MAX Molybdenum Mine Tailings Facility Operation, Maintenance and Surveillance Manual

Submitted By:

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MAX Molybdenum Mine

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Mine Permit M-226

Date: October 8, 2010

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October 8, 2010

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By Email: Diane.Howe@gov.bc.ca

Re: MAX Molybdenum Mine Tailings Facility – Operation, Maintenance and Surveillance Manual

We enclose, for your consideration, a copy of the MAX Molybdenum Mine Tailings Facility – Operation, Maintenance and Surveillance Manual as required per Permit M-226, Work System, Section 2 – Tailings Management Facility.

Should you have any questions or comments, please contact me at the number listed below.

Yours sincerely,
FortyTwo Metals Inc.

Scott E. Broughton, P.Eng.
President & CEO
Ph. (604) 684-2900

Encl.

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MANUAL REVISIONS

Standard practice is to periodically review the procedures being used by operating and maintenance personnel to ensure that they conform with the instructions set out in this manual. Any significant departures observed should be examined and appropriate action taken: either revise the manual to agree with the changed practice or revise the operation and maintenance practice to agree with the instructions.

Revision sheets shall be issued by FortyTwo Metals as required and will be distributed for each copy of the manual. The date of the revision shall also appear on the bottom of all revised pages.

Revision Number	Revision Date	Summary of Revision	Section	Page

LIMITATIONS OF REPORT

FortyTwo Metals Inc. (FortyTwo), a wholly owned subsidiary of Roca Mines Inc., and their consultants prepared this report as required by Permit M-226. The material in it reflects the judgement of FortyTwo staff and its consultants in light of the information available to them at the time of report preparation.

1. INTRODUCTION

The purpose of this manual is to provide a summary of the MAX Molybdenum Mine Tailings Facility and the operation requirements. The manual summarizes the instrumentation, inspection and monitoring requirements for the ongoing operation of the facility. The manual outlines the emergency response procedures, in the event of instability of the dam(s) or an emergency spill.

FortyTwo Metals will update and distribute the OMS, as required, to reflect any future changes in operational procedures or criteria and mine personnel.

2. FACILITY DESCRIPTION

2.1 General

The MAX Mine is an underground molybdenum mine with a current production rate of up to 500 tpd. Production to date has been achieved at various campaigned rates and under the terms of a small mines permit. Ore is processed in the mill on site and concentrate is shipped by truck. The MAX Mine commenced startup and commissioning in late 2007 and announced commercial production on April 12, 2008.

On April 26, 2010, the mine received an amended permit allowing an increase in mill production up to 1000 tpd.

2.2 Site Conditions

2.2.1 Facility Overview

Ownership current and historic

MAX Mine is owned and operated by FortyTwo Metals Inc. ("FortyTwo"), a wholly owned subsidiary of Roca Mines Inc.

The MAX project was previously known as the Trout Lake Molybdenum project and was the subject of a significant exploration program conducted by Newmont Exploration Canada Inc. (Newmont) in the late 1970's and early 1980's. That previous exploration work, including the development of an underground access adit, rock dump, roads and other facilities was substantially reclaimed by Newmont in 2004.

Further to FortyTwo's development plan, many of the previously developed roads, plant site and office areas have been reused. Part of the reclamation by others in 2004 included the covering of a concrete bin area and storage of mineralized material under a compacted cover. That area has been named the 'Drumlin' because of its shape.

Location and Access

Max Mine is located approximately 80 km by road south of Revelstoke and 3 km west of the Village of Trout Lake, in southeast British Columbia (Figure 01).

The main access to the mine is by road from Revelstoke to Trout Lake:

- 49 km south along Hwy 23 from Revelstoke to Shelter Bay (paved);
- 4.6 km on BC Inland Ferry across Arrow Lakes from Shelter Bay to Galena Bay;
- 32 km on Hwy 31 from Galena Bay to Trout Lake (paved and all-weather);
- 6 km on logging roads to the mine site.

The site can also be accessed from Nakusp to the south:

- 46 km north along Hwy 23 from Nakusp to Galena Bay (paved);
- 32 km on Hwy 31 from Galena Bay to Trout Lake (paved and all-weather);
- 6 km on logging roads to the mine site.

BC Ministry of Transportation and Highways maintains the highways and inland ferry all year round.

The all-weather access road from Trout Lake to the mine site is regularly maintained by FortyTwo Metals and provides satisfactory all-weather vehicular access to the site.

Access to the site is controlled by a locked gate which is located about half way from Trout Lake to the mine. A key to the gate is obtained from a FortyTwo Metals representative based in Trout Lake.

The primary access to the tailings facility is via the Lower Tailings Area Access Road; the turnoff is located about 1 km inside the mine gate. The Upper Tailings Area Access Road provides secondary access and is located about 2 km inside the control gate.

There is a small airport in Revelstoke that has a 1460 m paved runway, a terminal building, fueling facilities and hangars servicing small aircraft and helicopters. The

closest airports serviced by major airlines are located in Kelowna and Kamloops, which are both about 200 km southwest of Revelstoke.

Communications

Telephones and internet are located at the Mine Office. Most MAX Mine vehicles are equipped with a mine radio which can be used to contact mine personnel.

Site Plan

The general layout of the site is shown on Drawing 01. The site includes the following components: underground mine, office building, mill facilities, waste rock dump, tailings facility, maintenance building, gensets, staff camp and kitchen facilities.

History of Design, Construction, Operation, key milestones and significant changes

The Tailings Facility, which is located in a small drainage basin about 1 km northeast of the mill, was designed to contain five years of mine production at 72,000 tonnes per year (BGC 2007). The basin is separated from Wilkie Creek by a ridge that rises to about El. 840 m. The Tailings Facility is contained by two dams: Southeast Dam and Northwest Dam. The dams were constructed in 2006 and 2007 to approximately elevation 780 m using a zoned central core – rockfill dam section and were designed to be raised to El. 786 m by extending the dam material zones (BGC 2007).

The initial design of the tailings facility was carried out by BGC Engineering (BGC) and is presented in five reports, dated June 2005 to December 2007, which are listed in Appendix I – List of Reports.

In 2008, Klohn Crippen Berger Ltd. (KCB) was requested to review the BGC design and to assume responsibility for dam design and construction monitoring. The KCB design review was submitted June 11, 2008 (KCB, 2008) and included an updated dam design to crest El. 792 m. The design included modifications to the dam zones and construction materials, which simplified construction while still meeting the dam design criteria. A response regarding regulatory review of the modified dam design was received from the

Ministry of Energy and Mines in November 12, 2008 and comments were addressed in a response to the Ministry.

In October 2009, KCB updated the design so the tailings dams will be raised by the centreline construction method, to an ultimate crest El. 804 m (Appendix II). This will result in a maximum height for the Southeast Dam of 37 m and a maximum height for the Northwest Dam of 30 m.

2.2.2 Site Conditions

Climate

The property is located within the Columbia Mountains and Southern Rockies climate zone. This region has marked contrasts in climate. Valley bottom locations are semi-arid with warm summers and cold winters, like those found in the Grand Forks or Cranbrook areas. Upslope, and on the windward slopes of the Monashee, Selkirk, Purcell and Rocky Mountains, much higher precipitation and cooler temperatures are evident, like those found in the Revelstoke area.

Based on regional data, the MAX project area is expected to receive an average of 1284 mm total precipitation per year consisting of 718 mm snowfall, predominantly from November through March, and 566 mm of rainfall from May to September.

Annual lake evaporation at the MAX site area is estimated to be in the range of 350 mm to 400 mm per year, with maximum rates of about 100 mm per month in July/August.

Mean annual daily temperature is 3.9 C. The coldest month is typically December with a mean daily temperature of -7.7 C and the warmest month is typically July with a mean daily temperature of 15.4 C.

Seismicity

Based on the Geological Survey of Canada (GSC) hazard model for Western Canada, the 2475 year seismic event (2% probability of exceedance in 50 years) was estimated at 0.19 g (Klohn, 2009).

Hydrology

The MAX site is located on the moderately sloping northeast side of Trout Mountain, a peak in the Selkirk Range of southern British Columbia. The upland areas of the Selkirk Mountains are strongly sculpted by alpine glaciations, and bedrock is frequently exposed at elevations above 1067 m. Below this elevation, outcrops are sporadic and appear to be located on steep slopes of deeply incised creek valleys or on spurs of resistant rock.

The Tailings Facility is located in a small drainage basin about 1 km northeast of the mill. The basin is separated from Wilkie Creek by a ridge that rises to about El. 840 m. Drainages from both ends of the Tailings Facility eventually report to Wilkie Creek at the bottom of the main valley, which in turn flows into Trout Lake.

2.2.3 Site Reference Data

The property lies in the Revelstoke Mining Division at longitude 117 36’ W and latitude 50 38’ N (National Topographic System map sheet 82K/12E; mineral title reference maps 082K052, 53, 62, 63, 72 and 73).

The mine surface facilities are situated at about El. 970 m elevation and the tailings facility at about El. 770 m.

2.3 Components

The milling process produces thickened flotation tailings that are conveyed through a pipeline from the process plant to the tailings facility.

Tailings Characterization

The tailings underflow reporting to the tailings pond is around 40% solids by weight, and is a mixture of sand and silt sizes. Approximately 65% of the tailings stream is finer than No. 200 sieve (75 microns). The specific gravity of the tailings is 2.7.

Tailings Facility

The Tailings Facility is located in a small valley downhill and about 1 km northeast of the portal and plantsite area. The Tailing Facility is formed by two dams: Southeast (SE)

Dam and Northwest (NW) Dam (Drawing 01). The dam locations were selected to confine the footprint to the one small drainage basin and to limit the amount of runoff being captured by the basin. The NW Dam is located at a drainage divide near the northern end of the basin. South of this divide, water flows towards the southeast to Wilkie Inlet D, and north of the divide, water flows to the northeast. Both drainages eventually report to Wilkie Creek at the bottom of the main valley, which in turn flows into Trout Lake.

Tailings Pipeline

In late 2006, two 4 inch HDPE pipelines were installed on the Tailing Pipeline Trail (1.3 km) connecting the mill site to the tailings area. In 2010, a third 4 inch HDPE pipeline was installed as a spare.

The Tailings Pipeline Trail is a small equipment access trail (quads and snowmobiles) aligned on grade from the mill to the tailings pond area. The trail is used to monitor the tailings pipelines and can be accessed by larger equipment if necessary.

Pond Water Discharge

Pond water is discharged through a siphoning system that is installed, as required, at the SE Dam. The siphons discharge into the seepage recovery pond which releases through a weir into Shrub Creek. When not required, the siphons are removed from the pond. The siphons are 3 inch schedule 40 pipe. Up to 3 siphon pipes have been used. Discharge from the seepage recovery pond is measured using a 90 degree v-notch weir.

Surface Water Management

The main components for surface water management are shown on Drawings 02 to 05.

The surface water catchment area of the tailings pond is reduced by two diversion ditches on either side of the impoundment. Surface water is diverted along each side of the impoundment towards the southeast into Shrub Creek, which joins Wilkie Creek and

then Trout Lake and towards the northwest. A ditch along the Upper Tailings Access road diverts surface water to the north past the Northwest Dam.

In addition to tailings slurry water, runoff from the waste rock dump and plant site area is diverted to the plant site sump where water quality is monitored. This water flows into Wilkie Inlet D and ultimately reports to water quality compliance point C.

During operations, an emergency spillway is located in the Southeast Dam.

The tailings dams have been designed to be raised each year to accommodate mine tailings production and predicted water management requirements.

Tailings Distribution

Tailings are piped from the mill to the Tailings Facility in an HDPE pipeline at an average rate of 500 tpd and a slurry density of approximately 40% solids by weight. Tailings are alternately spigotted from each dam to form a beach against the upstream face of each dam. The tailings can be spigotted directly from the end of the pipe or through a manifold (pipe with multiple holes) which will distribute the tailings over a wider area at a lower velocity. After deposition on the beach, the tailings consolidate and release water.

As an example, at 500 tpd tailings discharged at a 40% solids content, and assuming a tailings dry density of 1.5 t/m^3 and a surface area of about 50,000 m^2, the water released will cause the tailings pond to rise about 2 cm/day.

The Tailings Facility is operated as a closed system for 4 months of the year, with an allowable discharge of 98,000 m^3/month for the remaining 8 months according to Permit M-226. Surplus water is discharged over the SE Dam when the water quality meets the permitted water quality. The compliance station, Site C, is located 200 m downstream of the SE Dam.

Seepage Recovery Pond

The Seepage Recovery Pond has been located downstream of the SE Dam to capture seepage out of the tailings basin while minimizing the amount of fresh water interception into the seepage pond. If water quality does not meet permit requirements or while not discharging, water can be pumped from the seepage recovery pond back into the tailings pond with an 8 hp portable pump.

The bedrock surface underlying the tailings facility slopes to the south; as a result, seepage is not expected to flow to the northwest.

Monitoring wells have been installed in the relatively narrow valley downstream of both dams to detect seepage. If necessary, pumpback wells can be installed and used to intercept and return unacceptable water to the impoundment.

Mine Water Management

Water pumped from the underground mine is discharged to a primary settling sump located between Portal #1 and Portal #2.

During the freshet of 2007, it was observed that water flows within the underground workings can substantially exceed previously measured and estimated flows for the project. To accommodate those higher flows and potential sediment transport from within the mine development, additional settling capacity was added. In 2007, a series of secondary settling ponds were constructed (Drawing 04). A 900 mm water pipeline was also installed to deliver the mine water to this expanded settling pond area. The secondary settling ponds are made up of 8 ponds or sumps that have been sub-excavated into natural ground:

- Ponds #1 and #2 – primary settling; Pond #2 is used to distribute the flow into two streams.

- Ponds #3 to #7 take about two thirds of the flow and Pond #9 takes about one third of the flow. Flows can be managed between these two streams to allow the sumps to be cleaned.
- Pond #8 - the two streams come back together in Pond #8. Water is released from Pond #8 through a 90 degree v-notch weir that is used to monitor flows.

