



March 18, 2019

Tracking Number: 356062  
Authorization Number: 416

**REGISTERED MAIL**

GIBRALTAR MINES LTD.  
c/o McMillan LLP  
1500 Royal Centre, 1055 W. Georgia St.  
PO Box 11117  
Vancouver BC V6E 4N7

Dear Permittee:

Enclosed is Amended Permit 416 issued under the provisions of the *Environmental Management Act*. Your attention is respectfully directed to the terms and conditions outlined in the permit. An annual fee will be determined according to the Permit Fees Regulation.

This permit does not authorize entry upon, crossing over, or use for any purpose of private or Crown lands or works, unless and except as authorized by the owner of such lands or works. The responsibility for obtaining such authority rests with the permittee. This permit is issued pursuant to the provisions of the *Environmental Management Act* to ensure compliance with Section 120(3) of that statute, which makes it an offence to discharge waste, from a prescribed industry or activity, without proper authorization. It is also the responsibility of the permittee to ensure that all activities conducted under this authorization are carried out with regard to the rights of third parties, and comply with other applicable legislation that may be in force.

When a spill occurs, or there is an imminent risk of one occurring, the responsible person must ensure that it is reported in accordance with the Spill Reporting Regulation.

Additional information on spill reporting requirements is available at:

<https://www2.gov.bc.ca/gov/content/environment/air-land-water/spills-environmental-emergencies/report-a-spill>.

This decision may be appealed to the Environmental Appeal Board in accordance with Part 8 of the *Environmental Management Act*. An appeal must be delivered within 30 days from the date that notice of this decision is given. For further information, please contact the Environmental Appeal Board at (250) 387-3464.

Administration of this permit will be carried out by staff from the Environmental Protection Division's Regional Operations Branch. Plans, data and reports pertinent to the permit are to be submitted by email ([EnvAuthorizationsReporting@gov.bc.ca](mailto:EnvAuthorizationsReporting@gov.bc.ca)) or electronic transfer to the Director, designated Officer, or as further instructed (for more information: [www.gov.bc.ca/submit-waste-authorization-reports](http://www.gov.bc.ca/submit-waste-authorization-reports)).

Yours truly,

A handwritten signature in black ink that reads "Douglas Hill". The signature is written in a cursive style with a large, stylized initial 'D'.

Douglas J. Hill, P.Eng.  
for Director, *Environmental Management Act*  
Mining Operations

Enclosure

cc: Environment Canada



**MINISTRY OF  
ENVIRONMENT**

**PERMIT**

**416**

*Under the Provisions of the Environmental Management Act*

**GIBRALTAR MINES LTD.**

**1500 Royal Centre, 1055 W. Georgia St.  
PO Box 11117  
Vancouver BC V6E 4N7**

Is authorized to discharge mine and mill effluent to the ground, saddle dam seepage and runoff to Arbutnot Creek, and tailings impoundment supernatant to the Fraser River near Marguerite, British Columbia, subject to the requirements listed below.

Contravention of any of these requirements is a violation of the *Environmental Management Act* and may lead to prosecution.

This Authorization supersedes and replaces all previous versions of Permit 416 issued under Section 14 of the *Environmental Management Act*.

**1. AUTHORIZED DISCHARGES**

**1.1 Authorized Source**

This section applies to the discharge of effluent from a Tailings Impoundment and/or Tailings Impoundment Seepage Ponds to the Fraser River. The site reference number for this discharge is E261604.

1.1.1 The maximum rate of discharge is 0.285 cubic metres per second.

1.1.2 The duration of the authorized discharge is from April 10, 2019 to November 10, 2021, except that:

(a) the discharge must be suspended during any time that both the Fraser River mean daily temperature at Marguerite exceeds 19 °C and the

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for Director, *Environmental Management Act*  
Mining Operations

tailings impoundment supernatant mean daily temperature exceeds the Fraser River temperature; and,

- (b) the maximum rate of discharge must be curtailed to 190 L/s on any day the Fraser River flow is less than 800 m<sup>3</sup>/s averaged over the previous 24 hours, as recorded at the Water Survey of Canada hydrometric station Fraser River near Marguerite (08MC018); and,
- (c) the discharge authorization must be suspended during the period of November 11th to April 9th, inclusive. The Permittee may discharge effluent under this section instead of under section 1.2 and not in addition to a discharge under section 1.2 of this permit.

1.1.3 The characteristics of the discharge must be equivalent to or better than:

Total Suspended Solids  
Maximum: 25 mg/L

Total Sulfate  
Maximum: 1650 mg/L

Nitrogen NO<sub>2</sub> + NO<sub>3</sub>  
Maximum: 10 mg/L

Total ammonia Nitrogen  
Maximum: 1 mg/L

Ortho-Phosphorus  
Maximum: 2 mg/L

Dissolved Aluminum  
Maximum: 0.1 mg/L

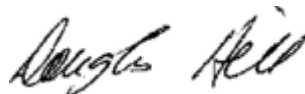
Dissolved Iron  
Maximum: 0.3 mg/L

Dissolved Manganese  
Maximum: 0.4 mg/L

Total Antimony  
Maximum: 0.2 mg/L

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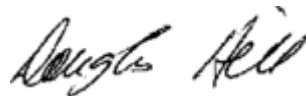


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Total Arsenic	
Maximum:	0.01 mg/L
Total Cadmium	
Maximum:	0.0005 mg/L
Total Chromium	
Maximum:	0.003 mg/L
Total Cobalt	
Maximum:	0.02 mg/L
Total Copper	
Maximum Monthly Average:	0.008 mg/L
Maximum:	0.030 mg/L
Total Lead	
Maximum:	0.05 mg/L
Total Mercury	
Maximum:	0.0001 mg/L
Total Molybdenum	
Maximum:	0.7 mg/L
Total Selenium	
Maximum:	0.01 mg/L
Total Zinc	
Maximum:	0.02 mg/L
Rainbow Trout LC50	
Maximum:	50 % (Mortality)

- 1.1.4 The effluent discharged must have an annual median total copper concentration that does not exceed 0.005 mg/L, and an annual median total cadmium concentration that does not exceed 0.00015 mg/L. Annual median concentrations must be determined based on calendar year. The effluent discharged must have a pH measured at the outfall within a range of 6.5 to 9.0 for at least 95% of all measurements taken during any day.

