Se)	ug/L	<0.10	0.10	8104506
Dissolved Silicon (Si)	ug/L	4010	100	8104506
Dissolved Silver (Ag)	ug/L	<0.020	0.020	8104506
Dissolved Strontium (Sr)	ug/L	29.6	1.0	8104506
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	8104506
Dissolved Tin (Sn)	ug/L	<5.0	5.0	8104506
Dissolved Titanium (Ti)	ug/L	<5.0	5.0	8104506
Dissolved Uranium (U)	ug/L	0.11	0.10	8104506
Dissolved Vanadium (V)	ug/L	<5.0	5.0	8104506
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	8104506
Dissolved Zirconium (Zr)	ug/L	<0.50	0.50	8104506
Dissolved Calcium (Ca)	mg/L	74.1	0.050	8104218
Dissolved Magnesium (Mg)	mg/L	1.79	0.050	8104218
Dissolved Potassium (K)	mg/L	0.551	0.050	8104218
Dissolved Sodium (Na)	mg/L	2.58	0.050	8104218
Dissolved Sulphur (S)	mg/L	<3.0	3.0	8104218
RDL = Reportable Detection Limit				

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Maxxam Job #: B599153
Report Date: 2015/11/10

MAXXAM ANALYTICS
Client Project #: MB5M4720

TEST SUMMARY

Maxxam ID: NO8369
Sample ID: MW101(BGW179)
Matrix: Water

Collected: 2015/10/28
Shipped:
Received: 2015/11/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness Total (calculated as CaCO3)	CALC	8104216	N/A	2015/11/10	Automated Statchk
Hardness (calculated as CaCO3)	CALC	8104217	N/A	2015/11/09	Automated Statchk
Mercury (Total) by CVAF	CV/AF	8108786	2015/11/10	2015/11/10	Edwin Lamigo
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8104218	N/A	2015/11/09	Automated Statchk
Elements by CRC ICPMS (dissolved)	ICP/CRCM	8104506	N/A	2015/11/07	Adnan Dzebic
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8104219	2015/11/10	2015/11/10	Automated Statchk
Elements by CRC ICPMS (total)	ICP/CRCM	8105014	2015/11/06	2015/11/09	Adnan Dzebic
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2015/11/06	Nahed Amer

Maxxam ID: NO8370
Sample ID: MW102(BGW180)
Matrix: Water

Collected: 2015/10/29
Shipped:
Received: 2015/11/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness Total (calculated as CaCO3)	CALC	8104216	N/A	2015/11/10	Automated Statchk
Hardness (calculated as CaCO3)	CALC	8104217	N/A	2015/11/09	Automated Statchk
Mercury (Total) by CVAF	CV/AF	8108786	2015/11/10	2015/11/10	Edwin Lamigo
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8104218	N/A	2015/11/09	Automated Statchk
Elements by CRC ICPMS (dissolved)	ICP/CRCM	8104506	N/A	2015/11/07	Adnan Dzebic
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8104219	2015/11/10	2015/11/10	Automated Statchk
Elements by CRC ICPMS (total)	ICP/CRCM	8105014	2015/11/06	2015/11/09	Adnan Dzebic
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2015/11/06	Nahed Amer

Maxxam ID: NO8371
Sample ID: MW103(BGW181)
Matrix: Water

Collected: 2015/10/29
Shipped:
Received: 2015/11/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness Total (calculated as CaCO3)	CALC	8104216	N/A	2015/11/10	Automated Statchk
Hardness (calculated as CaCO3)	CALC	8104217	N/A	2015/11/09	Automated Statchk
Mercury (Total) by CVAF	CV/AF	8108786	2015/11/10	2015/11/10	Edwin Lamigo
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8104218	N/A	2015/11/09	Automated Statchk
Elements by CRC ICPMS (dissolved)	ICP/CRCM	8104506	N/A	2015/11/07	Adnan Dzebic
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8104219	2015/11/10	2015/11/10	Automated Statchk
Elements by CRC ICPMS (total)	ICP/CRCM	8105014	2015/11/06	2015/11/09	Adnan Dzebic
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2015/11/06	Nahed Amer

Maxxam ID: NO8372
Sample ID: MW104(BGW182)
Matrix: Water

Collected: 2015/10/29
Shipped:
Received: 2015/11/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness Total (calculated as CaCO3)	CALC	8104216	N/A	2015/11/10	Automated Statchk
Hardness (calculated as CaCO3)	CALC	8104217	N/A	2015/11/09	Automated Statchk
Mercury (Total) by CVAF	CV/AF	8108786	2015/11/10	2015/11/10	Edwin Lamigo
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8104218	N/A	2015/11/09	Automated Statchk

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Maxxam Job #: B599153
Report Date: 2015/11/10

MAXXAM ANALYTICS
Client Project #: MB5M4720

TEST SUMMARY

Maxxam ID: NO8372
Sample ID: MW104(BGW182)
Matrix: Water

Collected: 2015/10/29
Shipped:
Received: 2015/11/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by CRC ICPMS (dissolved)	ICP/CRCM	8104506	N/A	2015/11/07	Adnan Dzebic
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8104219	2015/11/10	2015/11/10	Automated Statchk
Elements by CRC ICPMS (total)	ICP/CRCM	8105014	2015/11/06	2015/11/09	Adnan Dzebic
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2015/11/06	Nahed Amer

Maxxam ID: NO8373
Sample ID: MW105(BGW183)
Matrix: Water

Collected: 2015/10/29
Shipped:
Received: 2015/11/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness Total (calculated as CaCO3)	CALC	8104216	N/A	2015/11/10	Automated Statchk
Hardness (calculated as CaCO3)	CALC	8104217	N/A	2015/11/09	Automated Statchk
Mercury (Total) by CVAF	CV/AF	8108786	2015/11/10	2015/11/10	Edwin Lamigo
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8104218	N/A	2015/11/09	Automated Statchk
Elements by CRC ICPMS (dissolved)	ICP/CRCM	8104506	N/A	2015/11/07	Adnan Dzebic
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8104219	2015/11/10	2015/11/10	Automated Statchk
Elements by CRC ICPMS (total)	ICP/CRCM	8105014	2015/11/06	2015/11/09	Adnan Dzebic
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2015/11/06	Nahed Amer