From January 2008 through March 2010, flows from underground ranged from 21,639 m^3/month (0.01 m^3/sec) to 170,748 m^3/month (0.06 m^3/sec), with an average of 58,600 m^3/month (0.02 m^3/sec). The flows are lowest in late winter and early spring; peak flows occur in May and June.

Rainfall on the roads and runoff from adjacent hillslope is collected in ditches that have hay bale ditch blocks as well as geotextile sediment traps to minimize sediment transport. Flow from the ditches follows the natural water course via culverts under the road. From the portal to the secondary settling ponds, this water flows into Edward Creek and ultimately reports to water quality compliance point C. From the secondary settling ponds to the mine gate, this water flows into Wilkie Inlet D downstream of monitoring site C.

Water quality monitoring sites are shown on Drawing 05.

2.4 Regulatory Requirements

2.4.1 General

The mine operates in accordance with:

- Mines Act (RSBC 1996) Chapter 293
- Health, Safety and Reclamation Code for Mines in British Columbia 2008

The mine operates under the following permits:

2.4.2 BC Ministry of Energy, Mines and Petroleum Resources Permit M-226

November 7, 2005 - Approving Work System and Reclamation Program

February 29, 2008 – Permit M-226 Approval to Operate Tailings Facility

April 26, 2010 – Permit Amendment Approving Increase in Mill and Mine

Production

This permit covers "the work system and the program for protection and reclamation of the land surface and watercourses".

Annual Reporting – due by March 31

Annual Dam Safety Inspection Report - prepared by PEng

Annual Reclamation Report – document the current status of the work system and reclamation obligations, outstanding liability and associated costs, and all monitoring including water quality, and ongoing maintenance activities.

2.4.3 Ministry of Environment Permit PE-18167

June 22, 2007 – Permit 18167

April 21, 2010 – Amended Permit 18167

This permit covers discharges from authorized sources and also defines the quality of water that can be discharged:

Underground Mine Portal Water Settling Pond - the maximum authorized annual average rate of discharge is 90,000 m^3/month with a monthly maximum authorized discharge rate of 180,000 m^3/month during annual freshet.

Tailings Impoundment - the maximum rate of discharge is 98,000 m^3/month for 8 months per year.

The permit also outlines the reporting that is required for the facility:

Incident Reporting

- Incidents, process bypass, or emergency conditions;
- Notification within 24 hours of a reportable incident to Provincial Emergency Program (PEP) and Department of Fisheries and Oceans (DFO);
- Submit within a reasonable period to time of becoming aware of such an event by email or facsimile.

Quarterly Reporting

- Monitoring for previous quarter compared to Water Quality Guidelines;
- Correlations for turbidity and Total Suspended Solids;
- Identify any gaps in monitoring results;
- Due 60 days following the third month in which the data was collected.

Annual Reporting

- Water Quality and Biological Monitoring;
- Prepared and "signed off" by qualified person;
- Due by March 31.

2.4.4 Metal Mining Effluent Regulation

These regulations apply to mines that exceed an effluent flow of 50 m^3 per day from all final discharge points and deposit a deleterious substance in any water.

Regulatory Information Submission System (RISS)

The Department of the Environment provides a Regulatory Information Submission System (RISS) for the purpose of electronic reporting. The authority of the Minister to collect information through RISS (an electronic means) is provided by:

Section 23 of the *Metal Mining Effluent Regulations* that requires mine owners and operators to report monitoring results "… in writing and in the electronic format, if any, provided by the federal Department of the Environment."

Reporting is done quarterly (submitted within 45 days) and annually (submit within 60 days). The data from MAX is compiled and entered into RISS.

2.4.5 Environmental Laws and Regulations

There are many other provincial government, federal government, or both that govern mining in British Columbia. The following are some of the environmental laws and regulations:

Government of Canada
* Canadian Environmental Assessment Act
* Canadian Environmental Protection Act
* Fisheries Act
* Navigable Waters Protection Act
* Migratory Birds Act

Province Of British Columbia
* Mines Act (incl. Health, Safety & Reclamation Code & Mineral Exploration Code)
* Environmental Assessment Act
* Environment & Land Use Act
* Environment Management Act
* Forest Act (including the Forest Practices Code)
* Health Act
* Waste Management Act
  - Contaminated Sites Regulation
  - Petroleum Storage and Distribution Facilities
  - Storm Water Regulation
  - Placer Mining Waste Control Regulation
  - Special Waste Regulation
  - Spill Reporting Regulation
  - Sulphur Content of Fuel Regulation

- Waste Management Permit Fees Regulation
- Open Burning Smoke Control Regulation

* Water Act
* Water Protection Act
* Wildlife Act
* Fisheries Act
* Fish Protection Act

2.5 Design Basis

The details for this design are presented in Tailings Storage Facility – Dam Raise Design (Klohn Crippen Berger, October 15, 2009) which is included as Appendix II. The following sections describe the main features of the design.

2.5.1 Design for Dam Raising

The existing tailings dams will be raised by the centreline construction method, to an ultimate crest El. 804 m. This will result in a maximum height for the Southeast Dam of 37 m and a maximum height of the Northwest Dam of 30 m. The ultimate dams will have a crest width of 6 m, and a downstream slope of 2.25H:1V.

Foundation preparation of the dam footprint will include key trench excavation and removal of loose and organic soils. Clearing of trees has generally already taken place.

Dam Design Section

Representative cross sections for the Southeast Dam are shown in the design report. These sections are also representative of the design sections for the Northwest Dam.

Zones and Materials

The dams consist of a low permeability core with a well draining downstream shell. Construction materials consist of the following zones:

- Zone 1 - Core: Select low permeability glacial till with fines content > 30%.
- Zone 1A - General Fill: Random glacial till, typically with fines content between 15% and 30%.
- Zone 2Y – Filter: Processed sand (20 mm minus) with maximum 5% fines.
- Zone 3X – Drain: Processed gravel (150 mm minus) with maximum 2% fines.

- Zone 3Y – Clean Drain: Processed gravel (150 mm minus) with maximum 5% finer than 5 mm (No. 4 sieve size).

Specified material gradation envelopes for the above materials are also shown in the design report.

Drains and Filters

Drainage is required to maintain a low phreatic surface in the dams. The filters and drain zones are designed to be filter compatible meeting the following criteria:

$$D15(filter) / D85(base) \leq 5; \text{ and}$$
$$5 \leq D15(filter) / D15(base) \leq 20$$

The principal dam drainage works include:

- Chimney Drain: The dam section contains a 0.75 m wide vertical chimney drain, composed of Zone 2Y – Filter. The chimney drain is located downstream of the low permeability core, and extends from the ultimate dam crest down to approximately El. 786 m near the crest of the existing dams. Above the existing rockfill dams, the chimney drain will be constructed along the existing downstream slope and tie into the exposed downstream rockfill shell. Elsewhere, the chimney drain will tie into the chimney finger drain.
- Chimney Finger Drain: Dam sections on the abutments beyond the existing rockfill dam will contain a 1.2 m2 drainage zone (Zone 3X – Drain) along the base of the chimney to direct seepage down the abutment slope and into the rockfill dam downstream shell. The Chimney Finger Drain will be connected to the blanket drain where it is exposed along the existing dam toe.
- Valley Finger Drain: The existing downstream coarse rockfill shell will act as a large internal drainage zone and drain internal seepage towards the valley bottom. A 6 m wide clean drain (9 m^2 cross sectional area) will be constructed in

the valley bottom to drain the collected seepage to the downstream toe. The drain will be surrounded by the appropriate soil filter.

- Toe Drain: A toe blanket drain will be constructed along all sections of the dam to control toe seepage. The drainage zone (Zone 3X – Drain) will have a thickness of 0.6 m plus additional soil filter. The drain will extend into the downstream shell a distance equal to 80% of the ultimate dam height at that section, to a maximum of 20 m. The toe drain will be 10 m in width where the rockfill dam shells provide a large drainage zone leading to the Valley Finger Drain, below nominal El. 780 m.

2.5.2 Flood Management

Because of the relatively small local catchment, the flood management strategy was updated in 2010 to store the 24-hour PMP and provide minimum freeboard with a small emergency spillway:

- 24-Hour PMP: Based on the local catchment which includes the tailings impoundment plus the upslope area on the north and south sides of the impoundment (about 0.2 km^2), the 24-hour PMP would result in the water level rising by about 0.7 m.
- Minimum Freeboard: minimum freeboard, which is the difference in elevation between the crest and the mazimum reservoir level that would result should the inflow design flood occur, has been set at 0.8 m.
- Emergency Spillway: as a further safety measure, a small emergency spillway is included with a 2 m wide HDPE lined trapezoidal channel with invert 0.8 m below the dam crest.

For operating the facility, the normal pond water level has to be maintained at least 1.5 m below the dam crest.

2.5.3 Geochemical

The following is a summary of the sampling that is done to assess the geochemistry of the tailings.

Monthly Composite

Composite tailings samples are collected monthly and submitted for acid-base accounting and metal analyses, with some samples submitted for acid-buffering characteristic curves and NAG tests.

Tailings Beach Study

In September 2008, MESH Environmental Inc. conducted a survey of the exposed north tailings beach. The tailings beach survey was conducted to generally meet MEMPR Permit M-226, Section Protection of Land and Watercourses 3(e)(ii) which requires "…periodic samples from the tailings pond to assess depositional segregation effects."

Seepage

When water is being discharged from the SE Dam seepage recovery pond, water quality samples are collected and submitted for metal analyses as outlined in the permit.

Implications for Tailings Management

The lab test results indicate that the tailings have the potential to become acidic over the long term. Remediation/mitigation of the tailings facility is likely to be required in the future. This is consistent with mitigation measures described in the reclamation plan and the results to date do not suggest any changes to that plan.

In general, ongoing tailings placement helps to minimize the potential oxidation of the tailings by depositing fresh tailings on the tailings beach and keeping a significant percentage of the tailings flooded.

Some researchers have reported apparent inactivity of the sulphides associated with molybdenum deposits (Morin, Price and Coffin, 2001). As a result, there may be an opportunity to conduct research that could reduce ARD potential at MAX Mine.

2.5.4 Criteria (standards set by engineering practice and/or regulations)

The design is in general accordance with the Canadian Dam Association – Dam Safety

Guidelines (2007).

2.6 Construction History

The initial construction of the Tailings Facility was completed in 2006/2007. The dams have been raised in 2008, 2009, 2010:

2006

In late 2006 foundation excavation and preparation began at the tailings facility. Comprised of two primary dams (North and South), foundations were excavated to bedrock and/or till under the supervision of BGC Engineering Inc., geotechnical consultants. Because of poor conditions encountered during the foundation excavation, the NW Dam was moved about 100 m to the south.

The design of the dams included typical 'earthfill' structures to be constructed of local borrow. Prior to excavation of both dam sites the entire tailings basin was cleared and grubbed. Diversion ditches were also blasted in the valley slopes above the impoundment.

During excavation of the dam foundations overburden soils were stored at two soil stockpile locations as shown on the site plan. Both soil stockpiles include primarily mineral soils, sands and gravels and some coarse rock boulders. The stockpiles have been reclaimed.

2007

The dams were constructed to Starter elevation of about El. 780 m in 2007. An operating spillway was countersunk into the SE Dam.

2008

In 2008 the tailings dams were redesigned to incorporate local till fill and a dam raise was undertaken, both under the supervision of Klohn Crippen Berger.

The NW Dam was raised from El. 780 m to El. 783.5 m and the SE Dam was raised from El. 780 m to El. 784.3 m. An interim spillway in the SE Dam was constructed to invert El. 781.9 m.

2009

In 2009, the NW Dam was raised from El. 783.5 m to El. 784.6 m and the SE Dam was raised from El. 784.3 m to El. 784.6 m. An interim spillway at invert El. 783.0 m was installed in the SE Dam.

2010

In 2010, the NW Dam was raised from El. 784.6 m to El. 786.4 m and the SE Dam was

raised from El. 784.6 m to El. 786.4 m. An interim spillway will be installed in the SE Dam.

2.7 Closure Plan

Closure and reclamation of the tailings facility area will include:

- The dams are assumed to be stable in the long term without tailings against the upstream shells. However, they will need to be breached to avoid the area filling with water.
- The 7 ha impoundment area between the dams will be re-graded with an allowance to construct a watercourse through the facility.
- The entire disturbed area (7 ha impoundment and 1 ha dam areas) will be covered with a 0.15 m thickness of loose topsoil for a vegetated cover from the adjacent soil stockpiles. The area will be broadcast seeded and then a shrub and woody cover will be planted in the impoundment area. The dam slopes as well as slopes above the facility (toward the upslope freshwater diversions) will be hydroseeded so as to quickly establish a vegetated cover.
- The two adjacent soil stockpile areas will be revegetated by ATV using the site seed/fertilizer mix.
- The adjacent rock quarry will only require minor safety considerations for closure.
- Site roads will be ripped and then broadcast seeded by ATV. Small diameter culverts will be removed. Some minor re-grading of the roadside slopes may be required prior to ripping and revegetation.

3. OPERATION

3.1 General

Operation of the MAX Mine Tailings Facility is described below:

Normal Operation

- Discharge tailings into the facility to meet the mill production and discharge water from the pond to control the pond level. The inflow is operated from the mill. The outflow is operated from the SW Dam through the seepage recovery pond.
- Monitor pond level and discharge water as required. Under normal tailings operations, the water level rises about 2 cm/day.

Operation during a prolonged mill shutdown

- Monitor pond level and discharge water as required.

Operation during an emergency situation

- Stop discharging tailings.
- Monitor pond level and discharge water as required.
- The emergency spillway will flow as soon as the reservoir level exceeds the spillway control elevation. If spillway operates, observe the performance of the channel through the crest, the channel along the downstream slope, and the stilling basin. In the event of discharge over the spillway as indicated by the reservoir level above the spillway control elevation, the Environmental Manager shall inspect the spillway, spillway channel, embankment slopes and generally look for any unusual conditions.