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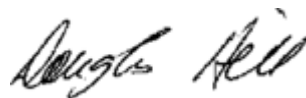
- 1.1.5 The discharge is authorized from Authorized Works, which are a barge and pump, reclaim water reservoir, pipeline, submerged outfall with diffuser, and related appurtenances approximately located as shown on Site Plan A.
- 1.1.6 The permittee must not discharge under this Authorization unless the Authorized Works are complete and fully operational.
- 1.1.7 The location of the facilities from which the discharge is authorized to originate is the Gibraltar Mine Tailings Impoundment, located at mineral claims HY5 (204316), HY10 (204302), HY 11 (204303), HY12 (204304), HY13 (204305), HY14 (204306), HY15 (204307), and HY16 (204308).
- 1.1.8 The location of the point where the discharge is authorized to occur is Fraser River mid-channel near Marguerite, BC, described as within R/W over District Lot 5106, Cariboo District and Over UCF Being part of the Bed of Fraser River, as shown on Plan EPP 1450 filed in the New Westminster Land Title Office.

## 1.2 Authorized Source

This section applies to the discharge of effluent from a Tailings Impoundment to the Fraser River. The site reference number for this discharge is E261604.

- 1.2.1 The maximum rate of discharge is 0.190 cubic metres per second.
- 1.2.2 The authorized discharge period is continuous except that:
  - (a) the discharge must be suspended during any time that both the Fraser River mean daily temperature at Marguerite exceeds 19 °C and the tailings impoundment supernatant mean daily temperature exceeds the Fraser River temperature; and,
  - (b) the discharge authorization must be suspended during the period of November 11th to April 9th, inclusive, unless following additional monitoring and testing, the Director makes a determination that some discharge be allowed for some or all of that period, at a rate or rates to be specified by the Director from time to time subject to the requirements set out in this amended permit and any further requirements that the Director considers advisable for the protection of

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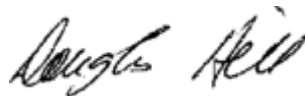
the environment.

1.2.3 The characteristics of the discharge must be equivalent to or better than:

Total Suspended Solids	
Maximum:	25 mg/L
Total Sulfate	
Maximum:	1800 mg/L
Nitrogen NO <sub>2</sub> + NO <sub>3</sub>	
Maximum:	10 mg/L
Total ammonia Nitrogen	
Maximum:	1 mg/L
Ortho-Phosphorus	
Maximum:	2 mg/L
Dissolved Aluminum	
Maximum:	0.7 mg/L
Dissolved Iron	
Maximum:	0.3 mg/L
Dissolved Manganese	
Maximum:	0.4 mg/L
Total Antimony	
Maximum:	0.2 mg/L
Total Arsenic	
Maximum:	0.01 mg/L
Total Cadmium	
Maximum:	0.0005 mg/L
Total Chromium	
Maximum:	0.02 mg/L

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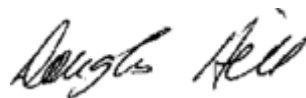


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Total Cobalt	
Maximum:	0.02 mg/L
Total Copper	
Maximum:	0.03 mg/L
Total Lead	
Maximum:	0.05 mg/L
Total Mercury	
Maximum:	0.0001 mg/L
Total Molybdenum	
Maximum:	0.7 mg/L
Total Selenium	
Maximum:	0.01 mg/L
Total Zinc	
Maximum:	0.02 mg/L
Rainbow Trout LC50	
Maximum:	50 % (Mortality)

- 1.2.4 The effluent discharged must have an annual median total copper concentration that does not exceed 0.005 mg/L, and an annual median total cadmium concentration that does not exceed 0.00015 mg/L. Annual median concentrations must be determined based on calendar year. The effluent discharged must have a pH measured at the outfall within a range of 6.5 to 9.0 for at least 95% of all measurements taken during any day.
- 1.2.5 The discharge is authorized from Authorized Works, which are a barge and pump, reclaim water reservoir, pipeline, submerged outfall with diffuser, and related appurtenances approximately located as shown on Site Plan A.
- 1.2.6 The permittee must not discharge under this Authorization unless the Authorized Works are complete and fully operational.
- 1.2.7 The location of the facilities from which the discharge is authorized to originate is the Gibraltar Mine Tailings Impoundment, located at mineral

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claims HY5 (204316), HY10 (204302), HY 11 (204303), HY12 (204304), HY13 (204305), HY14 (204306), HY15 (204307), and HY16 (204308).

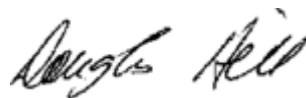
- 1.2.8 The location of the point where the discharge is authorized to occur is Fraser River mid-channel near Marguerite, BC, described as within R/W over District Lot 5106, Cariboo District and Over UCF Being part of the Bed of Fraser River, as shown on Plan EPP 1450 filed in the New Westminster Land Title Office.

### 1.3 Authorized Source

This section applies to the discharge of tailings slurry from a copper-molybdenum ore concentrator, seepage from embankment ponds, domestic sewage, treated open pit drainage, and treated rock dump drainage to a tailings impoundment. The site reference number for this discharge is E214755.

- 1.3.1 The maximum rate of tailings slurry and open pit and rock dump drainage discharged to the tailings impoundment is an annual average of 200,000 cubic metres per day.
- 1.3.2 The characteristics of the effluent must be typical of copper-molybdenum ore concentrator tailings slurry, and embankment seepage pond effluent. Lagoon treated domestic sewage effluent must have a total suspended solids content of less than 130 mg/L, and a 5-day biochemical oxygen demand of less than 130 mg/L. Treated open pit and rock dump drainage must have a pH of greater than 6.5 pH units as measured in both final tails pump boxes.
- 1.3.3 The discharge is authorized from Authorized Works, which include, but are not limited to, a tailings impoundment including a main embankment, perimeter embankment, and saddle dam; a tailings discharge line and containment ditching system; a seepage collection system and pond; a supernatant reclaim system; a mine drainage collection system; a waste rock dump drainage collection system; a lime addition system; a sewage lagoon; and, pipelines, pumps, reclaim water reservoir, and related appurtenances located approximately as shown on the attached Site Plan.
- 1.3.4 The location of the facilities from which the discharge is authorized to originate is within the area covered by the Mineral Claims and Leases as per the attached appendix A.

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#### 1.4 Authorized Source

This section applies to the discharge of tailings main embankment seepage pond water, excess raffinate from an SX-EW plant, open pit drainage, rock dump drainage, and domestic sewage to the Gibraltar East Pit. The site reference number for this discharge is E233664.