Maxxam ID: NO8374
Sample ID: MW106(BGW184)
Matrix: Water

Collected: 2015/10/29
Shipped:
Received: 2015/11/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness Total (calculated as CaCO3)	CALC	8104216	N/A	2015/11/10	Automated Statchk
Hardness (calculated as CaCO3)	CALC	8104217	N/A	2015/11/09	Automated Statchk
Mercury (Total) by CVAF	CV/AF	8108786	2015/11/10	2015/11/10	Edwin Lamigo
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8104218	N/A	2015/11/09	Automated Statchk
Elements by CRC ICPMS (dissolved)	ICP/CRCM	8104506	N/A	2015/11/07	Adnan Dzebic
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8104219	2015/11/10	2015/11/10	Automated Statchk
Elements by CRC ICPMS (total)	ICP/CRCM	8105014	2015/11/06	2015/11/09	Adnan Dzebic
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2015/11/06	Nahed Amer

Maxxam ID: NO8375
Sample ID: MW107(BGW185)
Matrix: Water

Collected: 2015/10/29
Shipped:
Received: 2015/11/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness Total (calculated as CaCO3)	CALC	8104216	N/A	2015/11/10	Automated Statchk
Hardness (calculated as CaCO3)	CALC	8108384	N/A	2015/11/10	Automated Statchk
Mercury (Total) by CVAF	CV/AF	8108786	2015/11/10	2015/11/10	Edwin Lamigo
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8108385	N/A	2015/11/10	Automated Statchk
Elements by CRC ICPMS (dissolved)	ICP/CRCM	8104506	N/A	2015/11/07	Adnan Dzebic
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8104219	2015/11/10	2015/11/10	Automated Statchk
Elements by CRC ICPMS (total)	ICP/CRCM	8105014	2015/11/06	2015/11/09	Adnan Dzebic
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2015/11/06	Nahed Amer

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Maxxam Job #: B599153
Report Date: 2015/11/10

MAXXAM ANALYTICS
Client Project #: MB5M4720

TEST SUMMARY

Maxxam ID: NO8376
Sample ID: MW6(BGW186)
Matrix: Water

Collected: 2015/10/26
Shipped:
Received: 2015/11/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness Total (calculated as CaCO3)	CALC	8104216	N/A	2015/11/10	Automated Statchk
Hardness (calculated as CaCO3)	CALC	8104217	N/A	2015/11/09	Automated Statchk
Mercury (Total) by CVAF	CV/AF	8108786	2015/11/10	2015/11/10	Edwin Lamigo
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8104218	N/A	2015/11/09	Automated Statchk
Elements by CRC ICPMS (dissolved)	ICP/CRCM	8104506	N/A	2015/11/07	Adnan Dzebic
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8104219	2015/11/10	2015/11/10	Automated Statchk
Elements by CRC ICPMS (total)	ICP/CRCM	8105014	2015/11/06	2015/11/09	Adnan Dzebic
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2015/11/06	Nahed Amer

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Maxxam Job #: B599153
Report Date: 2015/11/10

MAXXAM ANALYTICS
Client Project #: MB5M4720

GENERAL COMMENTS

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

Package 1	1.7°C

Results relate only to the items tested.

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Maxxam Job #: B599153
Report Date: 2015/11/10

QUALITY ASSURANCE REPORT

MAXXAM ANALYTICS
Client Project #: MB5M4720

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8104506	Dissolved Aluminum (Al)	2015/11/09	103	80 - 120	117	80 - 120	<3.0	ug/L	NC	20
8104506	Dissolved Antimony (Sb)	2015/11/09	107	80 - 120	104	80 - 120	<0.50	ug/L	NC	20
8104506	Dissolved Arsenic (As)	2015/11/09	100	80 - 120	100	80 - 120	<0.10	ug/L	NC	20
8104506	Dissolved Barium (Ba)	2015/11/09	NC	80 - 120	101	80 - 120	<1.0	ug/L	1.6	20
8104506	Dissolved Beryllium (Be)	2015/11/09	96	80 - 120	98	80 - 120	<0.10	ug/L	NC	20
8104506	Dissolved Bismuth (Bi)	2015/11/09	99	80 - 120	101	80 - 120	<1.0	ug/L	NC	20
8104506	Dissolved Boron (B)	2015/11/09					<50	ug/L	NC	20
8104506	Dissolved Cadmium (Cd)	2015/11/09	97	80 - 120	99	80 - 120	<0.010	ug/L	0	20
8104506	Dissolved Chromium (Cr)	2015/11/09	91	80 - 120	95	80 - 120	<1.0	ug/L	NC	20
8104506	Dissolved Cobalt (Co)	2015/11/09	86	80 - 120	92	80 - 120	<0.50	ug/L	NC	20
8104506	Dissolved Copper (Cu)	2015/11/09	87	80 - 120	92	80 - 120	<0.20	ug/L	NC	20
8104506	Dissolved Iron (Fe)	2015/11/09	105	80 - 120	112	80 - 120	<5.0	ug/L	NC	20
8104506	Dissolved Lead (Pb)	2015/11/09	94	80 - 120	98	80 - 120	<0.20	ug/L	NC	20
8104506	Dissolved Lithium (Li)	2015/11/09	NC	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
8104506	Dissolved Manganese (Mn)	2015/11/09	NC	80 - 120	98	80 - 120	<1.0	ug/L	3.4	20
8104506	Dissolved Mercury (Hg)	2015/11/07	96	80 - 120	101	80 - 120	<0.050	ug/L		
8104506	Dissolved Molybdenum (Mo)	2015/11/09	84	80 - 120	100	80 - 120	<1.0	ug/L	NC	20
8104506	Dissolved Nickel (Ni)	2015/11/09	89	80 - 120	95	80 - 120	<1.0	ug/L	NC	20
8104506	Dissolved Selenium (Se)	2015/11/09	99	80 - 120	93	80 - 120	<0.10	ug/L	0.80	20
8104506	Dissolved Silicon (Si)	2015/11/09					<100	ug/L	2.8	20
8104506	Dissolved Silver (Ag)	2015/11/09	101	80 - 120	100	80 - 120	<0.020	ug/L	NC	20
8104506	Dissolved Strontium (Sr)	2015/11/09	NC	80 - 120	99	80 - 120	<1.0	ug/L	2.0	20
8104506	Dissolved Thallium (Tl)	2015/11/09	92	80 - 120	99	80 - 120	<0.050	ug/L	NC	20
8104506	Dissolved Tin (Sn)	2015/11/09	108	80 - 120	105	80 - 120	<5.0	ug/L	NC	20
8104506	Dissolved Titanium (Ti)	2015/11/09	92	80 - 120	104	80 - 120	<5.0	ug/L	NC	20
8104506	Dissolved Uranium (U)	2015/11/09	93	80 - 120	95	80 - 120	<0.10	ug/L	1.3	20
8104506	Dissolved Vanadium (V)	2015/11/09	90	80 - 120	96	80 - 120	<5.0	ug/L	NC	20
8104506	Dissolved Zinc (Zn)	2015/11/09	NC	80 - 120	101	80 - 120	<5.0	ug/L	NC	20
8104506	Dissolved Zirconium (Zr)	2015/11/09					<0.50	ug/L	NC	20
8105014	Total Aluminum (Al)	2015/11/09	NC	80 - 120	103	80 - 120	<3.0	ug/L	28 (1)	20
8105014	Total Antimony (Sb)	2015/11/09	116	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
8105014	Total Arsenic (As)	2015/11/09	NC	80 - 120	104	80 - 120	<0.10	ug/L	3.7	20