3.2 Tailings Transport and Deposition

Tailings are fed into the tailings pipeline from the tailings box which is at the east end of the mill building on the lowest level. Tailings flow by gravity 1300 m down the slope from the mill at El. 920 m to the tailings facility at El. 770 m.

The outlet of the tailings pipeline is periodically moved to distribute the tailings around the facility. The tailings distribution system can feed tailings along the upstream slope of

both dams as well as from various points along the west side of the valley.

A manifold type arrangement, which distributes and slows the tailings flow, has been used to help build beaches along the upstream slope of the dams.

3.3 Dam Raising

The dams are periodically raised to match tailings production. In general, the dams should be raised in the summer to provide sufficient storage until the following summer. Dam construction has to be reported by a PEng. An engineering company is typically engaged to observe construction, provide quality assurance and prepare construction summary report.

3.4 Water Management

Surface Water

In general, surface water from the local catchment flows into the tailings facility. There are some local diversions for springs that have been routed around the dams.

Tailings Pond

Over the past 3 years, the only challenge to meeting tailings discharge effluent quality has been suspended solids. When tailings are not being discharged, the turbidity of tailings discharge is very low; when tailings are being discharged, the suspended solids in the tailings discharge increases. Typically, suspended solids in the tailings discharge can be managed by adjusting the depth of the siphon intake:

- Stop discharging water from seepage recovery pond and recycle back into tailings pond by pumping.
- Depending on the tailings level, some water can accumulate in the tailings pond while issue is resolved.
- If not resolved in a given period (water rises at about 2 cm/day during operations), stop discharging tailings into impoundment by stopping the mill.
- Water treatment options for suspended solids:
    - Addition of flocculant

  - Settling and polishing ponds
  - Filter system, such as Layfield Soil Tube
- Water treatment options for other parameters:
  - Water treatment in pond through addition of lime
  - Water treatment plant

Seepage

Both dams are designed with a seepage cutoff trench into low permeability soils or bedrock, and with low permeability core zones. Consequently, seepage rates from the pond are anticipated to be low. Seepage could report either to the dam toe or to the regional groundwater system. Seepage is difficult to observe at the toe of the dams, because the dam toes are partially covered by the seepage recovery ponds.

3.5 Safety and Security

The only access to the Tailings Facility is through the mine gate which is controlled by a lock. Signs are posted to indicate only mine personnel allowed.

Workers are required to wear a life jacket whenever they are in the boat in the pond to operate the siphon system.

4. MAINTENANCE

4.1 General

Key maintenance items and procedures that are required to ensure that civil, mechanical, electrical and instrumentation components are kept in proper operating condition are discussed below. Maintenance items can be routine, predictive and event-driven. The Environmental Manager is responsible for maintenance activities.

4.2 Inventory of components subject to maintenance

COMPONENT	MAINTENANCE ACTIVITY	SCHEDULE
Embankments	Control vegetation so that no trees or bushes are permitted to grow on the dam surfaces	Annually
	Repair erosion	Event-driven
Emergency Spillway	Keep clear of debris	Monthly
	Inspect for erosion, cracking or any other defects	Monthly
	Keep the open channel downstream of the spillway clear of debris and maintained in good order	Monthly
Tailings Pipelines	Inspect pipelines for leaks	Daily
	Inspect pipelines for wear	Annually
	Maintain as required	Event-driven
SE Dam, Water Discharge System	Inspect pipelines for leaks	Daily
	Keep intake clear of debris	Monthly
	Maintain as required	Event-driven
SE Dam, Water Reclaim System	Inspect pipelines for leaks	Daily
	Keep intake clear of debris	Monthly
	Maintain as required	Event-driven
	Inspect and maintain the pumping systems on a regular basis	Monthly
Access Roads	Maintain the access roads, including the dam crest roads, to provide good vehicular access at all times	Monthly
	Repair as required to facilitate drainage and present a smooth travelling surface	Monthly
	Plough and maintain access roads in winter	Event-driven
Instrumentation	Check piezometer leads regularly	Annually

5. SURVEILLANCE

5.1 General

Surveillance involves inspection and monitoring to ensure safety of the dams and the tailings facility. Surveillance consists of qualitative and quantitative comparison of actual to intended behaviour and must be integrated with operation and maintenance activities, consistent with design basis requirements.

This section describes recommended minimum monitoring for the tailings dams. The monitoring program contains four elements as follows:

- Instrumentation and monitoring:
  - Pore pressures in dam structure and foundation;
  - Pond water level;
  - Movement in the dam structure;
- Routine surveillance;
- Annual inspection by a qualified engineer;
- Dam Safety Inspection.

5.2 Instrumentation and Monitoring

Pore Pressure

Vibrating wire pizometers were installed as part of the initial construction. Installation details, drillhole logs, and calibration data are included in Appendix III. The vibrating wire piezometers are read with RST 2106 Vibrating Wire Readout. Specification sheets for the piezometers and the vibrating wire readout box are also included in Appendix III.

Piezometers installed in the SE Dam and NW Dam are summarized in Table 5.1 and 5.2, respectively.

Table 5.1 – SE Dam Piezometers

Location	ID No.	Depth Below Ground (m)	Tip Elev. (m)	Material Type	Trigger
Foundation (upstream toe) DH-BGC07-33	VW4987	10.2m	757.70	Sand and gravel layer	Abandoned
Foundation (downstream toe) DH-BGC07-35A	VW4988	12.25 m	756.85	Sand and gravel layer	N/A
Dam Fill	VW4829	N/A		Type 2A Filter Blanket	

Table 5.2 – NW Dam Piezometers

Location	ID No.	Depth Below Ground (m)	Tip Elev. (m)	Material Type	Trigger
Dam Fill– 0+070 ~ 10 m D/S of key trench centreline	VW4986	N/A	~ 771.0	Type 2A Filter Blanket	
Dam Fill– 0+058 ~ 6 m D/S of key trench centreline	VW4989	N/A	~ 770.5	Type 2A Filter Blanket	

SE Dam Foundation

A confined layer of granular material was identified during the site investigation beneath the SE Dam. Vibrating wire piezometers were installed in this layer during the 2007 investigation, one upstream of the dam and one downstream. The upstream foundation piezometer was buried during one of the dam raises. BGC recommended that these piezometers be read weekly during construction and initial reservoir filling. They should be read during subsequent filling, as necessary.

BGC (2007) recommended that if pressure heads exceed 5 m above the ground surface at the downstream toe, then pressure relief wells may be required. BGC reported that "there was no change in pore pressures resulting from the increased loading from

placement of dam fill materials. Pore pressures declined during construction likely indicating a seasonal decline in the water table".

The original design basis and triggers are not relevant any more. As a result, the downstream foundation piezometer should be read annually to give an indication of changes in the groundwater levels. The data should be reviewed as part of the annual geotechnical inspection.

Dam Fill

Vibrating wire piezometers were installed within the downstream sand filter (Type 2A) of both dams: 1 piezometer in SE Dam and 2 piezometers in NW Dam. These are intended to monitor pore pressure within the downstream shell of the dam. BGC recommended that "these should be monitored weekly during initial filling and annually (at spring freshet or maximum reservoir head) during subsequent annual inspections". Readings taken in August 2010 for VW4829 (SE Dam) and VW4989 (NW Dam) were negative indicating they are above the water level. VW4986 (NW Dam) gave 1.13 m of water indicating a water level of about 772.1 m in the downstream shell which is within the Type 2A/2B filters. This indicates that the downstream shell is well drained.

The dam fill piezometers should be read annually to give an indication of changes in the water levels within the downstream shells. The data should be reviewed as part of the annual geotechnical inspection.

KCB has indicated that additional piezometers may be recommended in future dam raises to confirm design assumptions. Trigger levels could consider something like the following:

- Condition Green: pore pressure is on the stable seasonal trend and the level is lower than required for a static FOS>1.5
- Condition Orange: pore pressure is rising faster than the normal seasonal trend and pressure is approaching the level that will give a static FOS<1.3

- Condition Red: pore pressure is rising faster than the normal seasonal trend and pressure is approaching the level that will give static FOS<1.1

Pond Water Level

A staff gauge is installed upstream of the SW Dam to monitor the level of the pond. The water level should be recorded daily on the Daily Water Quality Monitoring Form (sample included in Appendix IV).

Movement

Survey monuments are typically used to monitor settlement and/or horizontal movements of embankments. Survey pins can be constructed with rebar embedded at least 0.8 m into the dam surface. Since the soft material in the foundation was sub-excavated and the dam fill is compacted, significant settlement or lateral movement is not expected. In addition, the current design of the dams can tolerate some movement without significantly impacting the drainage or stability.

Since the dams are being raised annually, survey pins would have to be replaced annually so there would be no continuity of data. As a result, survey pins will be installed in a straight line and visually monitored for lateral movement. This will be done as part of the routine surveillance.

Seepage

Seepage is measured in the Seepage Recovery Pond and in monitoring wells installed downstream of the two dams.

When not discharging, the SE Dam Seepage Recovery Pond can be pumped back into the Tailings Facility at rates of 1.0 l/s to 2.0 l/s to prevent discharge. Although the Seepage Recovery Pond is subject to inflows other than seepage, these recorded rates may represent an upper bound of seepage through the SE Dam.

The monitoring wells are summarized in Table 5.3.

Table 5.3 - Monitoring Wells

	Location	ID No.	Screen Depth Below Ground (m)	Filter Depth Below Ground (m)	Material Type
SE Dam	100 m D/S	MW-BGC06-01	15.6 – 21.6	14.0 – 22.2	Gravel/till
SE Dam	100 m D/S	MW-BGC06-02	2.1 – 4.3	1.8 – 4.57	Gravel/till
NW Dam	250 m D/S	MW-BGC06-03	1.4 – 2.9	1.3 – 3.05	Gravel/till

5.3 Routine Surveillance

Routine surveillance should be undertaken on a monthly basis. During high water times (e.g., spring freshet, high rainfall, flood), weekly and even daily surveillance should be undertaken to ensure the safe operation of pumping systems and/or spillway operations.

Records should be kept of all dam inspections and copies should be maintained on site for review during annual inspections.

The tailings line is to be inspected every day by the person assigned to monitor daily water quality at the tailings pond and recorded on the Daily Tailings Line Inspection Form (sample included in Appendix IV).

Monitoring of the TSF is currently limited to visual monitoring of the dam toes, spillway and diversion ditches. Water quality testing is carried out as part of the environmental monitoring, and reported separately by Max Mine.

Table 5.4 summarizes the recommended monitoring and frequency. Records of monitoring activities should be maintained by the Environmental Manager and made available for the annual geotechnical review.

Table 5.4 Recommended Monitoring Frequency

TASK	FREQUENCY
Measure pumped seepage return or siphon discharge flows	Weekly, or as often as flows are adjusted
Inspect Overall Tailings Facility	Monthly
Measure dam piezometers	Monthly
Visually monitor dam crest monitoring pins	Quarterly
Inspect diversion ditches	Semi-annually – once in October before snowfall and during spring freshet
Inspect spillway channel and stilling basin. HDPE channel lining should be anchored securely and in good condition	Semi-annually – once in October before snowfall and during spring freshet
Inspect TSF pond freedboard for environmental flood storage	Monthly

5.4 Inspections Following Unusual Events

The Tailings Facility should be inspected following any unusual or extreme events such as flooding or earthquake. The inspection shall include the same tasks as identified below for the Annual Inspections. If anything unusual is observed, contact the design engineer.

These inspections should be documented with reports kept on file at the mine and corporate offices, and made available for the annual geotechnical review.

5.5 Annual Inspections

An annual inspection should be conducted by a qualified geotechnical engineer, familiar with earth and rockfill dam construction and performance. Those inspections should take place at, or immediately following, the spring freshet when water levels in the impoundment are at their highest.

The specific tasks carried out during the inspections include:

- Upstream slopes for any signs of distress, including erosion from wave action, and cracking;
- Dam crests for any sign of transverse or longitudinal cracking, misalignment, narrowing of the crest width due to erosion, settlement, rutting and ponding of water, sinkholes, etc.
- Downstream slopes for any signs of distress, including cracking, slope instability, and evidence of seepage; and
- Spillway facility for erosion protection, deterioration, etc.

Annual inspections shall be documented with reports to be kept on file at the mine and corporate offices, as well as submitted to Ministry of Energy, Mines and Petroleum Resources by the end of March in the following year.

5.6 Dam Safety Review

Canadian Dam Association Dam Safety Guidelines (2007) describes a Dam Safety Review as a systematic evaluation of the safety of a dam, by means of a comprehensive inspection of the structures, assessment of performance, and review of the original design and construction records to ensure that they meet current criteria. The review should be carried out by a qualified engineer who has not participated in the design or construction of the dam, or is normally involved in the inspection of the dam.

The frequency for dam safety reviews is based on consequence category. The MAX Mine tailings dams are classified as "High" consequence dams. CDA recommends the maximum period between reviews at 7 years with the next one scheduled for approximately 2015.

6. EMERGENCY PLANNING AND RESPONSE

6.1 General

The MAX Mine Tailings Facility is situated in a small valley in an uninhabited area about 4 km northwest of Trout Lake. The mine is under the control of FortyTwo Metals. Drainage from the facility leads to Trout Lake. Failure of the SE Dam could result in release of water, and possibly tailings, into Trout Lake. Failure of the North Dam would result in release of water, and possibly tailings, into Wilkie Creek which flows into Trout Lake.

This section covers emergency situations that potentially threaten structural integrity of the dams or result in the release of tailings and/or water into the surrounding environment.

6.2 Emergency Situations

Should an emergency arise, prompt and immediate action will be taken to avoid delays which would have serious consequences. Responsible persons listed in the following sections will be immediately informed, and contingency plans put into effect without delay.