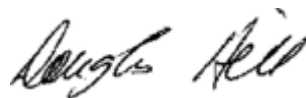
- 1.4.1 The maximum elevation to which effluent may be stored in the Gibraltar East Pit is 3200 feet above mean sea level (amsl).
- 1.4.2 The characteristics of the effluent must be typical of tailings embankment seepage pond water, SX-EW plant raffinate, open pit drainage, and rock dump drainage. Lagoon treated domestic sewage effluent must have a total suspended solids content of less than 130 mg/L, and a 5-day biochemical oxygen demand of less than 130 mg/L.
- 1.4.3 The discharge is authorized from Authorized Works, which include, but are not limited to, a seepage pond, an effluent pipeline and containment ditching system, a mine drainage collection system, mined out pits, a sewage lagoon, pumping systems and related appurtenances, approximately as shown on the attached Site Plan.
- 1.4.4 The location of the facilities from which the discharge is authorized to originate is within the area covered by the Mineral Claims and Leases as per the attached appendix A.
- 1.4.5 The location of the point of discharge is within the tailings impoundment approximately at latitude 52°30'56" and longitude 122°17'31".

#### 1.5 Authorized Source

This section applies to the discharge of seepage and runoff from the East Saddle Dam to a wetland on Arbuthnot Creek. The site reference number for this discharge is E293069.

- 1.5.1 The authorized discharge period is continuous:
  - (a) While the elevation of the East Saddle Dam does not exceed 3600 ft above mean sea level, unless following additional monitoring and assessment satisfactory to the Director, the Director makes a determination that some discharge be allowed for higher dam

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elevations, at a rate or rates to be specified by the Director from time to time subject to the requirements set out in this amended permit and any further requirements that the Director considers advisable for the protection of the environment; and,

- (b) While BC Water Quality Guidelines for Aquatic Life, as amended from time to time, excepting for those parameters listed in section 1.4.2 below, are met at the outlet from the wetland into Arbutnot Creek (latitude 52°32'54" and longitude 122°13'01", EMS site E293070) as defined in the triggers set in the Wetland Management and Contingency Plan required in section 2.6 below.

1.5.2 The characteristics of the discharge must be equivalent to or better than:

Total Suspended Solids

Maximum: 30 mg/L

Total Sulfate

Maximum: 600 mg/L

Dissolved Aluminum

Maximum: 0.1 mg/L

Dissolved Iron

Maximum: 0.35 mg/L

Total Chromium

Maximum: 0.005 mg/L

Total Copper

Maximum: 0.01 mg/L

Total Iron

Maximum: 1.0 mg/L

Total Selenium

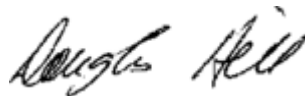
Maximum: 0.002 mg/L

Rainbow Trout 96-hr LC50

Maximum: 50 % (Mortality)

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Daphnia Magna 48-hr LC50  
Maximum: 50 % (Mortality)

- 1.5.3 The effluent discharged must have a pH measured at the weir within a range of 6.5 to 9.0 pH units.
- 1.5.4 The discharge is authorized from Authorized Works, which are a saddle dam, a ditch, a weir, pump back system, and related appurtenances approximately located as shown on the attached Site Plan.
- 1.5.5 The permittee must not discharge under this Authorization unless the Authorized Works are complete and fully operational.
- 1.5.6 1.5.6 The location from which the discharge originates is from the East Saddle Dam on the Gibraltar Mine Tailings Impoundment, located at mineral claims HY16 (204308), HY18 (204378), and HY19 (204443).
- 1.5.7 1.5.7 The location of the point of discharge is a weir overflow into a wetland at the headwaters to Arbutnot Creek (latitude 52°32'57" and longitude 122°13'21").

## 2. GENERAL REQUIREMENTS

### 2.1 Bypasses

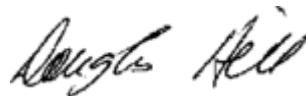
The permittee must not allow any discharge authorized by this Authorization to bypass the Authorized Works, except with the prior written approval of the Director.

### 2.2 Maintenance of Works and Emergency Procedures

The Permittee must regularly inspect the authorized works and maintain them in good working order.

In the event of an emergency or condition beyond the control of the Permittee which prevents effective operation of the Authorized Works, or leads to an unauthorized discharge, the Permittee must take remedial action to restore the effective operation of the Authorized Works and to prevent any unauthorized discharges.

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for Director, *Environmental Management Act*  
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The Director may require the Permittee to reduce or suspend operations until the Authorized Works have been restored and/or corrective steps have been taken to prevent unauthorized discharges.

### 2.3 **Process Modifications**

The Director must be notified prior to implementing changes to any process that may adversely affect the quality and/or quantity of the discharge. Despite notification under this section, permitted levels must not be exceeded.

### 2.4 **Posting of Outfall and Pipeline**

A sign must be erected along the alignment of the outfall above the high water mark. The sign must identify the nature of works. The wording and size of the sign must be acceptable to the Director.

Signs must be posted along the effluent pipeline right-of-way at points of public access that identifies the right-of-way and provides emergency contact information.

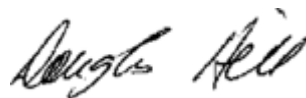
### 2.5 **Tailings Pond Intake for Effluent Discharge**

Effluent to be discharged must be drawn from the tailings pond no deeper than 3 metres from the surface, and no less than 2 metres from the bottom of the water column. Based on monitoring results, the Director may require additional water column profile monitoring.

### 2.6 **Wetland Management and Contingency Plan**

The Wetland Management and Contingency Plan for the discharge to the wetland on Arbuthnot Creek, submitted October 2, 2013, must be maintained and implemented. The Plan includes standard operating procedures, triggers, and contingency measures to be taken for protection of the environment. As a contingency to the discharge to the wetland, a system to pump seepage from the East Saddle Dam back to the tailings storage facility must be maintained. The Director may specify additional triggers based on the evaluation of the annual report and on any other information collected in connection with this discharge. The Plan must be reviewed, in conjunction with the associated monitoring plan review required by Section 3.6, and recommendations of any amendments are necessary for the protection of the environment must be submitted to the Director prior to recommencing the discharge. The Permittee must notify the

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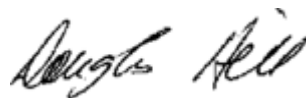
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Director 30 days prior to implementing any changes to the Plan.