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Maxxam Job #: B599153
Report Date: 2015/11/10

QUALITY ASSURANCE REPORT(CONT'D)

MAXXAM ANALYTICS
Client Project #: MB5M4720

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8105014	Total Barium (Ba)	2015/11/09	NC	80 - 120	103	80 - 120	<1.0	ug/L	0.93	20
8105014	Total Beryllium (Be)	2015/11/09	98	80 - 120	92	80 - 120	<0.10	ug/L	NC	20
8105014	Total Bismuth (Bi)	2015/11/09	107	80 - 120	99	80 - 120	<1.0	ug/L	NC	20
8105014	Total Boron (B)	2015/11/09					<50	ug/L	NC	20
8105014	Total Cadmium (Cd)	2015/11/09	103	80 - 120	98	80 - 120	<0.010	ug/L	0.73	20
8105014	Total Chromium (Cr)	2015/11/09	NC	80 - 120	99	80 - 120	<1.0	ug/L	NC	20
8105014	Total Cobalt (Co)	2015/11/09	98	80 - 120	96	80 - 120	<0.50	ug/L	NC	20
8105014	Total Copper (Cu)	2015/11/09	NC	80 - 120	95	80 - 120	<0.50	ug/L	7.2	20
8105014	Total Iron (Fe)	2015/11/09	NC	80 - 120	106	80 - 120	<10	ug/L	8.0	20
8105014	Total Lead (Pb)	2015/11/09	102	80 - 120	98	80 - 120	<0.20	ug/L	1.5	20
8105014	Total Lithium (Li)	2015/11/09	NC	80 - 120	90	80 - 120	<5.0	ug/L	NC	20
8105014	Total Manganese (Mn)	2015/11/09	NC	80 - 120	100	80 - 120	<1.0	ug/L	2.9	20
8105014	Total Molybdenum (Mo)	2015/11/09	NC	80 - 120	101	80 - 120	<1.0	ug/L	NC	20
8105014	Total Nickel (Ni)	2015/11/09	100	80 - 120	97	80 - 120	<1.0	ug/L	NC	20
8105014	Total Selenium (Se)	2015/11/09	100	80 - 120	101	80 - 120	<0.10	ug/L	NC	20
8105014	Total Silicon (Si)	2015/11/09					<100	ug/L	11	20
8105014	Total Silver (Ag)	2015/11/09	100	80 - 120	94	80 - 120	<0.020	ug/L	NC	20
8105014	Total Strontium (Sr)	2015/11/09	NC	80 - 120	102	80 - 120	<1.0	ug/L	1.5	20
8105014	Total Thallium (Tl)	2015/11/09	109	80 - 120	99	80 - 120	<0.050	ug/L	NC	20
8105014	Total Tin (Sn)	2015/11/09	102	80 - 120	99	80 - 120	<5.0	ug/L	NC	20
8105014	Total Titanium (Ti)	2015/11/09	111	80 - 120	100	80 - 120	<5.0	ug/L	NC	20
8105014	Total Uranium (U)	2015/11/09	NC	80 - 120	98	80 - 120	<0.10	ug/L	0.56	20
8105014	Total Vanadium (V)	2015/11/09	111	80 - 120	104	80 - 120	<5.0	ug/L	NC	20
8105014	Total Zinc (Zn)	2015/11/09	NC	80 - 120	101	80 - 120	<5.0	ug/L	NC	20
8105014	Total Zirconium (Zr)	2015/11/09					<0.50	ug/L	NC	20

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Maxxam Job #: B599153
Report Date: 2015/11/10

QUALITY ASSURANCE REPORT(CONT'D)

MAXXAM ANALYTICS
Client Project #: MB5M4720

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8108786	Total Mercury (Hg)	2015/11/10	99	80 - 120	98	80 - 120	<0.010	ug/L	NC	20

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).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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Maxxam Job #: B599153
Report Date: 2015/11/10

MAXXAM ANALYTICS
Client Project #: MB5M4720

VALIDATION SIGNATURE PAGE

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

David Huang, BBY 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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Project	GOLDSTONE
Report To	Goldstone Resources Inc. Brookbank, Premier Gold Mines Ltd..~TB
ALS File No.	L1503231
Date Received	15-Aug-14 15:20
Date	27-Aug-14

RESULTS OF ANALYSIS

Sample ID	EL1	EL2	EL3
Date Sampled	15-AUG-14	15-AUG-14	15-AUG-14
Time Sampled	10:00	10:20	10:11
ALS Sample ID	L1503231-1	L1503231-2	L1503231-3
Matrix	Water	Water	Water
Physical Tests			
Conductivity (EC)	494	496	502
Hardness (as CaCO3)	161	158	162
pH	8.07	8.13	8.14
Total Suspended Solids	<2.0	<2.0	<2.0
Total Dissolved Solids	271	285	289
Anions and Nutrients			
Acidity (as CaCO3)	<2.0	<2.0	<2.0
Alkalinity, Total (as CaCO3)	145	146	152
Cyanides			
Cyanide, Weak Acid Diss	<0.0020	<0.0020	<0.0020
Cyanide, Total	<0.0020	<0.0020	<0.0020
Cyanide, Free	<0.0050	<0.0050	<0.0050
Total Metals			
Aluminum (Al)-Total	0.0058	<0.0050	0.0367
Arsenic (As)-Total	0.0022	0.0021	0.0024
Cadmium (Cd)-Total	<0.000017	<0.000017	<0.000017
Calcium (Ca)-Total	51.9	50.6	52.1
Copper (Cu)-Total	0.0012	0.0011	0.0016
Iron (Fe)-Total	0.028	0.170	0.144
Lead (Pb)-Total	<0.0010	<0.0010	<0.0010
Mercury (Hg)-Total	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Total	<0.0010	<0.0010	<0.0010
Nickel (Ni)-Total	<0.0020	<0.0020	<0.0020
Zinc (Zn)-Total	<0.0030	<0.0030	<0.0030