Emergency situations may include, but are not limited to:

- Failure or suspected impending failure of the dams;
- Slumping, sliding, cracking or bulging of the dams;
- Slides or instability of the valley walls;
- Rapid increase or unexplained cloudy appearance of seepage through the dams or the foundations;
- Breakage of tailings pipelines which may result in dam erosion and/or release of tailings slurry;
- Severe storms;
- Extreme floods;
- Large earthquakes; and

- Sabotage and other criminal activity.

In the event of an emergency or unusual situation, all instrumentation in the affected area will be closely monitored during and/or immediately following the event. This information will be forwarded to the design engineer(s) promptly so that the situation can be assessed and necessary remedial actions be taken.

6.3 Procedure for an Emergency or Unusual Situation

In an emergency situation, the reporting procedure described below will be followed promptly.

PERSON RESPONSIBLE	ACTION REQUIRED	URGENCY	COMMENTS
Person finding the problem	1. Take appropriate action	Immediate	Secure the area. Follow specific procedures for products involved to stop, contain and minimize effects on people or the environment.
	2. Notify manager or superintendent	Immediate	Provide information: Type of emergency Product involved Location of emergency Measure being taken
	3. Notify Environmental Manager	As soon as practical	
Environmental Manager	1. Notify Mine Manager	As soon as practical	
	2. Notify appropriate Regulatory Agencies	As soon as practical	The agency notified will depend on the type of emergency involved.
	3. Notify Roca Mines	As soon as practical	

1. The person first noticing an emergency situation should secure the area and notify Environmental Manager
2. The Environmental Manager shall:
    a. Determine if the emergency situation can be stopped.
    b. Determine if any potential outflow can be contained.
    c. Take corrective action.
    d. Notify the Mine Manager.
3. The Mine Manager shall:
    a. Review the actions taken;
    b. Notify the President.
4. In the event of an emergency situation which may threaten dam stability, the Mine Manager shall notify:
    a. The engineering consultant
    b. The President of Roca Mines
    c. Mines Inspector
    d. Emergency Spill Inspector
5. If the event involves unusual release of tailings or water, immediately report to Provincial Emergency Program (PEP) at 1-800-663-3456.
6. A report of the incident should be compiled by the supervisory person first notified and will include:
    a. Location and nature of the incident;
    b. Timing of events;
    c. Steps taken to correct the problem;
    d. Personnel involved.

6.4 Communications Directory

The following lists the telephone numbers of key personnel associated with the construction, operation and maintenance of the MAX Mine Tailings Facility under both normal and emergency operating conditions.

MAX Mine Personnel		Office	Residence/Cell
Mine Manager	Scott Broughton	250-369-6833	
Environmental Manager	Doug Seaton	250-369-6833	
Vice President Environment and Sustainability	Bob Chambers	604-684-2900	[redacted]
President and CEO	Scott Broughton	604-684-2900	
Consulting Engineers – Klohn Crippen Berger			
Project Manager	Terence Jibiki	604-251-6900	
Principal	Harvey McLeod	604-251-6900	
BC Minsistry of Energy, Mines and Petroleum Resources			
Regional Director - Southeast (Cranbroook)	Jeremy Zandbergen	250-426-1252	
Deputy Chief Inspector of Mines, Victoria	Diane Howe	250-426-1252	
Chief Inspector of Mines, Victoria	Al Hoffman	250-952-0494	
BC Ministry of Environment			
Emergency Spill Inspector, Cranbrook			
Environmental Protection Division	Tamara Mickel	250-354-6333	
Environment Protection, Victoria	**24-Hour Emergency Number**	**380-8673**	
Village of Trout Lake			
RCMP	Nakusp	250-265-3677	
Provincial Emergency Program (PEP)		1-800-663-3456	

6.5 Construction Equipment, Labour and Engineering Expertise

If a situation arises that requires immediate attention, MAX Mine has at its disposal the equipment, material, labour and engineering expertise to respond immediately. The mining operation involves continual presence of personnel around the tailings facility.

Distribution of Operation Manual

Thirteen (12) copies of this manual have been distributed as follows:

MAX Mine, 3 copies

- Mine Manager
- Environmental Manager – Doug Seaton
- Mill Manager – Robin Fraser

Roca Mines Corporate Office, 2 copies

Klohn Crippen Berger, 2 copies

- Project Manager – Terence Jibiki
- Principal – Harvey McLeod

British Columbia Ministry of Energy, Mines and Petroleum Resources, 3 copies

- Regional Director – Southeast (Cranbrook)
- Deputy Chief Inspector of Mines (Victoria)
- Chief Inspector of Mines (Victoria)

British Columbia Ministry of Environment, 2 copies

- Environmental Protection Division (Cranbrook)
- Regional Manager (Cranbrook)

FIGURES

01 Location Plan

Legend

Populated Places

- Major Centers
- Other Towns

Transporation

- Roads
- Railroads

Dawson Creek
Mackenzie
Prince George
ALBERTA
Edmonton
BRITISH
COLUMBIA
Calgary
Revelstoke
Kamloops
Upper Arrow Lake
MAX PROJECT
Vernon
Okanagan Lake
Kelowna
Kootenay
Kimberley
Cranbrook
Nelson
Penticton
Castlegar
Lake
Trail
Vancouver
WASHINGTON
IDAHO
MONTANA

0 250 Kilometers

Map Projection: B.C. Albers

N

SCALE:	1:5,000,000
DATE:	MAY 30, 2010
DRAWN:	GEJ
DESIGNED:	RWC
CHECKED:	RWC
APPROVED:	

FortyTwo Metals Inc.

PROJECT:	MAX PROJECT
TITLE:	LOCATION MAP
MAP/DWG No.:	01
REV:	0

DRAWINGS

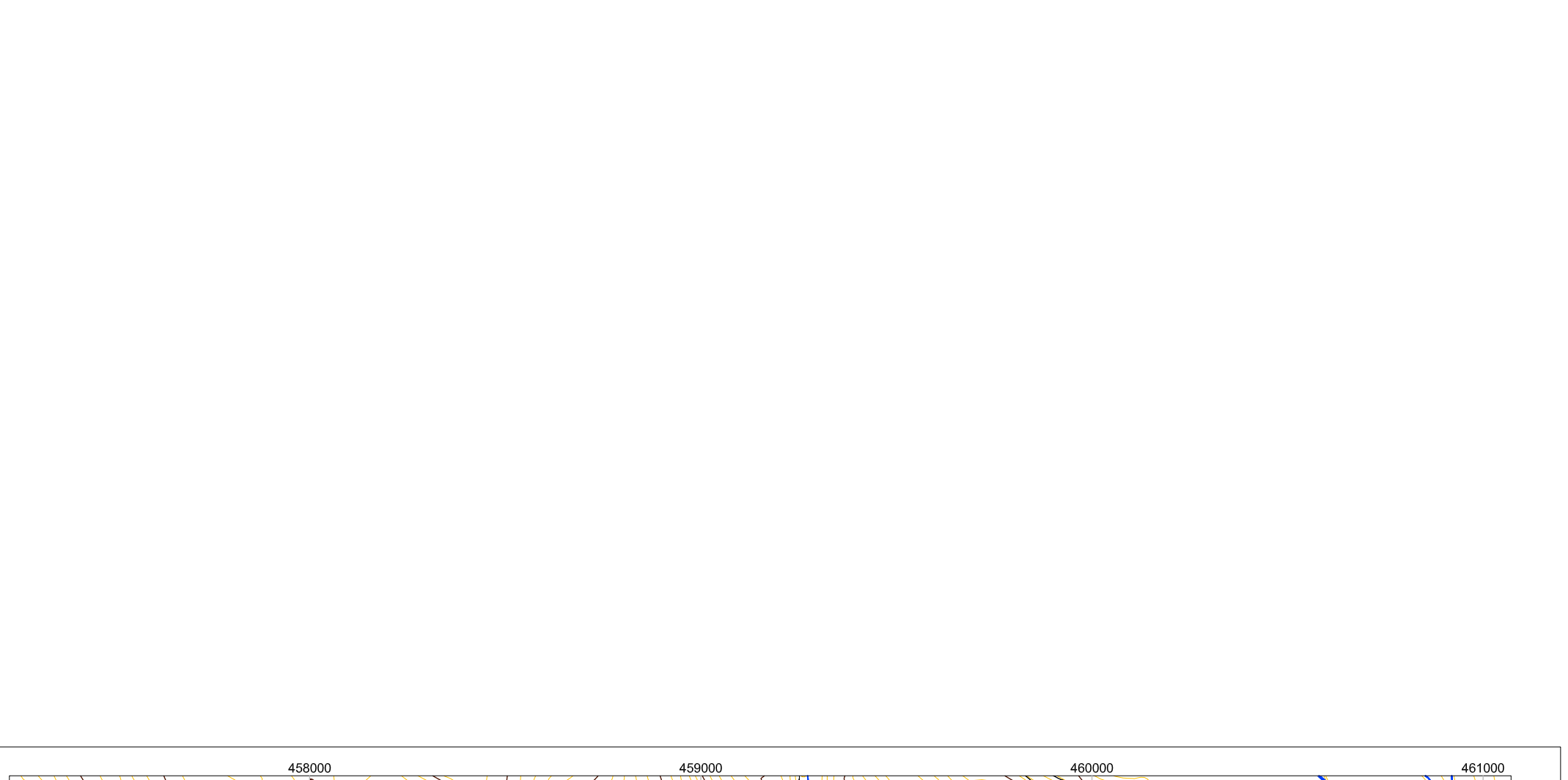
01 General Site Plan – October 2009

02 Mine Water Management Plan – General Arrangement

03 Plant Site – General Arrangement

04 Mine Water Management Plan – Settling Ponds

05 Water Quality Monitoring Sites



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Topographic contours were derived from Ikonos Satellite stereo imagery acquired on August 14, 2008

Contours: 10 meters

SCALE:	1:10,000
DATE:	MARCH 31, 2010
DRAWN:	GEJ
DESIGNED:	GEJ
CHECKED:	
APPROVED:	

Forty Two Metals Inc.
(a wholly-owned subsidiary of Roca Mines Inc.
490-1122 Mainland St.
Vancouver, B.C.
V6B 5L1
Tel 604.684.2900
Fax 604.684.2902
www.rocamines.com

PROJECT: MAX MOLYBDENUM MINE

TITLE: GENERAL SITE PLAN
OCTOBER 2009

PROJECT No.:	DWG No.:	REV.:
	01	0

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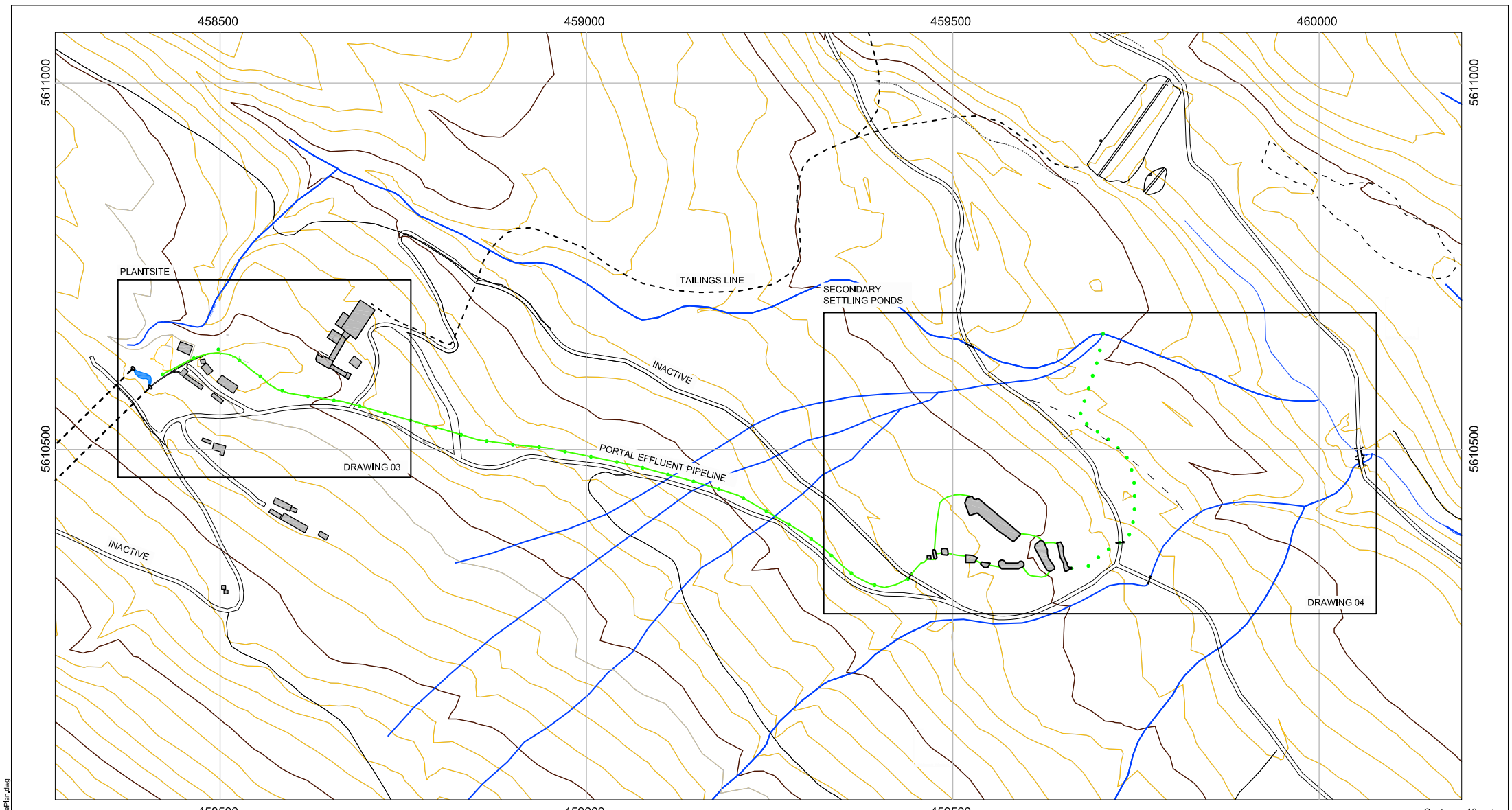