2.7 **Surface Runoff and Mine Drainage Control**

- 2.7.1 To the maximum extent possible, or unless authorized in this permit, seepage and runoff from the open pits, from the waste rock dumps, and from down gradient of the tailings impoundment must be collected and conveyed to the tailings impoundment or Gibraltar East Pit as appropriate.
- 2.7.2 Surface runoff from undisturbed areas must be diverted so that it does not flow to the tailings impoundment, or to the mine and mill area.
- 2.7.3 Surface runoff control works must be provided for all areas disturbed by open pits, waste rock dumps, and the mill and ore storage areas. The surface runoff control system must convey all flows up to a 1 in 10 year 24 hour storm event, and must withstand all flows without significant physical damage up to a 1 in 200 year 24 hour storm event.
- 2.7.4 The tailings impoundment main embankment must provide at least 3.0 metres of freeboard, the tailings impoundment saddle dams must provide at least 1.2 metres of freeboard, and all other effluent storage ponds, seepage ponds and surface runoff settling ponds must provide at least 0.5 metres of freeboard, up to a 1 in 200 year 24 hour storm event. If at any time the freeboard in the tailings impoundment main embankment is reduced to less than 3.0 metres, or to less than 1.2 metres for the tailings impoundment saddle dams, or to less than 0.5 metre in any other pond, the Permittee must take appropriate remedial action and notify the Director. After initially reporting such an occurrence, the Permittee must report the freeboard weekly until such time as permit compliance is re-established. Freeboard is defined as the difference in elevation between the contained liquid level and the top of the berm structure at its lowest point. The lowest point does not include spillways where a discharge is authorized or where the supernatant overflows to downstream collection works.
- 2.7.5 Sedimentation of watercourses must be prevented during construction and operation of any mine works or facilities. The Director may specify and require implementation of additional measures to prevent sedimentation of watercourses caused by construction or operational activity at the site.
- 2.7.6 All ponds, ditching, and other runoff or seepage collection and diversion works must be inspected at least twice per year, once in the spring after

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freshet and once in the fall before freeze-up. Records of these inspections must be maintained for inspection.

- 2.7.7 Mine site runoff, seepage water, or pit water may be used to control dust within the area served by the surface drainage collection system. The Permittee must recycle tailings impoundment supernatant to the maximum extent practicable while the concentrator is operating.

## 2.8 **Environmental Emergency Response Plan**

The Permittee must maintain an Environmental Emergency Response Plan which includes adequate procedures for responding to all probable environmental emergencies associated with the Gibraltar Mine operation and mine site area, including the suspension of discharge of effluent to the Fraser River if required. The Permittee must keep this plan up to date, and appropriate mine personnel must be made aware of its contents. The Permittee must provide the Director with any updates to this plan within 30 days of adoption of the plan update. The Director may require periodic review of the response plan, and/or a report on any emergency event associated with the mine operation or occurring at the mine site.

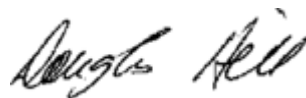
## 2.9 **Trigger Response Plan for the Fraser River**

The Permittee must maintain and implement a Trigger Response Plan (TRP) for the Fraser River. The purpose of the TRP is to ensure that corrective actions are implemented without delay to protect receiving water quality. An updated TRP, reviewed in consultation with the advisory committee established under section 2.11 below, must be submitted to the Director for approval by June 30, 2019.

The TRP must describe procedures by which exceedances of triggers set relative to the permit limits, as defined in Sections 1.1.2 or 1.1.3, and receiving environment conditions, including but not limited to nitrite, will be managed. The TRP procedures must include, but not be limited to an increase in monitoring to confirm exceedances, specific corrective actions to be implemented where exceedances are confirmed, and a schedule for implementation of the corrective actions.

The Permittee must review the TRP at least annually. The Permittee must notify the Director of the proposed changes, and obtain approval from the Director prior to implementing any changes to the approved TRP.

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The Director may require modifications to the TRP based on the monitoring results and any other information received by the Director in connection with site discharges.

## 2.10 Site Wide Water Management Plan

The Permittee must submit an updated Site Wide Water Management Plan by December 31, 2019 to the Director for approval that must include:

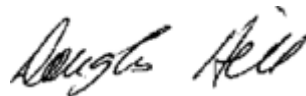
- The most recent site wide water balance model, and
- The most recent site wide water quality model

The site wide water balance and water quality models must reflect the current water management and mine site operating conditions up to June 30, 2019, as well as the projected conditions to March 31, 2021 (as required in the Mines Act M-40 permit). The site wide water balance must assess the feasibility to divert incoming non-contact waters around the mine operating area, and to divert non-contact up-gradient groundwater pumped by dewatering wells around the mine site. The site wide water quality model must integrate the water balance and source water models to project concentrations of parameters of concern over time for all site components and authorised discharges.

## 2.11 Adaptive Management Plan

The Permittee must maintain and implement the Adaptive Management Plan for managing the tailings pond supernatant discharge to the Fraser River. The Plan must include review of the effects of the discharge at least once every three years. The next review is due December 31, 2019. The review must consider findings from the monitoring program, updates to the water balance, information presented in annual reports, and other relevant sources of information. The review must also address attainment of objectives for key water quality parameters in the receiving environment, and an assessment of loading of parameters of concern related to the mine discharge to the Fraser River over the expected life of the mine and post closure. Each review will recommend what actions or permit amendments, if any, are advisable to limit impacts from current or future tailings impoundment supernatant discharges to the environment and to ensure compliance with permit requirements. Each review will consider cumulative effects, assessment of treatment and alternative discharge options, associated schedules, and Best Available Technology application. The Director may consider these recommendations and may make amendments to the permit that the Director considers necessary for the

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protection of the environment.

Each review will be conducted to include involvement of local First Nations and key interested parties through an advisory committee facilitated by the Permittee and following terms of reference satisfactory to the Director. The Permittee must notify the Director 30 days prior to implementing any changes to the Adaptive Management Plan.

#### 2.12 **Nitrogen Management Plan**

The 2017 Explosive and Nitrogen Management Plan (ENMP) for Gibraltar Mine, dated May 31, 2017, is hereby approved and must be maintained and implemented. The Director may require modifications to the ENMP based on the monitoring results and any other information received by the Director in connection with site discharges. Activities completed or underway to implement the ENMP must be reported in the annual report required under section 4.2 of this permit.

#### 2.13 **Security**

The Permittee must maintain security with the Minister of Finance, as required by condition of Permit M-40 Approving Work System and Reclamation Program issued by the Chief Inspector under the *Mines Act*.

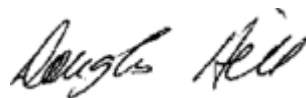
#### 2.14 **Qualified Professionals**

All documents submitted to the Director must be signed by the author. Reports where an opinion or recommendation is expressed regarding data analysis, interpretation, assessment and/or design must also be sealed by an appropriately qualified professional, who in doing so takes professional responsibility for the content of the document. A qualified professional is defined as follows:

"Qualified Professional" means an applied scientist or technologist specializing in an applied science or technology applicable to the duty or function, including, if applicable and without limiting this, agronomy, biology, chemistry, engineering, geology or hydrogeology and who

- i. is registered with the appropriate professional organization, is acting under that organization's code of ethics and is subject to disciplinary action by that organization, and
- ii. through suitable education, experience, accreditation and/or knowledge,

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may be reasonably relied on to provide advice within their area of expertise.