Project	NORTHERN EMPIRE
Report To	Goldstone Resources Inc. Brookbank, Premier Gold Mines Hardrock Inc~TB
ALS File No.	L1521938
Date Received	23-Sep-14 13:53
Date	30-Sep-14

RESULTS OF ANALYSIS

Sample ID	CHECKLEY	NELSON	TURBIDE	VEILLEUX
Date Sampled	22-SEP-14	22-SEP-14	22-SEP-14	22-SEP-14
Time Sampled	15:30	15:30	15:30	17:00
ALS Sample ID	L1521938-1	L1521938-2	L1521938-3	L1521938-4
Matrix	Water	Water	Water	Water
Physical Tests				
pH	7.90	7.93	7.91	7.79
Total Metals				
Aluminum (Al)-Total	<10	<10	<10	<10
Antimony (Sb)-Total	<0.60	<0.60	<0.60	<0.60
Arsenic (As)-Total	<1.0	<1.0	1.2	<1.0
Barium (Ba)-Total	<10	16	<10	<10
Beryllium (Be)-Total	<1.0	<1.0	<1.0	<1.0
Bismuth (Bi)-Total	<1.0	<1.0	<1.0	<1.0
Boron (B)-Total	<50	<50	<50	<50
Cadmium (Cd)-Total	<0.10	<0.10	<0.10	<0.10
Calcium (Ca)-Total	59400	83400	53100	53200
Chromium (Cr)-Total	<1.0	<1.0	<1.0	<1.0
Cobalt (Co)-Total	<0.50	<0.50	<0.50	<0.50
Copper (Cu)-Total	1.7	4.2	4.9	12.6
Iron (Fe)-Total	53	61	104	497
Lead (Pb)-Total	<1.0	<1.0	<1.0	<1.0
Lithium (Li)-Total	<100	<100	<100	<100
Magnesium (Mg)-Total	8010	11400	7770	7410
Manganese (Mn)-Total	41.4	<1.0	5.8	493
Mercury (Hg)-Total	<0.10	<0.10	<0.10	<0.10
Molybdenum (Mo)-Total	<1.0	<1.0	<1.0	<1.0
Nickel (Ni)-Total	<2.0	<2.0	<2.0	2.7
Potassium (K)-Total	<1000	<1000	<1000	<1000
Selenium (Se)-Total	<1.0	<1.0	<1.0	<1.0
Silver (Ag)-Total	<0.10	<0.10	<0.10	<0.10
Sodium (Na)-Total	28700	161000	56000	23600
Strontium (Sr)-Total	104	117	79.5	90.4
Tellurium (Te)-Total	<1.0	<1.0	<1.0	<1.0
Thallium (Tl)-Total	<0.30	<0.30	<0.30	<0.30
Tin (Sn)-Total	<1.0	<1.0	<1.0	<1.0
Titanium (Ti)-Total	<2.0	<2.0	<2.0	<2.0
Tungsten (W)-Total	<10	<10	<10	<10
Uranium (U)-Total	<2.0	<2.0	<2.0	<2.0
Vanadium (V)-Total	<1.0	<1.0	<1.0	<1.0
Zinc (Zn)-Total	70.6	13.2	<3.0	9.7
Zirconium (Zr)-Total	<4.0	<4.0	<4.0	<4.0

Project	NORTHERN EMPIRE
Report To	Goldstone Resources Inc. Brookbank, Premier Gold Mines Hardrock Inc~TB
ALS File No.	L1544866
Date Received	10-Nov-14 16:15
Date	20-Nov-14

RESULTS OF ANALYSIS

Sample ID	EL1	EL2	EL3
Date Sampled	10-NOV-14	10-NOV-14	10-NOV-14
Time Sampled	10:30	11:00	11:15
ALS Sample ID	L1544866-1	L1544866-2	L1544866-3
Matrix	Water	Water	Water
Physical Tests			
Conductivity (EC)	426	463	488
Hardness (as CaCO3)	150	155	152
pH	7.85	7.88	7.91
Total Suspended Solids	<2.0	<2.0	<2.0
Total Dissolved Solids	263	273	279
Anions and Nutrients			
Acidity (as CaCO3)	6.3	5.5	5.3
Alkalinity, Total (as CaCO3)	140	145	157
Cyanides			
Cyanide, Weak Acid Diss	<0.0020	<0.0020	<0.0020
Cyanide, Total	<0.0020	<0.0020	<0.0020
Cyanide, Free	<0.0050	<0.0050	<0.0050
Total Metals			
Aluminum (Al)-Total	0.0084	0.0064	0.0226
Arsenic (As)-Total	0.00147	0.00154	0.00146
Cadmium (Cd)-Total	<0.000010	<0.000010	<0.000010
Calcium (Ca)-Total	49.2	50.5	50.1
Copper (Cu)-Total	0.00105	0.00100	0.00105
Iron (Fe)-Total	0.025	0.020	0.018
Lead (Pb)-Total	<0.000050	<0.000050	<0.000050
Magnesium (Mg)-Total	6.63	6.92	6.55
Mercury (Hg)-Total	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Total	0.000143	0.000136	0.000141
Nickel (Ni)-Total	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total	<0.0030	<0.0030	<0.0030

Project	NORTHERN EMPIRE
Report To	Goldstone Resources Inc. Brookbank, Premier Gold Mines Hardrock Inc~TB
ALS File No.	L1548033
Date Received	18-Nov-14 15:00
Date	24-Nov-14