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Contours: 10 meters

SCALE:	1:5,000
DATE:	OCTOBER 6, 2009
DRAWN:	GEJ
DESIGNED:	GEJ
CHECKED:	
APPROVED:	

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PROJECT: MAX MOLYBDENUM MINE

TITLE: MINE WATER MANAGEMENT PLAN
GENERAL ARRANGEMENT

PROJECT No.:	DWG No.:	REV.:
	02	0

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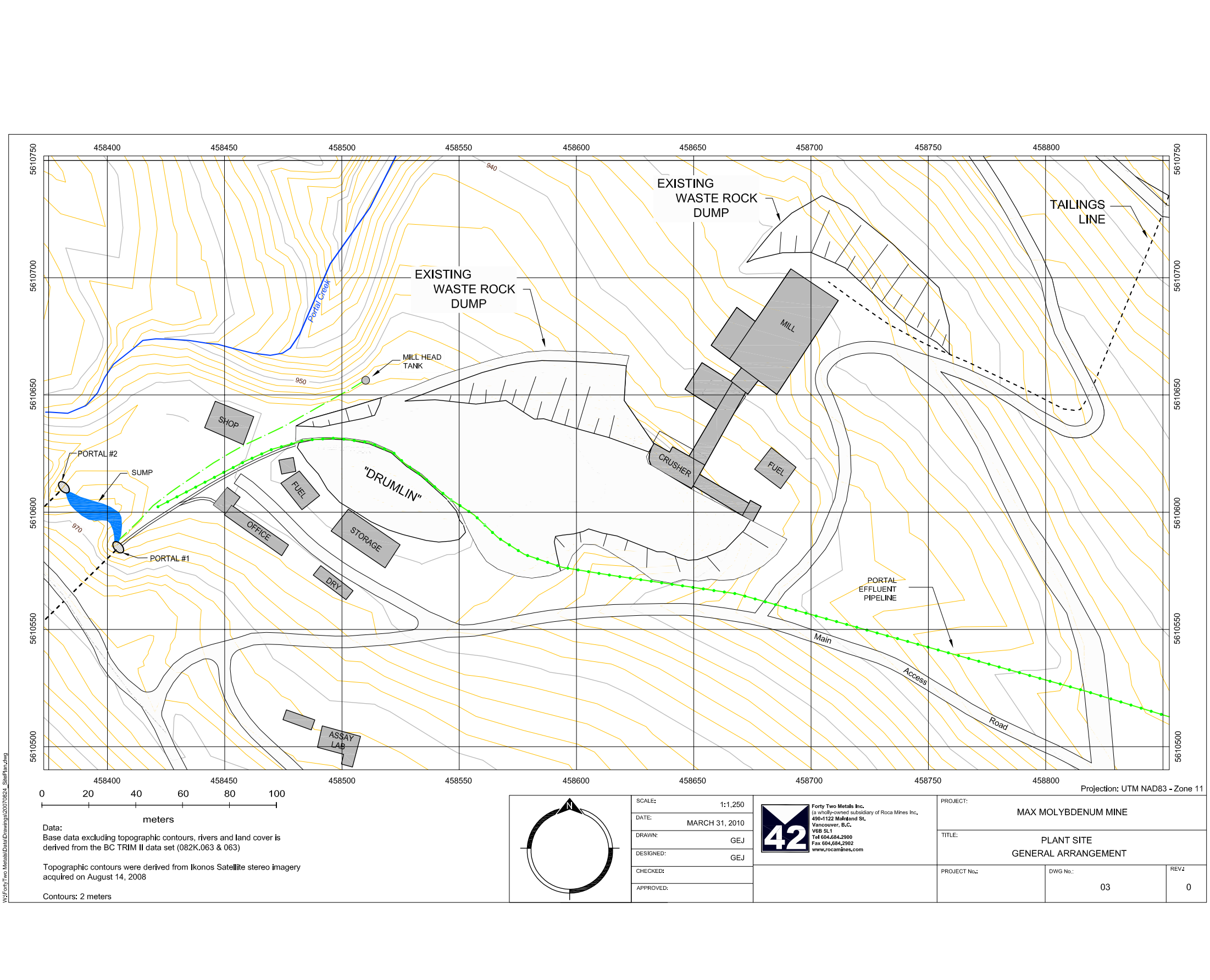

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Contours: 2 meters

SCALE:	1:1,250
DATE:	MARCH 31, 2010
DRAWN:	GEJ
DESIGNED:	GEJ
CHECKED:	
APPROVED:	

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PROJECT: MAX MOLYBDENUM MINE

TITLE: PLANT SITE GENERAL ARRANGEMENT

PROJECT No.:

DWG No.: 03

REV.: 0

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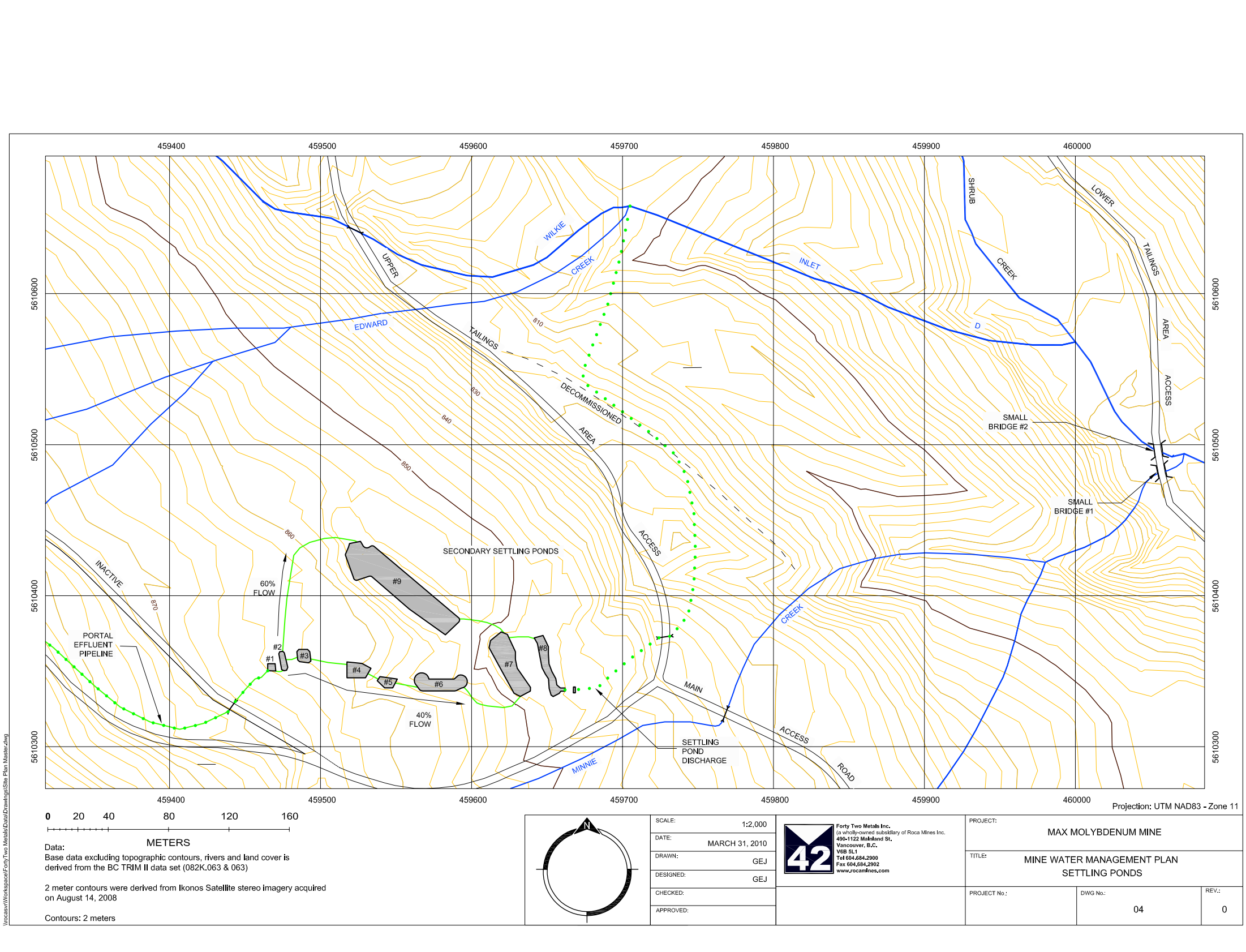

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SCALE:	1:2,000
DATE:	MARCH 31, 2010
DRAWN:	GEJ
DESIGNED:	GEJ
CHECKED:	
APPROVED:	

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PROJECT: MAX MOLYBDENUM MINE

TITLE: MINE WATER MANAGEMENT PLAN
SETTLING PONDS

PROJECT No.:	DWG No.:	REV.:
	04	0

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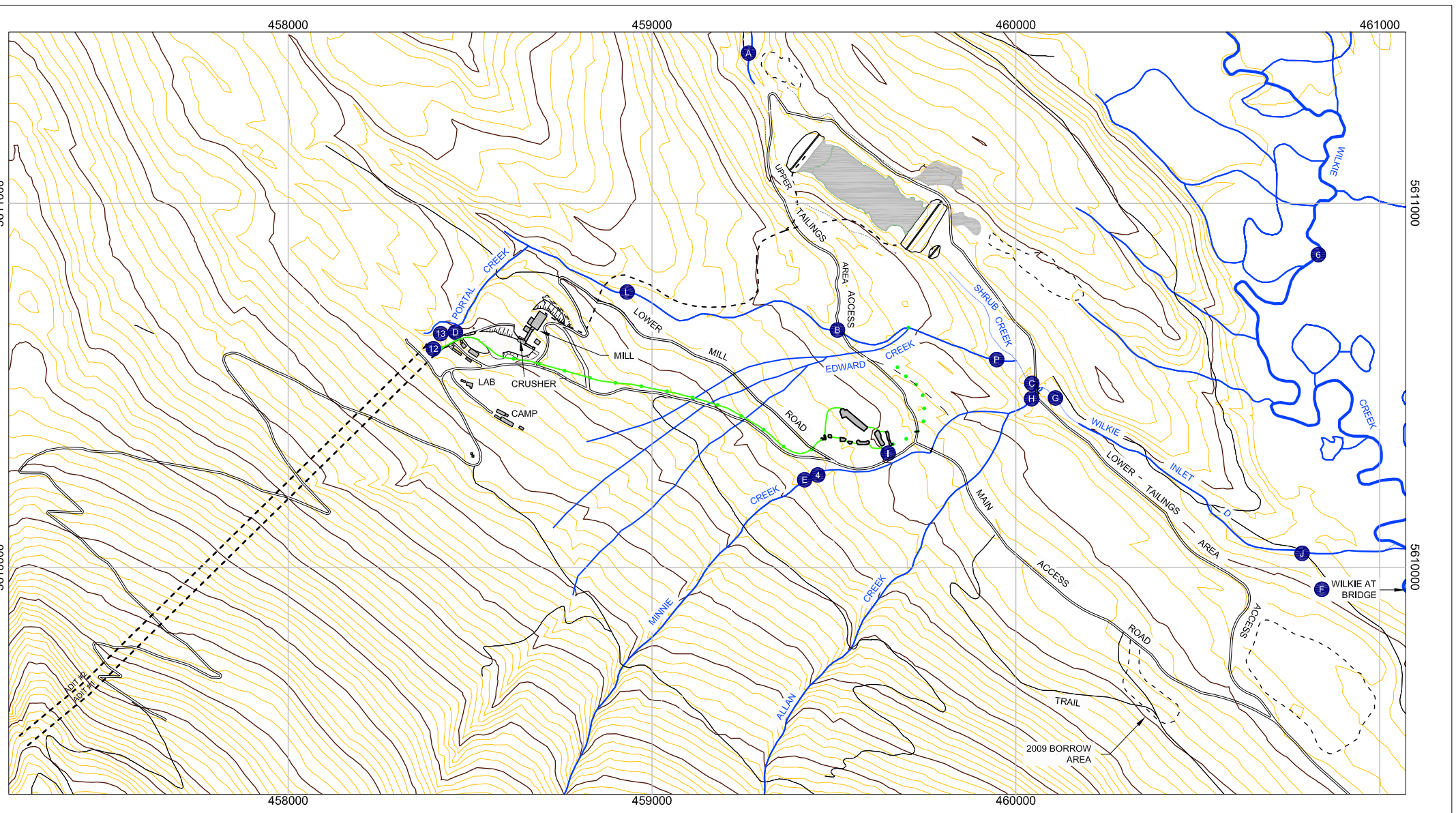

0 100 200 400 600 800

METERS

Data:
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Topographic contours were derived from Ikonos Satellite stereo imagery acquired on August 14, 2008

Contours: 10 meters

Symbol Legend:
Water Quality Sampling Locations

- 6 Historic Monitoring Sites
- A MAX Monitoring Sites

SCALE:	1:10,000
DATE:	MARCH 31, 2010
DRAWN:	GEJ
DESIGNED:	GEJ
CHECKED:	
APPROVED:	

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PROJECT: MAX MOLYBDENUM MINE