### 3. **MONITORING REQUIREMENTS**

#### 3.1 **Sampling Procedures**

Sampling is to be carried out in accordance with the procedures described in the "British Columbia Field Sampling Manual for Continuous Monitoring and the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples, 2013 Edition", or most recent edition, or by suitable alternative procedures as authorized by the Director.

A copy of the above manual is available on the Ministry web page at [http://www.env.gov.bc.ca/epd/wamr/labsys/lab\\_meth\\_manual.html](http://www.env.gov.bc.ca/epd/wamr/labsys/lab_meth_manual.html).

#### 3.2 **Outfall and Pipeline Inspection**

The pipeline must have a leak detection system installed, and the Permittee must develop and implement a routine visual inspection program for the outfall and pipeline. Records of inspections and checks on the leak detection system must be maintained for review by the Director.

Additionally, the Permittee must ensure that comprehensive inspection and testing of the outfall and pipeline is conducted, including but not limited to annual pressure testing and underwater inspection by a qualified professional at least every five years, to ensure they are in good working condition. The annual and 5-year inspection reports with recommended remedial actions, if required, must be submitted to The Director 30 days prior to initiating the discharge each year.

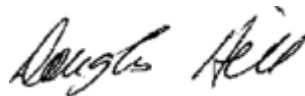
#### 3.3 **Flow Measurement**

The Permittee must provide and maintain water flow measuring devices acceptable to the Director at locations and frequencies as specified in attached Table 1a.

The Permittee must measure and record the following:

- (a) tonnes of solids discharged to the tailings impoundment each day;

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- (b) cubic metres of water discharged to the tailings impoundment each day;
- (c) cubic metres of supernatant recycled to the mill from the tailings impoundment each day;
- (d) cubic metres of seepage pond supernatant recycled or returned each day;
- (e) cubic metres of effluent discharged to the Gibraltar East Pit each day;
- (f) rate of discharge at the East Saddle Dam in litres per minute measured once per week, while discharging under section 1.4;
- (g) rate of flow entering the wetland on Arbuthnot Creek from adjacent roadway culvert once per week;
- (h) elevation of water in metres in the wetland on Arbuthnot Creek once per month, while discharging under section 1.4; and
- (i) cubic metres of effluent discharged to the Fraser River on a continuous basis.

### 3.4 **Receiving Environment Hydrometric Monitoring**

The Permittee must provide and maintain receiving environment hydrometric flow monitoring at locations and frequencies as specified in attached Table 1b.

The receiving environment hydrometric stations must each be equipped with appropriate instrumentation to record continuous water level (stage) data during the open water season (typically May to October), with a minimum of three benchmarks. Manual discharge measurements (open water season) must be completed on a monthly basis until a stable stage- discharge relationship (rating curve) has been established with a minimum of 10 unique discharge points over a range of flow. During the winter low flow period (November to April), discharge measurements should be conducted when safe to do so (e.g. before ice-up, mid-winter, late-winter).

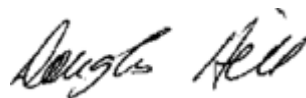
The hydrometric monitoring procedures, data analysis, quality and quantifying data grades must follow the standards as outlined by the Ministry's Resources Information Standards Committee (RISC) in the "Manual of British Columbia Hydrometric Standards Version 1.0 (2009)" or most recent edition.

A copy of the above manual is available on the Ministry web page at [https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/science-data/man\\_bc\\_hydrometric\\_stand\\_v10.pdf](https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/science-data/man_bc_hydrometric_stand_v10.pdf).

### 3.5 **Climate Monitoring**

The Permittee must maintain the meteorological stations W1, W2 and W3 at the

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mine site. The stations must record and report out continuously: precipitation, temperature, incident solar radiation, and humidity.

### 3.6 **Surface Water and Effluent Sampling**

The Permittee must collect grab samples from the locations and at the frequencies listed in Table 1a, Table 1b and Table 2 of this permit. Suitable sampling facilities must be installed at all sample locations. Proper care should be taken in sampling, storing and transporting the samples to adequately control temperature and avoid contamination, breakage, etc.

Samples collected in accordance with Section 3.6 must be analysed for the characteristics listed in Table 3. The minimum detection limits for the analyses must be as listed in Table 3.

### 3.7 **Analytical Procedures**

Analyses are to be carried out in accordance with procedures described in the "British Columbia Environmental Laboratory Manual, 2013 Edition", or the most recent edition, or by suitable alternative procedures as authorized by the Director.

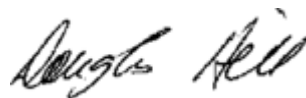
A copy of the above manual is available on the Ministry web page at [http://www.env.gov.bc.ca/epd/wamr/labsys/lab\\_meth\\_manual.html](http://www.env.gov.bc.ca/epd/wamr/labsys/lab_meth_manual.html).

### 3.8 **Biological, Toxicity and Environmental Effects Monitoring Program**

The Permittee must conduct toxicity testing on rainbow trout and *Daphnia magna* of tailings pond supernatant collected at the Fraser River outfall monthly and of seepage and runoff at the East Saddle Dam weir quarterly. The 96-hr LC50 rainbow trout toxicity test must be carried out in accordance with the procedures described in "Biological Test Method: Reference Method for Determining Acute Lethality of Effluent to Rainbow Trout", (EPS 1/RM/13 Second Edition-December 2000). The 48-hr LC50 *Daphnia Magna* toxicity test must be conducted in accordance with the procedures described in "Biological Test Method: Reference Method for Determining Acute Lethality of Effluent to *Daphnia magna*," (EPS 1/RM/14, Second Edition – December 2000).

Sublethal toxicity testing of tailings impoundment supernatant collected at the Fraser River outfall and of seepage and runoff collected at the East Saddle Dam

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weir must be conducted on a fish species, an invertebrate species, a plant species, and an algal species at least annually in accordance with the procedures of the Metal Mine Effluent Regulation (MMER, pursuant to Subsections 34(2), 36(5) and 38(9) of the federal Fisheries Act).

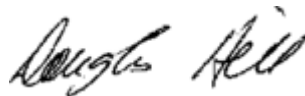
Rainbow trout toxicity testing of the discharge to the Fraser River must be increased to once per week if a sample of effluent fails the rainbow trout toxicity test (96HR LC50). In the event of a toxicity test failure, the Permittee must without delay conduct additional effluent characterization. The Director must be notified immediately and the Director may require a Toxicity Identification Evaluation (TIE) to be initiated to determine the cause the effluent toxicity. The percent of fish survival for the entire 96 hour exposure period of the test must also be recorded. Samples must continue to be collected and tested on one day of each week until three consecutive tests are determined to be not acutely toxic, at which time testing can revert to the normal frequency.