RESULTS OF ANALYSIS

Sample ID	F.A CHECKLEY	MYRON NELSON	M. TURBIDE
Date Sampled	17-NOV-14	17-NOV-14	17-NOV-14
Time Sampled	12:30	13:00	13:30
ALS Sample ID	L1548033-1	L1548033-2	L1548033-3
Matrix	Water	Water	Water
Physical Tests			
pH	7.69	7.84	7.80
Total Metals			
Aluminum (Al)-Total	<10	<10	<10
Antimony (Sb)-Total	<0.60	<0.60	<0.60
Arsenic (As)-Total	1.1	1.1	1.2
Barium (Ba)-Total	<10	11	<10
Beryllium (Be)-Total	<1.0	<1.0	<1.0
Bismuth (Bi)-Total	<1.0	<1.0	<1.0
Boron (B)-Total	<50	<50	<50
Cadmium (Cd)-Total	<0.10	<0.10	<0.10
Calcium (Ca)-Total	53.1	49.5	45.2
Chromium (Cr)-Total	<1.0	<1.0	<1.0
Cobalt (Co)-Total	<0.50	<0.50	<0.50
Copper (Cu)-Total	1.1	5.6	8.4
Iron (Fe)-Total	97	<50	<50
Lead (Pb)-Total	<1.0	<1.0	<1.0
Lithium (Li)-Total	<100	<100	<100
Magnesium (Mg)-Total	7.85	7.41	6.98
Manganese (Mn)-Total	44.1	<1.0	1.4
Mercury (Hg)-Total	<0.10	<0.10	<0.10
Molybdenum (Mo)-Total	<1.0	<1.0	<1.0
Nickel (Ni)-Total	<2.0	<2.0	<2.0
Potassium (K)-Total	<1.0	<1.0	<1.0
Selenium (Se)-Total	<1.0	<1.0	<1.0
Silver (Ag)-Total	<0.10	<0.10	<0.10
Sodium (Na)-Total	28.8	136	48.8
Strontium (Sr)-Total	97.8	73.7	70.7
Tellurium (Te)-Total	<1.0	<1.0	<1.0
Thallium (Tl)-Total	<0.30	<0.30	<0.30
Tin (Sn)-Total	<1.0	<1.0	<1.0
Titanium (Ti)-Total	<2.0	<2.0	<2.0
Tungsten (W)-Total	<10	<10	<10
Uranium (U)-Total	<2.0	<2.0	<2.0
Vanadium (V)-Total	<1.0	<1.0	<1.0
Zinc (Zn)-Total	94.3	7.0	<3.0
Zirconium (Zr)-Total	<4.0	<4.0	<4.0

Project	EMPIRE LAKE
Report To	Goldstone Resources Inc. , Goldstone Resources~TB
ALS File No.	L1619003
Date Received	29-May-15 14:15
Date	08-Jun-15

RESULTS OF ANALYSIS

Sample ID	EL1	EL2	EL3
Date Sampled	28-MAY-15	28-MAY-15	28-MAY-15
Time Sampled	18:00	18:15	18:30
ALS Sample ID	L1619003-1	L1619003-2	L1619003-3
Matrix	Water	Water	Water
Physical Tests			
Conductivity (EC)	326	328	327
Hardness (as CaCO3)	102	102	100
pH	7.90	7.91	7.93
Total Dissolved Solids	183	188	192
Anions and Nutrients			
Acidity (as CaCO3)	2.8	2.6	2.5
Alkalinity, Total (as CaCO3)	104	105	104
Cyanides			
Cyanide, Weak Acid Diss	<0.0020	<0.0020	<0.0020
Cyanide, Total	<0.0020	<0.0020	<0.0020
Cyanide, Free	<0.0050	<0.0050	<0.0050
Total Metals			
Aluminum (Al)-Total	0.0207	0.0206	0.0210
Arsenic (As)-Total	0.00108	0.00104	0.00117
Calcium (Ca)-Total	33.3	33.2	32.5
Copper (Cu)-Total	0.00162	0.00163	0.00140
Iron (Fe)-Total	0.042	0.048	0.040
Lead (Pb)-Total	<0.000050	<0.000050	<0.000050
Magnesium (Mg)-Total	4.68	4.68	4.62
Mercury (Hg)-Total	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Total	0.000143	0.000143	0.000151
Nickel (Ni)-Total	0.00070	0.00069	0.00071
Zinc (Zn)-Total	<0.0030	<0.0030	<0.0030

Project	TANSLEYVILLE TAP WATER
Report To	Paul Brugger, Goldstone Resources~TB
ALS File No.	L1618133
Date Received	28-May-15 12:45
Date	04-Jun-15

RESULTS OF ANALYSIS

Sample ID	FACHECKLEY	M NELSON (MYRON)	M TURBIDE
Date Sampled	27-MAY-15	27-MAY-15	27-MAY-15
Time Sampled	18:15	18:30	18:45
ALS Sample ID	L1618133-1	L1618133-2	L1618133-3
Matrix	Water	Water	Water
Physical Tests			
pH	8.06	8.18	8.11
Total Metals			
Aluminum (Al)-Total	<10	<10	<10
Antimony (Sb)-Total	<0.60	<0.60	<0.60
Arsenic (As)-Total	<1.0	1.1	<1.0
Barium (Ba)-Total	<10	<10	<10
Beryllium (Be)-Total	<1.0	<1.0	<1.0
Bismuth (Bi)-Total	<1.0	<1.0	<1.0
Boron (B)-Total	<50	<50	<50
Cadmium (Cd)-Total	<0.10	<0.10	<0.10
Calcium (Ca)-Total	57.1	38.5	60.5
Chromium (Cr)-Total	<1.0	<1.0	<1.0
Cobalt (Co)-Total	<0.50	<0.50	<0.50
Copper (Cu)-Total	1.1	8.0	12.1
Iron (Fe)-Total	68	<50	116
Lead (Pb)-Total	<1.0	<1.0	<1.0
Lithium (Li)-Total	<100	<100	<100
Magnesium (Mg)-Total	7.75	5.18	9.52
Manganese (Mn)-Total	41.6	<1.0	6.5
Molybdenum (Mo)-Total	<1.0	<1.0	<1.0
Nickel (Ni)-Total	<2.0	<2.0	<2.0
Potassium (K)-Total	<1.0	<1.0	<1.0
Selenium (Se)-Total	<1.0	<1.0	<1.0
Silver (Ag)-Total	<0.10	<0.10	<0.10
Sodium (Na)-Total	30.1	142	33.2
Strontium (Sr)-Total	102	58.4	64.2
Tellurium (Te)-Total	<1.0	<1.0	<1.0
Thallium (Tl)-Total	<0.30	<0.30	<0.30
Tin (Sn)-Total	<1.0	<1.0	<1.0
Titanium (Ti)-Total	<2.0	<2.0	<2.0
Tungsten (W)-Total	<10	<10	<10
Uranium (U)-Total	<2.0	<2.0	<2.0
Vanadium (V)-Total	<1.0	<1.0	<1.0
Zinc (Zn)-Total	125	7.5	3.6
Zirconium (Zr)-Total	<4.0	<4.0	<4.0
Dissolved Metals			
Mercury (Hg)-Dissolved	<0.10	<0.10	<0.10