TITLE: WATER QUALITY MONITORING SITES

PROJECT No.:	DWG No.:	REV.:
	05	0

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Appendix I

List of Reports

Updated: 08/10/2010

MAX Molybdenum Mine Tailings Facility
List of Reports

DATE	COMPANY	TITLE
	FortyTwo Metals	2005 Brish Columbia Small Mine Application for an Underground Mine and On-site Concentrator
07-Jun-05	BGC Engineering Inc.	Max Molybdenum Project - Tailings Scoping Study - Final Report
18-May-06	BGC Engineering Inc.	Max Molybdenum Project - Tailings Scoping Study Update - Final Report
12-Sep-06	BGC Engineering Inc.	Borrow Suitability and Updated Dam Design
19-Feb-07	MESH Environmental Inc.	Technical Memorandum: ARD Monitoring Reommendations for Max Molybdenum Project
21-Aug-07	BGC Engineering Inc.	Max Molybdenum Project - Supplemental Site Investigation and Revised Dam Design - Final Report
28-Dec-07	BGC Engineering Inc.	Max Molybdenum Mine - Max Tailings Containment Facility 2007 As-Fuilt Report - Final
01-Mar-08	Masse and Miller	MAX Molybdenum Mine Water Quality Report 2007
11-Jun-08	Klohn Crippen Berger	Max Mine - Tailings Storage Facility - New Dam Section
01-Aug-08	MESH Environmental Inc.	2007 Metal Leaching and Acid Rock Drainage Monitoring Report, MAX Molybdenum Mine
01-Feb-09	Masse and Miller	MAX Molybdenum Mine Environmental Impact Study for a Discharge Permit
23-Feb-09	MESH Environmental Inc.	MAX Molybdenum Mine Geochemical Characterization Program on the Waste Rock Pile 2008
01-Mar-09	Masse and Miller	MAX Molybdenum Mine Annual Water Quality and Biological Monitoring Report - 2008
30-Mar-09	Klohn Crippen Berger	Max Mine Tailings Facility - 2008 Annual Geotechnical Review
30-Apr-09	MESH Environmental Inc.	2008 Tailings Geochemistry Data Summary, MAX Molybdenum Mine

Updated: 08/10/2010

13-Jul-09	Klohn Crippen Berger	Max Molybdenum Mine - Tailings Dams - 2008 Construction Summary Report
18-Sep-09	Klohn Crippen Berger	Max Molybdenum Mine - Construction Summary for 2009 Tailings Dam Construction - August 18-25, 2009
15-Oct-09	Klohn Crippen Berger	Max Molybdenum Mine - Tailings Storage Facility - Dam Raise Design
27-Nov-09	Masse Environmental Consultants	Preliminary Water Quality Assessment for 2009
30-Nov-09	FortyTwo Metals Inc.	MAX Molybdenum Mine - Application to Amend BC Mines Permit M-226
28-Jan-10	FortyTwo Metals Inc.	MAX Molybdenum Mine - Updated Conceptual Closure Plan
20-Apr-10	Masse Environmental Consultants Ltd.	MAX Molybdenum Mine Annual Water Quality and Biological Monitoring Report - 2009
22-Apr-10	Klohn Crippen Berger	Max Mine Tailings Facility - 2009 Annual Geotechnical Review
24-Apr-10	Bruceline Engineering Consultants Inc.	Technical Memorandum: 2009 Monthly Tailings Composites
18-May-10	Nautilus Environmental	Toxicity testing on the sample identified as Site TP (Collected on April 21, 2010)
21-May-10	Nautilus Environmental	Roca Mines MMER Toxity Testing Program - May 2010 Sample - Final Toxicity Test Report

Appendix II

Tailings Storage Facility

Dam Raise Design (Klohn Crippen Berger, October 15, 2009)

Appendix III

Piezometer Installation Details

Max Mine - TSF Vibrating Wire Piezometer Readings

VW4829 Southeast Dam

Date	T (°C)	B	Pressure (MPa)	Pressure Head (m)	Water Elevation (mASL)	Reading by
15-Aug-10	7.2	8766.8	-0.003	-0.32	-0.32	J.Lam (KCB)
			11.271	1148.88	1148.88	
			11.271	1148.88	1148.88	
			11.271	1148.88	1148.88	
			11.271	1148.88	1148.88	

VW4988 Southeast Dam

Date	T (°C)	B	Pressure (MPa)	Pressure Head (m)	Water Elevation (mASL)	Reading by
15-Aug-10	6.7	8845.4	0.123	12.58	769.43	J.Lam (KCB)
			11.419	1164.03	1920.88	
			11.419	1164.03	1920.88	
			11.419	1164.03	1920.88	
			11.419	1164.03	1920.88	

VW4986 Northwest Dam

Date	T (°C)	B	Pressure (MPa)	Pressure Head (m)	Water Elevation (mASL)	Reading by
15-Aug-10	7.9	8714.5	0.011	1.13	1.13	J.Lam (KCB)
			7.560	770.62	770.62	
			7.560	770.62	770.62	
			7.560	770.62	770.62	
			7.560	770.62	770.62	

VW4989 Northwest Dam

Date	T (°C)	B	Pressure (MPa)	Pressure Head (m)	Water Elevation (mASL)	Reading by
15-Aug-10	8.1	8820.8	-0.003	-0.26	-0.26	J.Lam (KCB)
			10.957	1116.87	1116.87	
			10.957	1116.87	1116.87	
			10.957	1116.87	1116.87	
			10.957	1116.87	1116.87	

Vibrating Wire Pressure Transducer

Customer:	BGC ENGINEERING INC.		
Model:	VW2100-5.0		
Serial Number:	**VW4989**		
Mfg Number	06-9011		
Range:	5.0 MPa		
Date of Calibration:	1-Jun-06		
Temperature:	24.4 °C		
Barometric Pressure:	991.8 millibars		
W.O. Number:	Q06662		
Cable Length:	250 meters		
Cable Colour Code:	red / black (coil)	green / white	(thermistor)
Cable Insulation	Polyurethane		
Thermistor type:	3 Kohms		

Applied Pressure (MPa)	First Reading (B units)	Applied Pressure (MPa)	Second Reading (B units)	Average Pressure (MPa)	Average Readings (B units)	Calculated Linear (MPa)	Linearity F.S. Error (%)	Polynomial Fit (% FS)
0.000	8834	0.000	8834	0.000	8834	0.010	0.19	-0.02
1.000	8038	1.000	8038	1.000	8038	1.000	0.00	0.04
2.000	7242	2.000	7239	2.000	7241	1.992	-0.17	0.01
3.000	6438	3.000	6438	3.000	6438	2.990	-0.20	-0.02
4.000	5629	4.000	5628	4.000	5629	3.997	-0.06	-0.02
5.000	4812	5.000	4813	5.000	4813	5.012	0.23	0.02
						Max. Error (%):	0.23	0.04

Linear Calibration Factor:	**C.F.=**	**0.0012438**	**MPa/B unit**
Regression Zero:	**At Calibration Bi =**	**8841.8**	B unit
Temperature Correction Factor:	**Tk =**	**0.001505**	**MPa/°C rise**

Polynomial Gage Factors (MPa) **A:** -5.085E-09 **B:** -0.0011744 **C:** 10.7705

Pressure is calculated with the following equations:

Linear, P(MPa) = C.F. X (Li - Lc) - [Tk (Ti - Tc)] + [0.00010 (Bi - Bc)]

Polynomial: $P(MPa)=A(Lc)^2+BLc+C+Tk(Tc-Ti)-[0.00010(Bc-Bi)]$

	Date (dd/mm/yr)	VW Readout Pos. B (Li)	Temp °C (Ti)	Baro (Bi)
Factory Zero Readings:	6-Dec-06	8826	23.0	990.6
Shipped Zero Readings:	16-Jun-06	8833	21.5	1015.8

Li, Lc = initial (at installation) and current readings

Ti, Tc = initial (at installation) and current temperature, in °C

Bi, Bc = initial (at installation) and current barometric pressure readings, in millibars

B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts

B units = Hz^2 / 1000 ie: 1700Hz = 2890 B units

Technician: C. Luong Date: 16-Jun-06

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Document Number: ELL0143E

Vibrating Wire Pressure Transducer

Customer:	BGC ENGINEERING INC.		
Model:	VW2100-3.0		
Serial Number:	**VW4986**		
Mfg Number	06-5997		
Range:	3.0 MPa		
Date of Calibration:	9-May-06		
Temperature:	21.9 °C		
Barometric Pressure:	994.2 millibars		
W.O. Number:	Q06662		
Cable Length:	255 meters		
Cable Colour Code:	red / black (coil)	green / white	(thermistor)
Cable Insulation	Polyurethane		
Thermistor type:	3 Kohms		

Applied Pressure (MPa)	First Reading (B units)	Applied Pressure (MPa)	Second Reading (B units)	Average Pressure (MPa)	Average Readings (B units)	Calculated Linear (MPa)	Linearity F.S. Error (%)	Polynomial Fit (% FS)
0.000	8729	0.000	8730	0.000	8730	0.005	0.16	-0.03
0.600	8042	0.600	8043	0.600	8043	0.600	0.01	0.05
1.200	7354	1.200	7355	1.200	7355	1.197	-0.12	0.04
1.800	6663	1.800	6669	1.800	6666	1.793	-0.22	-0.07
2.400	5967	2.400	5968	2.400	5968	2.399	-0.04	0.00
3.000	5265	3.000	5268	3.000	5267	3.006	0.21	0.02
						Max. Error (%):	0.22	0.07

Linear Calibration Factor:	**C.F.=**	**0.0008667**	**MPa/B unit**
Regression Zero:	**At Calibration Bi =**	**8735.0**	**B unit**
Temperature Correction Factor:	**Tk =**	**0.0005261**	**MPa/°C rise**

Polynomial Gage Factors (MPa) **A:** -3.617E-09 **B:** -0.0008161 **C:** 7.3989

Pressure is calculated with the following equations:

Linear, P(MPa) = C.F. X (Li - Lc) - [Tk (Ti - Tc)] + [0.00010 (Bi - Bc)]

Polynomial: $P(MPa)=A(Lc)^2+BLc+C+Tk(Tc-Ti)-[0.00010(Bc-Bi)]$

	Date (dd/mm/yr)	VW Readout Pos. B (Li)	Temp °C (Ti)	Baro (Bi)
Factory Zero Readings:	5-Oct-06	8727	23.8	992.9
Shipped Zero Readings:	16-Jun-06	8733	21.4	1015.8

Li, Lc = initial (at installation) and current readings

Ti, Tc = initial (at installation) and current temperature, in °C

Bi, Bc = initial (at installation) and current barometric pressure readings, in millibars

B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts

B units = Hz^2 / 1000 ie: 1700Hz = 2890 B units

Technician: C. Luong Date: 16-Jun-06

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Document Number: ELL0143E

Vibrating Wire Pressure Transducer

Customer:	BGC Engineering Inc.	
Model:	VW2100-5.0	
Serial Number:	**VW4829**	
Mfg Number	06-4639	
Range:	5.0 MPa	
Date of Calibration:	21-Apr-06	
Temperature:	25.8 °C	
Barometric Pressure:	1002.7 millibars	
W.O. Number:	024384	
Cable Length:	360 meters	
Cable Colour Code:	red / black (coil)	green / white (thermistor)
Cable Insulation	Polyurethane	
Thermistor type:	3 Kohms	

Applied Pressure (MPa)	First Reading (B units)	Applied Pressure (MPa)	Second Reading (B units)	Average Pressure (MPa)	Average Readings (B units)	Calculated Linear (MPa)	Linearity F.S. Error (%)	Polynomial Fit (% FS)
0.000	8767	0.000	8766	0.000	8767	0.014	0.29	-0.01
1.000	8001	1.000	8002	1.000	8002	0.999	-0.03	0.03
2.000	7234	2.000	7234	2.000	7234	1.986	-0.28	-0.04
3.000	6455	3.000	6455	3.000	6455	2.988	-0.24	0.01
4.000	5671	4.000	5670	4.000	5671	3.997	-0.05	0.02
5.000	4880	5.000	4880	5.000	4880	5.014	0.29	-0.01
						Max. Error (%):	0.29	0.04

Linear Calibration Factor:	**C.F.=**	**0.0012865 MPa/B unit**
Regression Zero:	**At Calibration Bi =**	**8777.8 B unit**
Temperature Correction Factor:	**Tk =**	**0.000660 MPa/°C rise**

Polynomial Gage Factors (MPa) **A:** -7.4334E-09 **B:** -0.0011851 **C:** 10.960

Pressure is calculated with the following equations:

Linear, P(MPa) = C.F. X (Li - Lc) - [Tk (Ti - Tc)] + [0.00010 (Bi - Bc)]

Polynomial: $P(MPa)=A(Lc)^2+BLc+C+Tk(Tc-Ti)-[0.00010(Bc-Bi)]$

	Date (dd/mm/yr)	VW Readout Pos. B (Li)	Temp °C (Ti)	Baro (Bi)
Factory Zero Readings:	19-May-06	8759	22.3	974.2
Shipped Zero Readings:	30-May-06	8769	19.5	1023.8

Li, Lc = initial (at installation) and current readings

Ti, Tc = initial (at installation) and current temperature, in °C

Bi, Bc = initial (at installation) and current barometric pressure readings, in millibars

B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts

B units = Hz^2 / 1000 ie: 1700Hz = 2890 B units

Technician: James C. Date: 30-May-06

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Document Number: ELL0143E

Vibrating Wire Pressure Transducer

Customer:	BGC ENGINEERING INC.		
Model:	VW2100-5.0		
Serial Number:	**VW4988**		
Mfg Number	06-9010		
Range:	5.0 MPa		
Date of Calibration:	1-Jun-06		
Temperature:	24.4 °C		
Barometric Pressure:	991.8 millibars		
W.O. Number:	Q06662		
Cable Length:	150 meters		
Cable Colour Code:	red / black (coil)	green / white	(thermistor)
Cable Insulation	Polyurethane		
Thermistor type:	3 Kohms		