A river water quality monitoring program must be designed and conducted by a qualified professional to monitor every three years\* the effluent dispersion in the Fraser River, and to assess attainment of receiving environment water quality guidelines downstream of the outfall on the Fraser River for all applicable uses. This must include a spring and a fall intensive (i.e., 5 samples collected within 30 days) river sampling event.

A sediment monitoring program must be designed and conducted by a qualified professional to assess every three years\* the attainment of receiving environment sediment quality guidelines and to monitor for accumulation of metals in sediments within 5 km downstream of the Fraser River outfall.

The Wetland Monitoring Program, submitted November 27, 2013, for the discharge from the East Saddle Dam, must be maintained and implemented. The Program must assess the effects of the discharge on the wetland on Arbutnot Creek every three years\*, including but not limited to the function of the wetland, changes to the plant community in the wetland, metal content of wetland vegetation, and content of metals in wetland sediments and benthic invertebrates. The first two cycles of the program must include quarterly samples of soil and vegetation to determine seasonal variation of metals content in the wetland. The retention time and dilution in the wetland must be re-assessed at low flows through an additional tracer study, or alternative means satisfactory to the Director, conducted as part of the first cycle of this program. The assessment of the wetland plant community must be completed by a qualified professional with appropriate experience in plant ecology and

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identification. The assessment must include field parameter sampling along transects established in the wetland and a review of the wetland hydrology and must assess if there are changes to estimated risk to wildlife that may be using the wetland. The first cycle of the Program must be conducted during the year that the associated discharge re-commences. The Program must be reviewed and recommendations submitted to the Director, prior to recommencing the discharge. The Permittee must notify the Director 30 days prior to implementing any changes to the Program.

The biological monitoring program must include an assessment of the effects of the discharge in the Fraser River on benthic invertebrate communities and tissue every three years\*. A study design for benthic invertebrate monitoring must be developed and maintained by a Qualified Professional, and submitted to the Director at least 6 months prior to undertaking each assessment. An assessment report must be submitted to the Director at the conclusion of each study, and following review of the draft report with the Advisory Committee established under section 2.11 of this permit.

The biological monitoring program must also include monitoring and assessment for metal bioaccumulation and potential resultant health impacts on sturgeon that inhabit the discharge area, or that may be exposed to the effluent. To meet this requirement, the Permittee must participate in a sturgeon contaminant monitoring program that includes monitoring of metal concentration in the tissue of sturgeon captured downstream of the Fraser River effluent outfall. The monitoring program must be conducted in accordance with a monitoring plan developed by the ministry in consultation with the Permittee and other program participants.

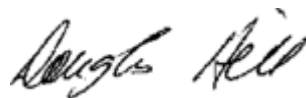
The Permittee must provide the Director with any updates to the Biological, Toxicity and Environmental Effects Monitoring Program within 30 days of adopting the changes.

\* The frequency of these programs may be the same as that required under the Federal MMER, typically every three years. The Director may approve a different frequency based on other monitoring programs or information collected.

### 3.9 **Hydrogeological Assessment and Mitigation**

The Permittee must conduct an ongoing hydrogeological monitoring and assessment program. A report reviewing the site hydrogeology and

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groundwater chemistry must be completed by a qualified professional every five years and submitted to the Director. After each review, refinements to the program must be made based on the ongoing findings and recommendations of these assessments. The Director may require revisions or additions to the program based on information obtained in connection with this facility.

### 3.10 **Human Health and Ecological Risk Assessment**

The Permittee must conduct a Human Health and Ecological Risk Assessment to examine the potential effects of parameters of concern for the area of influence by the mine activities. The “*Terms of Reference and Workplan for Human Health and Ecological Risk Assessment Gibraltar Mine*”, dated February 2014, is hereby approved.

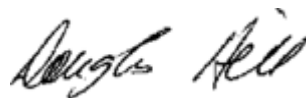
The Permittee must continue the implementation of the approved Terms of Reference and Workplan to assess the exposure pathways and potential health risks from parameters of concern which may be present in vegetation and wildlife that are potentially used for food or medicinal sources, or present in potable water source, which could affect individuals living near the mine or harvesting these materials in the local and immediate area of the mine. The assessment must take into consideration Aboriginal peoples consumption patterns and risk sensitivities. The study must incorporate information available from a variety of sources such as: traditional use studies, Aboriginal consultation records, consumption surveys, and baseline monitoring data for parameters of concern.

Written authorization from the Director shall be obtained prior to implementing any study changes to the approved Terms of Reference and Workplan, excluding changes to the proposed schedule. Based on any information obtained in connection with this facility, the Director may require revision of, or addition to, the Terms of Reference and Workplan.

### 3.11 **Quality Assurance**

The Permittee must maintain a “Quality Assurance Manual” consistent with the “British Columbia Field Sampling Manual for Continuous Monitoring and the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples, 2003 Edition (Permittee)”, or most recent edition. The Permittee must ensure that all data submitted as a requirement of this permit is produced in accordance with the quality assurance manual, that data is handled and reviewed in accordance with a standard protocol, and is accompanied by

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quality assurance data required by this manual. The Permittee must provide the Director with any updates to this manual within 30 days of adoption of the update.

Analyses of samples for parameters designated under the Environmental Data Quality Assurance Regulation must be at a laboratory registered for the designated parameter. In addition, the Permittee must participate in quality assurance audits as required by this regulation.

#### 4. **REPORTING REQUIREMENTS**

##### 4.1 **Quarterly Reporting**

Maintain data of field measurements, water and effluent sample analyses, flow measurements, and toxicity testing for inspection and submit the data, suitably tabulated, to the Director for the previous quarter. All reports must be submitted within 60 days of the end of each three month period. Water and effluent sample data required by this permit must be submitted in an electronic format suitable for entry into the provincial database system known as EMS.

Surface water hydrometric and climate monitoring in Sections 3.4 and 3.5 of this Permit are only required to be submitted annually.

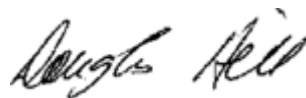
In the event that any monitoring requirement stipulated in this permit is not met the Permittee must document the occurrence and provide an explanation for the omission in the quarterly report for that period. Any quality assurance notes by laboratories must be summarized in the quarterly report for that period.