Results Summary L1629891

Job Reference	TANLEYSVILLE TAP WATER
Report To	Paul Brugger , Goldstone Resources
Date Received	19-Jun-2015 13:23
Report Date	15-Jul-2015 14:54
Report Revision	1

Client Sample ID			TOM NELSON
Date Sampled			18-Jun-2015
Time Sampled			12:30
ALS Sample ID			L1629891-1
Parameter	Lowest Detection Limit	Units	Water
Physical Tests (Water)			
pH	0.10	pH	8.07
Total Metals (Water)			
Aluminum (Al)	5.0	ug/L	6.2
Antimony (Sb)	0.10	ug/L	<0.10
Arsenic (As)	0.10	ug/L	0.20
Barium (Ba)	0.10	ug/L	13.3
Beryllium (Be)	0.10	ug/L	<0.10
Bismuth (Bi)	0.050	ug/L	<0.050
Boron (B)	10	ug/L	18
Cadmium (Cd)	0.010	ug/L	0.041
Calcium (Ca)	100	ug/L	75900
Chromium (Cr)	0.20	ug/L	0.33
Cobalt (Co)	0.10	ug/L	0.22
Copper (Cu)	0.50	ug/L	61.4
Iron (Fe)	10	ug/L	131
Lead (Pb)	0.050	ug/L	1.25
Lithium (Li)	1.0	ug/L	1.7
Magnesium (Mg)	10	ug/L	11200
Manganese (Mn)	0.20	ug/L	11.4
Molybdenum (Mo)	0.050	ug/L	0.257
Nickel (Ni)	0.50	ug/L	2.21
Phosphorus (P)	50	ug/L	<50
Potassium (K)	50	ug/L	1060
Selenium (Se)	0.10	ug/L	0.12
Silicon (Si)	50	ug/L	3480
Silver (Ag)	0.020	ug/L	<0.020
Sodium (Na)	0.50	mg/L	87.3
Strontium (Sr)	0.40	ug/L	104
Thallium (Tl)	0.010	ug/L	<0.010
Tin (Sn)	0.10	ug/L	<0.10
Titanium (Ti)	0.30	ug/L	<0.30
Tungsten (W)	0.10	ug/L	<0.10
Uranium (U)	0.010	ug/L	0.188
Vanadium (V)	0.50	ug/L	<0.50
Zinc (Zn)	3.0	ug/L	140
Zirconium (Zr)	0.30	ug/L	3.35
Dissolved Metals (Water)			
Mercury (Hg)-Dissolved	0.10	ug/L	<0.10

Results Summary L1655672

Job Reference	EMPIRE LAKE
Report To	Goldstone Resources Inc. , Goldstone Resources
Date Received	11-Aug-2015 14:00
Report Date	17-Aug-2015 14:24
Report Revision	1

Client Sample ID			EL1	EL2	EL3	BWR1A
Date Sampled			10-Aug-2015	10-Aug-2015	10-Aug-2015	10-Aug-2015
Time Sampled			14:00	14:15	14:35	15:10
ALS Sample ID			L1655672-1	L1655672-2	L1655672-3	L1655672-4
Parameter	Lowest Detection Limit	Units	Water	Water	Water	Water
Physical Tests (Water)						
Conductivity (EC)	3.0	uS/cm	462	466	464	200
Hardness (as CaCO3)	0.50	mg/L	143	156	157	102
pH	0.10	pH	8.16	8.17	8.21	7.85
Total Suspended Solids	2.0	mg/L	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	13	mg/L	253	260	259	125
Anions and Nutrients (Water)						
Acidity (as CaCO3)	2.0	mg/L	<2.0	<2.0	<2.0	2.0
Alkalinity, Total (as CaCO3)	2.0	mg/L	145	145	143	98.1
Cyanides (Water)						
Cyanide, Weak Acid Diss	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020
Cyanide, Total	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020
Cyanide, Free	0.0050	mg/L	<0.0050	<0.0050	<0.0050	<0.0050
Total Metals (Water)						
Aluminum (Al)-Total	0.0030	mg/L	0.136	0.0056	0.0032	0.0316
Arsenic (As)-Total	0.00010	mg/L	0.0436	0.00191	0.00231	0.00117
Cadmium (Cd)-Total	0.0000050	mg/L	0.0000050	0.0000109	<0.0000050	0.0000050
Calcium (Ca)-Total	0.050	mg/L	46.1	50.2	50.9	32.7
Copper (Cu)-Total	0.00050	mg/L	0.458	0.00135	0.00119	0.00106
Iron (Fe)-Total	0.010	mg/L	1.95	0.021	0.017	0.119
Lead (Pb)-Total	0.000050	mg/L	<0.000050	<0.000050	<0.000050	0.000050
Magnesium (Mg)-Total	0.0050	mg/L	6.80	7.43	7.15	4.96
Mercury (Hg)-Total	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Total	0.000050	mg/L	0.00269	0.000202	0.000192	0.000108
Nickel (Ni)-Total	0.00050	mg/L	0.116	0.00059	0.00052	0.00068
Sodium (Na)-Total	0.050	mg/L	64.1	38.9	38.9	4.92
Zinc (Zn)-Total	0.0030	mg/L	<0.0030	0.0056	<0.0030	0.0058

Results Summary L1655672

Job Reference	EMPIRE LAKE
Report To	Goldstone Resources Inc. , Goldstone R
Date Received	11-Aug-2015 14:00
Report Date	17-Aug-2015 14:24
Report Revision	1