Applied Pressure (MPa)	First Reading (B units)	Applied Pressure (MPa)	Second Reading (B units)	Average Pressure (MPa)	Average Readings (B units)	Calculated Linear (MPa)	Linearity F.S. Error (%)	Polynomial Fit (% FS)
0.000	8942	0.000	8943	0.000	8943	0.015	0.30	-0.03
1.000	8172	1.000	8172	1.000	8172	0.999	-0.01	0.05
2.000	7400	2.000	7398	2.000	7399	1.987	-0.26	0.00
3.000	6617	3.000	6617	3.000	6617	2.986	-0.28	-0.01
4.000	5828	4.000	5828	4.000	5828	3.994	-0.12	-0.04
5.000	5026	5.000	5027	5.000	5027	5.018	0.36	0.03
					Max. Error (%):		0.36	0.05

Linear Calibration Factor:	**C.F.=**	**0.0012776 MPa/B unit**
Regression Zero:	**At Calibration Bi =**	**8954.2** B unit
Temperature Correction Factor:	**Tk =**	**0.000769 MPa/°C rise**

Polynomial Gage Factors (MPa) **A:** -8.155E-09 **B:** -0.0011637 **C:** 11.0566

Pressure is calculated with the following equations:

Linear, P(MPa) = C.F. X (Li - Lc) - { Tk (Ti - Tc) } + { 0.00010 (Bi - Bc) }

Polynomial: $P(MPa)=A(Lc)^2+BLc+C+Tk(Tc-Ti)-[0.00010(Bc-Bi)]$

	Date (dd/mm/yr)	VW Readout Pos. B (Li)	Temp °C (Ti)	Baro (Bi)
Factory Zero Readings:	6-Dec-06	8934	22.9	990.6
Shipped Zero Readings:	16-Jun-06	8949	21.5	1015.8

Li, Lc = initial (at installation) and current readings

Ti, Tc = initial (at installation) and current temperature, in °C

Bi, Bc = initial (at installation) and current barometric pressure readings, in millibars

B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts

B units = Hz^2 / 1000 ie: 1700Hz = 2890 B units

Technician: C. Luong Date: 16-Jun-06

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Document Number: ELL0143E

DRILL HOLE # MW-BGC06-01

Project : Max Molybdenum Project

Location : D/S of Southeast (Lower) Dam

Project No. :

Survey Method :
Co-ordinates (m) :
Ground Elevation (m) :
Datum :
Dip (degrees from horizontal) :
Direction :

Drill Designation : SIMCO Explorer
Drilling Contractor : Geotech Drilling Services Ltd.
Drill Method : ODEX/Diamond drill
Core : HQ
Fluid : water
Casing : HW **Cased To (m)** : 22.86

Start Date : 18 Aug 06
Finish Date: 20 Aug 06
Final Depth of Hole (m) : 29.4
Depth to Top of Rock (m) :
Logged by : ARB
Reviewed by :

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description
0					PEAT (PT) Dark brown, moist, fine to coarse rootlets, occasional woody debris, some silt and sand.
2					ORGANIC SILT (OL) Silt and fine sand, non plastic, soft, bright brown, moist, homogeneous, organic content consists predominantly of rootlets. Note: Organics decayed and dark brown to black in colour.
3					GRAVEL (GM) Silty, some sand, occasional to frequent cobbles, poorly graded, dense, subrounded to subangular particles, brown, moist. [ABLATION TILL]
5					SILT (ML) Some gravel to gravelly, some sand, occasional to frequent cobbles and boulders, poorly graded, very dense, angular to subangular particles, grey, moist. [BASAL TILL]

Instrument Details | SPT Blows per 150mm | SPT-T Friction (kPa) | DCT Blows per 300mm

Su - kPa: 40 80 120 160

VANE PEAT ◆ ■ REMOLD ◇ □

★ % Fines

Core Recovery: 20 40 60 80

▲ UC/2
△ Pocket Pen /2
DCT (blows/300mm)
● SPT (blows/300mm)

Moisture Content & SPT N
W_P% W% W_L%
20 40 60 80

(Continued on next page)

DRILL HOLE # MW-BGC06-01

Project : Max Molybdenum Project

Location : D/S of Southeast (Lower) Dam

Project No. :

Survey Method :
Co-ordinates (m) :
Ground Elevation (m) :
Datum :
Dip (degrees from horizontal) :
Direction :

Drill Designation : SIMCO Explorer
Drilling Contractor : Geotech Drilling Services Ltd.
Drill Method : ODEX/Diamond drill
Core : HQ
Fluid : water
Casing : HW ***Cased To (m)*** : 22.86

Start Date : 18 Aug 06
Finish Date: 20 Aug 06
Final Depth of Hole (m) : 29.4
Depth to Top of Rock (m) :
Logged by : ARB
Reviewed by :

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	Instrument Details	SPT Blows per 150mm	SPT-T Friction (kPa)	DCT Blows per 300mm
8									
9									
10									
11									
12									
13									
14					GRAVEL (GW) Sandy, trace fines, dense, subrounded particles, grey-brown, wet. [POSSIBLE FLUVIAL]				
15									
16									

Su - kPa: 40, 80, 120, 160

VANE: FIELD PEAK ◆ REMOLD ◇ LAB ■ ★ % Fines

▲ UC/2
△ Pocket Pen /2
DCT (blows/300mm)
● SPT (blows/300mm)

Core Recovery: 20 40 60 80

Moisture Content & SPT N
W_P% W% W_L%
20 40 60 80

(Continued on next page)

DRILL HOLE # MW-BGC06-01

Project : Max Molybdenum Project

Location : D/S of Southeast (Lower) Dam

Project No. :

Survey Method :
Co-ordinates (m) :
Ground Elevation (m) :
Datum :
Dip (degrees from horizontal) :
Direction :

Drill Designation : SIMCO Explorer
Drilling Contractor : Geotech Drilling Services Ltd.
Drill Method : ODEX/Diamond drill
Core : HQ
Fluid : water
Casing : HW **Cased To (m)** : 22.86

Start Date : 18 Aug 06
Finish Date: 20 Aug 06
Final Depth of Hole (m) : 29.4
Depth to Top of Rock (m) :
Logged by : ARB
Reviewed by :

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	Instrument Details	SPT Blows per 150mm	SPT-T Friction (kPa)	DCT Blows per 300mm
16									
17									
18					SILT (ML) Some gravel to gravelly, some sand, occasional to frequent cobbles and boulders, poorly graded, very dense, angular to subangular particles, grey, moist. [BASAL TILL]				
19									
20									
21									
22									
23					BEDROCK: Argillite - foliated, with majority of fractures along foliation planes. Foliation fractures are typically 30mm spacing. Discontinuities typically contain thin film of graphite and/or clay.				
24									

Su - kPa: 40, 80, 120, 160

VANE: PEAK ◆ ◇ REMOLD — FIELD ◆ ◇ LAB ■ □

★ % Fines

Core Recovery: 20, 40, 60, 80

▲ UC/2
△ Pocket Pen /2
DCT (blows/300mm)
● SPT (blows/300mm)

Moisture Content & SPT N
W_P% W% W_L%
20, 40, 60, 80

(Continued on next page)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: FortyTwo Metals

DRILL HOLE # MW-BGC06-01

Project : Max Molybdenum Project

Location : D/S of Southeast (Lower) Dam

Project No. :

Survey Method :
Co-ordinates (m) :
Ground Elevation (m) :
Datum :
Dip (degrees from horizontal) :
Direction :

Drill Designation : SIMCO Explorer
Drilling Contractor : Geotech Drilling Services Ltd.
Drill Method : ODEX/Diamond drill
Core : HQ
Fluid : water
Casing : HW ***Cased To (m)*** : 22.86

Start Date : 18 Aug 06
Finish Date: 20 Aug 06
Final Depth of Hole (m) : 29.4
Depth to Top of Rock (m) :
Logged by : ARB
Reviewed by :

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	Instrument Details	SPT Blows per 150mm	SPT-T Friction (kPa)	DCT Blows per 300mm
24									
25									
26									
27									
28									
29									
					END OF HOLE: 29.41 m.				
30									
31									
32									

Su - kPa: 40 80 120 160

VANE: PEAK ◆ ■ / REMOLD ◇ □ (FIELD / LAB)

▲ UC/2
△ Pocket Pen /2
DCT (blows/300mm)
★ % Fines
● SPT (blows/300mm)

Core Recovery: 20 40 60 80

Moisture Content & SPT N: W_P% W% W_L%
20 40 60 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: FortyTwo Metals

DRILL HOLE # MW-BGC06-02

Project : Max Molybdenum Project

Location : D/S of Southeast (Lower) Dam

Project No. :

Survey Method :
Co-ordinates (m) :
Ground Elevation (m) :
Datum :
Dip (degrees from horizontal) :
Direction :

Drill Designation : SIMCO Explorer
Drilling Contractor : Geotech Drilling Services Ltd.
Drill Method : ODEX/Diamond drill
Core : HQ
Fluid : water
Casing : HW **Cased To (m)** : 4.57

Start Date : 20 Aug 06
Finish Date: 20 Aug 06
Final Depth of Hole (m) : 4.6
Depth to Top of Rock (m) :
Logged by : ARB
Reviewed by :

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	Instrument Details
0					PEAT (PT) Dark brown, moist, fine to coarse rootlets, occasional woody debris, some silt and sand.	
2					ORGANIC SILT (OL) Silt and fine sand, non plastic, soft, bright brown, moist, homogeneous, organic content consists predominantly of rootlets. Note: Organics decayed and dark brown to black in colour.	
4					GRAVEL (GM) Silty, some sand, occasional to frequent cobbles, poorly graded, dense, subrounded to subangular particles, brown, moist. [ABLATION TILL]	
5					END OF HOLE: 4.57 m. Shallow piezo/monitoring well offset approximately 3 m northwest of MW-BGC06-01.	

SPT Blows per 150mm | SPT-T Friction (kPa) | DCT Blows per 300mm

Su - kPa: 40, 80, 120, 160

VANE: FIELD PEAK ◆ LAB PEAK ■; FIELD REMOLD ◇ LAB REMOLD □

▲ UC/2
△ Pocket Pen /2
DCT (blows/300mm)
★ % Fines
● SPT (blows/300mm)

Core Recovery: 20, 40, 60, 80

Moisture Content & SPT N: W_p% × — W% -O- — W_L% ×; 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: FortyTwo Metals

DRILL HOLE # MW-BGC06-03

Project : Max Molybdenum Project

Location : D/S of Northwest (Upper) Dam

Project No. :

Survey Method :
Co-ordinates (m) :
Ground Elevation (m) :
Datum :
Dip (degrees from horizontal) :
Direction :

Drill Designation : SIMCO Explorer
Drilling Contractor : Geotech Drilling Services Ltd.
Drill Method : ODEX/Diamond drill
Core : HQ
Fluid : water
Casing : HW **Cased To (m)** : 3.05

Start Date : 22 Aug 06
Finish Date: 23 Aug 06
Final Depth of Hole (m) : 8.0
Depth to Top of Rock (m) :
Logged by : ARB
Reviewed by :

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	Instrument Details	SPT Blows per 150mm	SPT-T Friction (kPa)	DCT Blows per 300mm
0					ORGANIC SILT (OL) Silt and fine sand, non plastic, soft, bright brown, moist, homogeneous, organic content consists predominantly of rootlets.				
1									
2					GRAVEL (GM) Silty, some sand, occasional to frequent cobbles, poorly graded, dense, subrounded to subangular particles, brown, moist. [ABLATION TILL]				
3					BEDROCK: Argillite - foliated, with majority of fractures along foliation planes. Foliation fractures are typically 30mm spacing. Discontinuities typically contain thin film of graphite and/or clay.				
4									
5									
6									
7									
8									

Su - kPa: 40 80 120 160

VANE: PEAK ◆ REMOLD ◇ | FIELD: ◆ | LAB: ■

▲ UC/2
△ Pocket Pen /2
DCT (blows/300mm)
● SPT (blows/300mm)

★ % Fines

Core Recovery: 20 40 60 80

Moisture Content & SPT N
W_P% W% W_L%
20 40 60 80

(Continued on next page)

DRILL HOLE # MW-BGC06-03

Project : Max Molybdenum Project

Location : D/S of Northwest (Upper) Dam

Project No. :

Survey Method :
Co-ordinates (m) :
Ground Elevation (m) :
Datum :
Dip (degrees from horizontal) :
Direction :

Drill Designation : SIMCO Explorer
Drilling Contractor : Geotech Drilling Services Ltd.
Drill Method : ODEX/Diamond drill
Core : HQ
Fluid : water
Casing : HW ***Cased To (m)*** : 3.05

Start Date : 22 Aug 06
Finish Date: 23 Aug 06
Final Depth of Hole (m) : 8.0
Depth to Top of Rock (m) :
Logged by : ARB
Reviewed by :

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	Instrument Details	SPT Blows per 150mm	SPT-T Friction (kPa)	DCT Blows per 300mm
8					END OF HOLE: 8.03 m. Drilled hole to prove out bedrock, and drilled adjacent hole for HQ core to obtain geomechanical properties of bedrock.				
9									
10									
11									
12									
13									
14									
15									
16									

Su - kPa: 40, 80, 120, 160

VANE: FIELD PEAK ◆ LAB PEAK ■; FIELD REMOLD ◇ LAB REMOLD □

▲ UC/2
△ Pocket Pen /2
DCT (blows/300mm)
● SPT (blows/300mm)

★ % Fines

Core Recovery: 20, 40, 60, 80

Moisture Content & SPT N
W_p% W% W_l%
20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: FortyTwo Metals

Project: Max Molybdenum

DRILL HOLE # DH-BGC07-33

Location : 22 m u/s of SE Dam, Sta. 0+185 m

Project No. : 0327-003-05

Survey Method :
Co-ordinates (m) : 459,701.E, 5,610,923.N
Ground Elevation (m) : 767.9
Datum :
Dip (degrees from horizontal) : 90
Direction :

Drill Designation : Fraste Multidrill XL
Drilling Contractor : Geotech
Drill Method : Rotex
Core :
Fluid :
Casing : HWT **Cased To (m)** :

Start Date : 23 Feb 07
Finish Date: 24 Feb 07
Final Depth of Hole (m) : 10.2
Depth to Top of Rock (m) :
Logged by : RRL
Reviewed by : BJN

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	Instrument Details	SPT Blows per 150mm	SPT-T Friction (kPa)	DCT Blows per 300mm
0					GRAVEL (GW) Sandy, some silt, dense, brown, dry to moist [FILL]				
2		1			GRAVEL (GM) Silty, some sand, very dense, angular to subrounded, grey [BASAL TILL] Slow drilling, dry gravel, sand and matrix, dry silt cuttings		41 47 49		
4		2			Silty GRAVEL with sand (GM) Very dense, angular to subrounded, grey matrix, dry [BASAL TILL] - 46% gravel, 28% fines, 26% sand		41 50+		
6		3			GRAVEL (GM) Silty, some sand, very dense, angular to subrounded, grey, dry to moist [BASAL TILL]		14 28 34		
7		4			GRAVEL (GM) Silty, some sand, very dense, subangular to subrounded, grey, moist [BASAL TILL]		50+ Refusal at 10 cm		
8									

Su - kPa: 40, 80, 120, 160

VANE / FIELD / LAB
PEAK ◆ ■
REMOLD ◇ □
★ % Fines
Core Recovery: 20, 40, 60, 80

▲ UC/2
△ Pocket Pen /2
DCT (blows/300mm)
SPT (blows/300mm)

Moisture Content & SPT N
W_p% W% W_L%
20, 40, 60, 80

(Continued on next page)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: FortyTwo Metals Inc.