##### 4.2 **Annual Report**

The Permittee must electronically submit an annual report to the Director by April 1st of each year. The annual report must follow *Technical Guidance 4 – Annual Reporting Under the Environmental Management Act*, version 1.3 or the most recent version and must include but not be limited to:

- 4.2.1 An evaluation of the impacts and risks of the mining and milling operations on the receiving environment;
- 4.2.2 Results of any investigations of available alternate collection and treatment options for mine site water;

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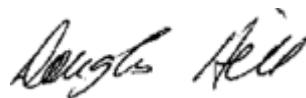


- 4.2.3 A summary of all water quality, quality assurance data, climate and surface water hydrometric monitoring data for the previous calendar year, including all data submitted to satisfy the federal Metal and Diamond Mining Effluent Regulations, employing tables and graphs where appropriate to indicate trends in key water quality parameters, and including an assessment of relevant quality assurance data;
- 4.2.4 Results of any assessments related to water quality objective attainment, including any results of investigations into improving detection limits for metals or into the potential causes of trends in key water quality parameters;
- 4.2.5 The results of all ongoing hydrogeological assessment work, including progress in developing and implementing groundwater contaminant mitigation plans;
- 4.2.6 The results of ongoing mine drainage chemistry studies and site water quality modeling. This must include a review of all geochemical monitoring and assessment work, and progress in implementing mitigations to prevent or reduce metal leaching and acid rock drainage;
- 4.2.7 The results and analyses of the ongoing review of the site water balance, tailings impoundment seepage conditions, and water management plan, including an assessment of the proportion of flow contributed from tailings impoundment seepage at the East Saddle Dam weir;
- 4.2.8 The results of any efforts to reduce or treat source contaminants, and to recycle, evaporate or conserve water;
- 4.2.9 An update on the Human Health and Ecological Risk Assessment study, including changes to the proposed schedule or program; and,
- 4.2.10 An update on the Trigger Response Plan, including recommended changes.

4.3 **Non-compliance Notification**

The Permittee must immediately notify the Director or designate by email at [EnvironmentalCompliance@gov.bc.ca](mailto:EnvironmentalCompliance@gov.bc.ca) of any non-compliance with the requirements of this authorization by the Permittee and take remedial action to remedy any effects of such non-compliance. The Permittee must provide the

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Director with written confirmation of all such non-compliance events, including available test results within 24 hours of the original notification, unless otherwise directed by the Director.

The Permittee must, within 24 hours of notifying the Director or designate of any non-compliance with the requirements of this authorization that relates to or potentially affects the discharge to the Fraser River, provide notification and resultant remedial action planned or underway to the Xats'ull First Nation, ?Esdilagh First Nation, and Lhtako Dene First Nation.

#### 4.4 **Non-compliance Reporting**

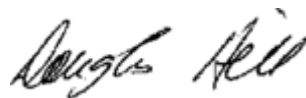
If the Permittee fails to comply with any of the requirements of this authorization, the Permittee must, within 30 days of such non-compliance, submit to the Director a written report that is satisfactory to the Director and includes, but is not necessarily limited to, the following:

- a. all relevant test results obtained by the Permittee related to the noncompliance,
- b. an explanation of the most probable cause(s) of the noncompliance, and
- c. a description of remedial action planned and/or taken by the Permittee to prevent similar noncompliance(s) in the future.

The Permittee must submit all non-compliance reporting required to be submitted under this section by email to the Ministry's Compliance Reporting Submission Mailbox (CRSM) at [EnvironmentalCompliance@gov.bc.ca](mailto:EnvironmentalCompliance@gov.bc.ca). For guidelines on how to report a non-compliance or for more information visit the Ministry website

<http://www2.gov.bc.ca/gov/content/environment/waste-management/waste-discharge-authorization/data-and-report-submissions/non-compliance-reporting-mailbox>.

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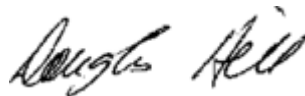
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**Table 1a: Mine Site Surface Water Sample Sites and Monitoring Frequency**

SITE NAME	EMS SITE NO.	GIBRALTAR SITE ID	WATER QUALITY FREQUENCY	FLOW FREQUENCY
OUTFALL AT FRASER RIVER	E261604	105B	2W**	CIF
FINAL TAILS PUMP BOX #1	E208092		D	
FINAL TAILS PUMP BOX #2	E295789		D	
GIBRALTAR EAST PIT SUPERNATANT	E244555	303	M	D
TAILINGS IMPOUNDMENT SUPERNATANT	E214755	105	4x/YR	D
TAILINGS IMPOUNDMENT SEEPAGE SUPERNATANT	0601004	111	M	D
SADDLE DAM SEEPAGE AT WEIR	E293069	114	2W*	WIF
LEACHATE CONTROL POND NO.4	E207503	SDC-4	4x/YR	
FINGER DRAIN 1	E207504	FD-14	A	
FINGER DRAIN 2	E207505	FD-08	A	
FINGER DRAIN 3	E207506	FD-06	A	
FINGER DRAIN 4	E207507	FD-01	A	
FINGER DRAIN 5	E207508	FD-13	A	
FINGER DRAIN 6	E207509	FD-9	A	

D = daily; M = monthly; 4x/YR = four times per year on a seasonal basis such that each of the four seasons (winter, spring, summer, and fall) are represented; A = annually; 2W = every two weeks  
WIF/MIF/QIF/CIF = Weekly/Monthly/Quarterly/Continuous if flowing  
\*\* except continuous for pH, temperature, conductivity and turbidity  
\* required when discharging under Section 1.4, otherwise as required by the Wetland Monitoring Program under Section 3.8

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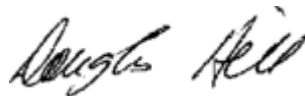
**Table 1b: Receiving Environment Surface Water Sample Sites and Monitoring Frequency**