Client Sample ID			BWR1B
Date Sampled			10-Aug-2015
Time Sampled			16:15
ALS Sample ID			L1655672-5
Parameter	Lowest Detection Limit	Units	Water
Physical Tests (Water)			
Conductivity (EC)	3.0	uS/cm	202
Hardness (as CaCO3)	0.50	mg/L	103
pH	0.10	pH	7.82
Total Suspended Solids	2.0	mg/L	<2.0
Total Dissolved Solids	13	mg/L	127
Anions and Nutrients (Water)			
Acidity (as CaCO3)	2.0	mg/L	2.1
Alkalinity, Total (as CaCO3)	2.0	mg/L	94.8
Cyanides (Water)			
Cyanide, Weak Acid Diss	0.0020	mg/L	<0.0020
Cyanide, Total	0.0020	mg/L	<0.0020
Cyanide, Free	0.0050	mg/L	<0.0050
Total Metals (Water)			
Aluminum (Al)-Total	0.0030	mg/L	0.0324
Arsenic (As)-Total	0.00010	mg/L	0.00136
Cadmium (Cd)-Total	0.0000050	mg/L	<0.0000050
Calcium (Ca)-Total	0.050	mg/L	32.9
Copper (Cu)-Total	0.00050	mg/L	0.00100
Iron (Fe)-Total	0.010	mg/L	0.120
Lead (Pb)-Total	0.000050	mg/L	<0.000050
Magnesium (Mg)-Total	0.0050	mg/L	5.10
Mercury (Hg)-Total	0.0000050	mg/L	<0.0000050
Molybdenum (Mo)-Total	0.000050	mg/L	0.000137
Nickel (Ni)-Total	0.00050	mg/L	0.00065
Sodium (Na)-Total	0.050	mg/L	5.12
Zinc (Zn)-Total	0.0030	mg/L	0.0060

Results Summary L1655908

Job Reference	TANLEYSVILLE TAP WATER
Report To	Paul Brugger , Goldstone Resources
Date Received	11-Aug-2015 19:00
Report Date	17-Aug-2015 14:26
Report Revision	1

Client Sample ID			M NELSON	T NELSON	M TURBIDE	A VEILLEUX	F CLECKLEY
Date Sampled			10-Aug-2015	10-Aug-2015	10-Aug-2015	10-Aug-2015	10-Aug-2015
Time Sampled			19:00	19:30	19:45	20:00	20:15
ALS Sample ID			L1655908-1	L1655908-2	L1655908-3	L1655908-4	L1655908-5
Parameter	Lowest Detection Limit	Units	Water	Water	Water	Water	Water
Physical Tests (Water)							
pH	0.10	pH	8.09	7.91	8.02	8.04	8.07
Total Metals (Water)							
Aluminum (Al)-Total	10	ug/L	<10	<10	<10	<10	<10
Antimony (Sb)-Total	0.60	ug/L	<0.60	<0.60	<0.60	<0.60	<0.60
Arsenic (As)-Total	1.0	ug/L	<1.0	<1.0	1.1	<1.0	1.0
Barium (Ba)-Total	10	ug/L	10	17	<10	<10	<10
Beryllium (Be)-Total	1.0	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
Bismuth (Bi)-Total	1.0	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
Boron (B)-Total	50	ug/L	<50	<50	<50	<50	<50
Cadmium (Cd)-Total	0.10	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10
Calcium (Ca)-Total	0.50	mg/L	53.2	89.6	52.5	51.3	60.1
Chromium (Cr)-Total	1.0	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
Cobalt (Co)-Total	0.50	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50
Copper (Cu)-Total	1.0	ug/L	4.7	35.4	37.3	31.4	1.8
Iron (Fe)-Total	50	ug/L	<50	1360	71	1250	79
Lead (Pb)-Total	1.0	ug/L	<1.0	1.1	<1.0	<1.0	<1.0
Lithium (Li)-Total	100	ug/L	<100	<100	<100	<100	<100
Magnesium (Mg)-Total	0.50	mg/L	7.16	13.5	7.76	6.95	8.10
Manganese (Mn)-Total	1.0	ug/L	1.1	9.9	1.9	886	41.1
Molybdenum (Mo)-Total	1.0	ug/L	<1.0	<1.0	<1.0	1.1	<1.0
Nickel (Ni)-Total	2.0	ug/L	<2.0	<2.0	<2.0	2.7	<2.0
Potassium (K)-Total	1.0	mg/L	<1.0	1.2	<1.0	<1.0	<1.0
Selenium (Se)-Total	1.0	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
Silver (Ag)-Total	0.10	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium (Na)-Total	0.50	mg/L	118	83.4	45.7	15.6	29.2
Strontium (Sr)-Total	1.0	ug/L	76.4	116	79.0	93.1	105
Tellurium (Te)-Total	1.0	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
Thallium (Tl)-Total	0.30	ug/L	<0.30	<0.30	<0.30	<0.30	<0.30
Tin (Sn)-Total	1.0	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
Titanium (Ti)-Total	2.0	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0
Tungsten (W)-Total	10	ug/L	<10	<10	<10	<10	<10
Uranium (U)-Total	2.0	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0
Vanadium (V)-Total	1.0	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
Zinc (Zn)-Total	3.0	ug/L	10.8	164	193	88.7	140
Zirconium (Zr)-Total	4.0	ug/L	<4.0	<4.0	<4.0	<4.0	<4.0
Dissolved Metals (Water)							
Mercury (Hg)-Dissolved	0.10	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10

Results Summary L1691456

Job Reference	EMPIRE LAKE
Report To	Goldstone Resources Inc. , Goldstone Resources
Date Received	21-Oct-2015 12:40
Report Date	29-Oct-2015 13:38
Report Version	1