Project: Max Molybdenum

DRILL HOLE # DH-BGC07-33

Location : 22 m u/s of SE Dam, Sta. 0+185 m

Project No. : 0327-003-05

Survey Method :
Co-ordinates (m) : 459,701.E, 5,610,923.N
Ground Elevation (m) : 767.9
Datum :
Dip (degrees from horizontal) : 90
Direction :

Drill Designation : Fraste Multidrill XL
Drilling Contractor : Geotech
Drill Method : Rotex
Core :
Fluid :
Casing : HWT **Cased To (m)** :

Start Date : 23 Feb 07
Finish Date: 24 Feb 07
Final Depth of Hole (m) : 10.2
Depth to Top of Rock (m) :
Logged by : RRL
Reviewed by : BJN

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	Instrument Details	SPT Blows per 150mm	SPT-T Friction (kPa)	DCT Blows per 300mm
8									
		5			GRAVEL (GM) Silty, some sand, very dense, angular to subrounded, grey, moist [BASAL TILL]		27 47 50+		
9					Gravel, wet Very wet, artesian - 30+ gal / min (?) grey silty water				
10					End of Hole (10.2 m) - artesian conditions ~ 4 m of head - VW Piezometer (VW 4987) installed at 10.2 m				
11									
12									
13									
14									
15									
16									

Su - kPa: 40, 80, 120, 160

VANE: FIELD PEAK ◆ REMOLD ◇ | LAB ■ □

★ % Fines

Core Recovery: 20 40 60 80

UC/2 ▲
Pocket Pen /2 △
DCT (blows/300mm)
SPT (blows/300mm) ●

Moisture Content & SPT N
W_P% W% W_L%
20 40 60 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: FortyTwo Metals Inc.

Project: Max Molybdenum

DRILL HOLE # DH-BGC07-35A

Location : D/s of SE Dam

Project No. : 0327-003-05

Survey Method :
Co-ordinates (m) : 459,772.E, 5,610,875.N
Ground Elevation (m) : 769.1
Datum :
Dip (degrees from horizontal) : 90
Direction :

Drill Designation : Fraste Multidrill XL
Drilling Contractor : Geotech
Drill Method : Rotex
Core :
Fluid :
Casing : HWT **Cased To (m)** : 12.30

Start Date : 26 Feb 07
Finish Date: 27 Feb 07
Final Depth of Hole (m) : 12.3
Depth to Top of Rock (m) :
Logged by : RRL
Reviewed by : BJN

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	Instrument Details	SPT Blows per 150mm	SPT-T Friction (kPa)	DCT Blows per 300mm
0					GRAVEL (GW) Some silt, some sand, compact to dense, flat, angular, dark grey, moist [FILL]				
2.4					ORGANIC SOIL (PT) Loose [PEAT]				
4.3					Silty SAND with gravel (SM) Very dense, subangular to subrounded, grey, moist [BASAL TILL]		20 33 50		
7.0					GRAVEL (GM) And silt, some sand, very dense, subangular to subrounded, grey, moist [BASAL TILL]		19 42 50+		
8									

Su - kPa: 40, 80, 120, 160

VANE: FIELD / LAB — PEAK ◆ ■ — REMOLD ◇ □

★ % Fines

Core Recovery: 20 40 60 80

▲ UC/2
△ Pocket Pen /2
DCT (blows/300mm)
● SPT (blows/300mm)

Moisture Content & SPT N
W_P% W% W_L%
20 40 60 80

(Continued on next page)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: FortyTwo Metals Inc.

Project: Max Molybdenum

DRILL HOLE # DH-BGC07-35A

Location : D/s of SE Dam

Project No. : 0327-003-05

Survey Method :
Co-ordinates (m) : 459,772.E, 5,610,875.N
Ground Elevation (m) : 769.1
Datum :
Dip (degrees from horizontal) : 90
Direction :

Drill Designation : Fraste Multidrill XL
Drilling Contractor : Geotech
Drill Method : Rotex
Core :
Fluid :
Casing : HWT **Cased To (m)** : 12.30

Start Date : 26 Feb 07
Finish Date: 27 Feb 07
Final Depth of Hole (m) : 12.3
Depth to Top of Rock (m) :
Logged by : RRL
Reviewed by : BJN

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	Instrument Details	SPT Blows per 150mm	SPT-T Friction (kPa)	DCT Blows per 300mm
8									
		3			GRAVEL (GM) Some silt, some sand, dense, angular to subrounded, grey, wet [BASAL TILL]		50+ - -		
9									
10		4			GRAVEL (GM) And silt, some sand, very dense, subangular to subrounded, moist, grey [BASAL TILL]		30 38 50		
11		5			GRAVEL (GW) Wet, making water (driller noted, but not flowing to surface). Pebbles recovered from SPT, subangular to subrounded, multicoloured.		Refusal at 0 cm - -		
12					End of Hole (12.25 m) - slow progress (30 cm in 1.5 hours) - VW Piezometer (VW 4988) installed: tip at bottom of hole (12.25 m) - Water level 30 cm above ground level on Feb 27, 2007.				
13									
14									
15									
16									

Su - kPa: 40, 80, 120, 160

VANE: PEAK, REMOLD — FIELD: ◆ ◇ — LAB: ■ □

★ % Fines

Core Recovery: 20, 40, 60, 80

▲ UC/2
△ Pocket Pen /2
DCT (blows/300mm)
SPT (blows/300mm)

Moisture Content & SPT N
W_P% W% W_L%
20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: FortyTwo Metals Inc.

Project: Max Molybdenum

DRILL HOLE # DH-BGC07-23A

Location : 16 m d/s of original NW Dam, Sta. 0+135 m

Project No. : 0327-003-05

Survey Method :
Co-ordinates (m) : 459,359.E, 5,611,286.N
Ground Elevation (m) : 774.8
Datum :
Dip (degrees from horizontal) : 90
Direction :

Drill Designation : Fraste Multidrill XL
Drilling Contractor : Geotech
Drill Method : ROTEX /ODEX
Core :
Fluid :
Casing : HWT **Cased To (m)** :

Start Date : 06 Feb 07
Finish Date: 06 Feb 07
Final Depth of Hole (m) : 11.5
Depth to Top of Rock (m) :
Logged by : RRL
Reviewed by : BJN

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	Instrument Details	SPT Blows per 150mm	SPT-T Friction (kPa)	DCT Blows per 300mm
0					GRAVEL (GW) And sand, some silt, well graded, compact, brown [FILL]				
1					GRAVEL (GM) Silty, some sand, dense, grey, dry to moist Boulder (1.3 m to 1.9 m)				
2					GRAVEL (GM) And sand, silty, compact to dense, brown, dry to moist [GLACIAL OUTWASH]				
3									
4					Wet, some rounded gravel pieces noted in cuttings, gravel is green, white, grey, orange				
5					Boulder (4.9 m to 5.4 m)				
6									
7		1			GRAVEL (GM) Sandy, some fines, very dense, angular to subrounded, multicolour sand and gravel, tan silt, wet. [GLACIAL OUTWASH] Boulder (7.2 m to 7.6 m)		45 50+		
8									

Su - kPa: 40, 80, 120, 160

VANE: FIELD / LAB — PEAK ◆ ■ — REMOLD ◇ □

▲ UC/2 — △ Pocket Pen /2 — DCT (blows/300mm) — ● SPT (blows/300mm)

★ % Fines

Core Recovery: 20, 40, 60, 80

Moisture Content & SPT N: W_P% — W% — W_L%: 20, 40, 60, 80

(Continued on next page)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: FortyTwo Metals Inc.

Project: Max Molybdenum

DRILL HOLE # DH-BGC07-23A

Location : 16 m d/s of original NW Dam, Sta. 0+135 m

Project No. : 0327-003-05

Survey Method :
Co-ordinates (m) : 459,359.E, 5,611,286.N
Ground Elevation (m) : 774.8
Datum :
Dip (degrees from horizontal) : 90
Direction :

Drill Designation : Fraste Multidrill XL
Drilling Contractor : Geotech
Drill Method : ROTEX /ODEX
Core :
Fluid :
Casing : HWT **Cased To (m)** :

Start Date : 06 Feb 07
Finish Date: 06 Feb 07
Final Depth of Hole (m) : 11.5
Depth to Top of Rock (m) :
Logged by : RRL
Reviewed by : BJN

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	Instrument Details	SPT Blows per 150mm	SPT-T Friction (kPa)	DCT Blows per 300mm
8									
		2			Silty GRAVEL with sand (GM) Very dense, angular, grey, orange - yellow, wet [GLACIAL OUTWASH] - 46% gravel, 34% sand, 20% fines		50 50+		
9									
10		3			GRAVEL (GM) Some sand, some silt, very dense, angular and friable, grey, orange, wet		22 50+		
11									
12					End of Hole (11.5 m) - Standpipe installed - Very slow drill progress				
13									
14									
15									
16									

Su - kPa: 40, 80, 120, 160

VANE	FIELD	LAB
PEAK	◆	■
REMOLD	◇	□

▲ UC/2
△ Pocket Pen /2
DCT (blows/300mm)
● SPT (blows/300mm)

★ % Fines

Core Recovery: 20, 40, 60, 80

Moisture Content & SPT N
W_P% W% W_L%
20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: FortyTwo Metals Inc.

Appendix IV

Standard Forms

Daily Tailings Line Inspection

Date		Tailing inspected OK ?YES / NO	Tailing Pond Level	Weather	Corrective Action
May	1	yes	1.28	overcast	
	2	yes	1.05	lt rain	
	3	yes	1.38	rain/snow	checked entire tailings line
	4	yes	1.38	cloudy	
	5				
	6				
	7				
	8				
	9				
	10				
	11				
	12				
	13				
	14				
	15				
	16				
	17				
	18				
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	20				
	21				
	22				
	23				
	24				
	25				
	26				
	27				
	28				
	29				
	30				
	31				

The tailing line is to be inspected every day by the person assigned to monitor daily water quality at the tailing pond effluent discharge and the settling pond discharge. Any problems with the tailing line are to be reported immediately to the on-site supervisor and / or mill supervisor. In the event of a leak, the mill will stop discharging tailings immediately and only commence operations once the tailings line is repaired.

(SAME FORM FOR SITE D)

Sample Site TP

Month APRIL

Date	Time	NTU	ECC	pH	Temp	Weather	Activity	Staff Gauge	Flow	Notes
Apr 1	4:45	14.1	550	7.72	5.4	7°				started lines @ 4:30
Apr 2	8:30	47.5	670	7.98	4.1	2°				2 lines
Ap 9	9:10	29.3	620	7.69	4.0	0°	WINDY	.175		1 LINE
AP 10	9:05	22.9	630	7.79	4.5	0°		.175		1 LINE
11	8:40	20.2	630	7.58	4.7	-1°		.175		1 LINE
12	8:50	20.3	630	7.62	4.8	0°		.175		1 LINE
13	8:30	26.1	640	7.52	5.4	+4°		.225		2 LINES
14	8:35	24.8	630	7.68	6.2			.225		2 lins
15	8:20	22.5	630	7.63	6.6	-4°		.225		2 lins
16	8:40	15.1	630	7.57	7.1	+4°		.225		2 lins
17	8:50	19.1	630	7.76	8.2	7°		.225		2 lins
18	8:55	26.0	630	7.70	8.3	+6°		.225		2 lins
19	8:30	23.3	630	7.73	8.2	-4°		.225		2 lins
20	8:50	17.0	540	7.46	11.0	+12°		.08		Pulled lines
21	10:20	6.40	510	7.17	11.2	+13°		.06		
22	9:45	7.07	550	7.78	9.5	+9°		.065		OVERCAST SUN WIND
23	9:05	6.01	560	7.76	7.8	+5°		.065		
24	9:50	4.08	540	7.73	8.3	+5°		.07		
25	7:40	4.17	540	7.81	7.9	+2°		.07		
26	7:50	4.12	540	7.64	8.7	+2°		.07		CAL pH
27	7:50	2.82	580	7.93	8.8	+4°		.06		
28	8:10	4.03	570	8.40	8.3	+6°		.065		
29	8:05	3.98	580	8.37	8.4	+7°		.06		
30	7:45	3.65	580	8.47	8.8	+5°		.06		
May 1	9:15	1.48	580	8.31	8.9	6°		.06		
	9:30	1.38	600	8.24	9.2	8°		.06		
	9:10	2.45	590	8.11	8.2	3°		.065		