Client Sample ID			EL1	EL2	EL3	BWR1A
Date Sampled			19-Oct-2015	19-Oct-2015	19-Oct-2015	19-Oct-2015
Time Sampled			13:00	13:30	14:00	10:00
ALS Sample ID			L1691456-1	L1691456-2	L1691456-3	L1691456-4
Parameter	Lowest Detection Limit	Units	Water	Water	Water	Water
Physical Tests (Water)						
Conductivity (EC)	3.0	uS/cm	482	483	486	160
Hardness (as CaCO3)	0.50	mg/L	155	152	159	82.4
pH	0.10	pH	8.06	8.07	8.08	7.86
Total Suspended Solids	2.0	mg/L	<2.0	<2.0	<2.0	3.3
Total Dissolved Solids	13	mg/L	271	276	277	117
Anions and Nutrients (Water)						
Acidity (as CaCO3)	2.0	mg/L	<2.0	<2.0	<2.0	<2.0
Alkalinity, Total (as CaCO3)	2.0	mg/L	161	162	159	85.0
Cyanides (Water)						
Cyanide, Weak Acid Diss	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020
Cyanide, Total	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020
Cyanide, Free	0.0050	mg/L	<0.0050	<0.0050	<0.0050	<0.0050
Total Metals (Water)						
Aluminum (Al)-Total	0.0030	mg/L	<0.0030	0.0038	0.0034	0.0307
Arsenic (As)-Total	0.00010	mg/L	0.00173	0.00171	0.00177	0.00100
Cadmium (Cd)-Total	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Total	0.050	mg/L	49.9	49.0	51.3	25.9
Copper (Cu)-Total	0.00050	mg/L	0.00105	0.00102	0.00107	0.00104
Iron (Fe)-Total	0.010	mg/L	0.015	0.014	0.014	0.156
Lead (Pb)-Total	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
Magnesium (Mg)-Total	0.0050	mg/L	7.34	7.23	7.60	4.27
Mercury (Hg)-Total	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Total	0.000050	mg/L	0.000177	0.000166	0.000168	0.000077
Nickel (Ni)-Total	0.00050	mg/L	<0.00050	<0.00050	<0.00050	0.00069
Sodium (Na)-Total	0.050	mg/L	44.0	44.1	45.6	4.46
Zinc (Zn)-Total	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030

Results Summary L1691456

Job Reference	EMPIRE LAKE
Report To	Goldstone Resources Inc. , Goldstone R
Date Received	21-Oct-2015 12:40
Report Date	29-Oct-2015 13:38
Report Version	1

Client Sample ID			BWR1B
Date Sampled			19-Oct-2015
Time Sampled			10:30
ALS Sample ID			L1691456-5
Parameter	Lowest Detection Limit	Units	Water
Physical Tests (Water)			
Conductivity (EC)	3.0	uS/cm	162
Hardness (as CaCO3)	0.50	mg/L	83.7
pH	0.10	pH	7.77
Total Suspended Solids	2.0	mg/L	<2.0
Total Dissolved Solids	13	mg/L	115
Anions and Nutrients (Water)			
Acidity (as CaCO3)	2.0	mg/L	<2.0
Alkalinity, Total (as CaCO3)	2.0	mg/L	86.8
Cyanides (Water)			
Cyanide, Weak Acid Diss	0.0020	mg/L	<0.0020
Cyanide, Total	0.0020	mg/L	<0.0020
Cyanide, Free	0.0050	mg/L	<0.0050
Total Metals (Water)			
Aluminum (Al)-Total	0.0030	mg/L	0.0308
Arsenic (As)-Total	0.00010	mg/L	0.00106
Cadmium (Cd)-Total	0.0000050	mg/L	<0.0000050
Calcium (Ca)-Total	0.050	mg/L	26.0
Copper (Cu)-Total	0.00050	mg/L	0.00085
Iron (Fe)-Total	0.010	mg/L	0.143
Lead (Pb)-Total	0.000050	mg/L	<0.000050
Magnesium (Mg)-Total	0.0050	mg/L	4.57
Mercury (Hg)-Total	0.0000050	mg/L	<0.0000050
Molybdenum (Mo)-Total	0.000050	mg/L	0.000083
Nickel (Ni)-Total	0.00050	mg/L	0.00082
Sodium (Na)-Total	0.050	mg/L	4.57
Zinc (Zn)-Total	0.0030	mg/L	<0.0030

Results Summary L1696155

Job Reference	TANLEYSVILLE TAP WATER
Report To	Paul Brugger , Goldstone Resources
Date Received	30-Oct-2015 17:10
Report Date	10-Nov-2015 9:06
Report Version	1

Client Sample ID			T NELSON
Date Sampled			29-Oct-2015
Time Sampled			9:00
ALS Sample ID			L1696155-1
Parameter	Lowest Detection Limit	Units	Water
Physical Tests (Water)			
pH	0.10	pH	7.83
Total Metals (Water)			
Aluminum (Al)-Total	10	ug/L	<10
Antimony (Sb)-Total	0.60	ug/L	<0.60
Arsenic (As)-Total	1.0	ug/L	<1.0
Barium (Ba)-Total	10	ug/L	15
Beryllium (Be)-Total	1.0	ug/L	<1.0
Bismuth (Bi)-Total	1.0	ug/L	<1.0
Boron (B)-Total	50	ug/L	<50
Cadmium (Cd)-Total	0.10	ug/L	<0.10
Calcium (Ca)-Total	0.50	mg/L	84.1
Chromium (Cr)-Total	1.0	ug/L	<1.0
Cobalt (Co)-Total	0.50	ug/L	<0.50
Copper (Cu)-Total	1.0	ug/L	18.4
Iron (Fe)-Total	50	ug/L	61
Lead (Pb)-Total	1.0	ug/L	<1.0
Lithium (Li)-Total	100	ug/L	<100
Magnesium (Mg)-Total	0.50	mg/L	11.6
Manganese (Mn)-Total	1.0	ug/L	<1.0
Molybdenum (Mo)-Total	1.0	ug/L	<1.0
Nickel (Ni)-Total	2.0	ug/L	<2.0
Potassium (K)-Total	1.0	mg/L	1.3
Selenium (Se)-Total	1.0	ug/L	<1.0
Silver (Ag)-Total	0.10	ug/L	<0.10
Sodium (Na)-Total	0.50	mg/L	118
Strontium (Sr)-Total	1.0	ug/L	95.6
Tellurium (Te)-Total	1.0	ug/L	<1.0
Thallium (Tl)-Total	0.30	ug/L	<0.30
Tin (Sn)-Total	1.0	ug/L	<1.0
Titanium (Ti)-Total	2.0	ug/L	<2.0
Tungsten (W)-Total	10	ug/L	<10
Uranium (U)-Total	2.0	ug/L	<2.0
Vanadium (V)-Total	1.0	ug/L	<1.0
Zinc (Zn)-Total	3.0	ug/L	40.1
Zirconium (Zr)-Total	4.0	ug/L	<4.0
Dissolved Metals (Water)			
Mercury (Hg)-Dissolved	0.10	ug/L	<0.10