SITE NAME	EMS SITE NO.	GIBRALTAR SITE ID	WATER QUALITY FREQUENCY	FLOW FREQUENCY
LEWIS CREEK AT MINE ACCESS ROAD	0600332	107	M	MIF
EAST FORK CUISSON CREEK 375M UPSTREAM OF MOFFAT LAKE ROAD (CUISSON CREEK CONTROL)	E207578	101	M	MIF
EAST FORK OF CUISSON CREEK BELOW SEEPAGE POND DISCHARGE (CUISSON CREEK LOWER)	0600033	104	M	
CUISSON CREEK AT BC HYDRO POWERLINE	E207584	218	4x/YR	
LEWIS CREEK LOWER	0800001	102	M	
LEWIS CREEK CONTROL	E217191	106	M	
CUISSON CREEK AT OUTLET OF SOURAN LAKE	0800002	109	4x/YR	
SADDLE DAM SEEPAGE AT WEIR	E293069	114	2W*	WIF
OUTLET FROM ARBUTHNOT CREEK WETLAND	E293070		M*	
ARBUTHNOT CREEK AT DEACTIVATED ROAD CROSSING	E293072		4x/YR*	WIF
ROAD RUNOFF U/S WETLAND AT DITCH	E293073		A (spring)	
CUISSON CREEK AT OUTLET OF CUISSON LAKE	E207501	112A	4x/YR	
GRANITE CREEK AT INDIAN RESERVE	E207494	110	4x/YR	QIF
PIERCE CREEK U/S OF MINE ACCESS ROAD	E207498	113	4x/YR	QIF
CUISSON CREEK AT OUTLET OF VALERIE LAKE (BUSHIE LAKE OUTLET)	E207502	108	4x/YR	

D = daily; M = monthly; 4x/YR = four times per year on a seasonal basis such that each of the four seasons (winter, spring, summer, and fall) are represented; A = annually; 2W = every two weeks

WIF/MIF/QIF/CIF = Weekly/Monthly/Quarterly/Continuous if flowing

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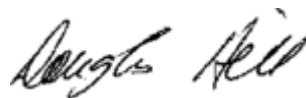
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- \*\* except continuous for pH, temperature, conductivity and turbidity  
 \* required when discharging under Section 1.4, otherwise as required by the Wetland Monitoring Program under Section 3.8

**Table 2: Groundwater Sample Sites and Monitoring Frequency**

SITE NAME	EMS SITE NO.	GIBRALTAR SITE ID	FREQUENCY
TAILINGS AQUIFER - SW	E261601/ E261602	MW99-9(A/B)	A
TAILINGS AQUIFER - NE	E261599/ E261600	MW99-8(A/B)	A
TAILINGS ZONE	E303470/ E303471	MW14-9(A/B)	2x/YR
PIERCE CREEK AQUIFER	E261603	OW-4A	A
PIERCE CREEK & SOUTH PIERCE CREEK ZONE	E242949	OW-2B	2x/YR
SADDLE DAM AQUIFER	E261597/ E261598	MW91-7(A/B)	2x/YR
LOWER LEWIS CREEK AQUIFER	E264589	MW06-5	2x/YR
LEWIS CREEK ZONE	E303473/ E303477	MW14-3(A/B)	2x/YR
GRANITE CREEK AQUIFER	E264588	MW06-4	2x/YR
GRANITE CREEK ZONE	E264586	MW06-02	2x/YR
GRANITE CREEK ZONE	E303474	PW14-2	2x/YR
LOWER NO.5 DUMP SEEPAGE ZONE	E264587	MW06-3	2x/YR
NO.5 DUMP SEEPAGE ZONE	E303475/ E303476	MW14-4(A/B)	2x/YR
NO.4 DUMP SEEPAGE ZONE	E264583/ E264585	MW06-1(A/B)	2x/YR
NO.7 DUMP ZONE	E294829/ E294830 E294831/ E294832 E294833/ E294834	MW12-1(A/B) MW12-2(A/B) MW12-3(A/B)	4x/YR
CUISSON CREEK AQUIFER	E242963/ E242964	MW99- 10(A/B)	2x/YR

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CUISSON CREEK AQUIFER	E242965/ E242966	MW99- 17(A/B)	4x/YR
SOUTH CUISSON CREEK	E303472	MW14-1	2x/YR

A = annually

2x/YR = two times per year (once in spring, once in fall)

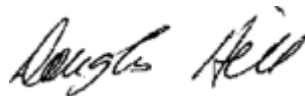
4x/YR = four times per year (quarterly)

**Table 3: Characteristics to be Analyzed**

(all units are in mg/L unless otherwise specified, \*MDL = minimum detection limit[subject to lab correction resulting from chemical interferences during testing], †minimum units of resolution, FIELD = measured in field at monitoring site)

CHARACTERISTIC	SITE	MDL
pH (FIELD)	ALL SITES	0.1 pH UNITS †
TEMPERATURE (FIELD)	ALL SITES, EXCEPT FINAL TAILS PUMP BOX	0.1°C†
SPECIFIC CONDUCTIVITY (FIELD)	ALL SITES, EXCEPT FINAL TAILS PUMP BOX	5µS/CM†
TURBIDITY (FIELD)	FRASER RIVER OUTFALL	1 NTU†
NON-FILTERABLE RESIDUE	ALL SITES, EXCEPT GROUNDWATER SITES & FINAL TAILS PUMP BOX	2
FILTERABLE RESIDUE	ALL SITES, EXCEPT FINAL TAILS PUMP BOX	10
HARDNESS	ALL SITES, EXCEPT FINAL TAILS PUMP BOX	1
ACIDITY	GIBRALTAR EAST PIT SUPERNATANT & LEACHATE CONTROL POND NO. 4	1
ALKALINITY (TOTAL)	ALL SITES EXCEPT: FINAL TAILS PUMP BOX, LEACHATE CONTROL POND NO. 4, & GIBRALTAR EAST PIT SUPERNATANT	1
SULPHATE (DISSOLVED)	ALL SITES, EXCEPT FINAL TAILS PUMP BOX	1
CHLORIDE	ALL SITES, EXCEPT FINAL TAILS PUMP BOX	0.5
AMMONIA	FRASER RIVER OUTFALL, SADDLE DAM SEEPAGE AT WEIR	0.005
NITRITE	FRASER RIVER OUTFALL, ALL GROUNDWATER SITES	0.005
NITRATE PLUS NITRITE, AS	ALL SITES, EXCEPT FINAL TAILS PUMP	0.005

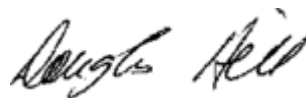
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N	BOX	
DISSOLVED ORGANIC CARBON	OUTLET OF ARBUTHNOT CREEK WETLAND, & ARBUTHNOT CREEK AT DEACTIVATED ROAD CROSSING	1
ALUMINUM (TOTAL & DISSOLVED)	ALL SITES, EXCEPT FINAL TAILS PUMP BOX, DISSOLVED ONLY AT GROUNDWATER SITES	0.01
ANTIMONY (TOTAL & DISSOLVED)	ALL SITES, EXCEPT FINAL TAILS PUMP BOX, DISSOLVED ONLY AT GROUNDWATER SITES	0.001
ARSENIC (TOTAL & DISSOLVED)	ALL SITES, EXCEPT FINAL TAILS PUMP BOX, DISSOLVED ONLY AT GROUNDWATER SITES	0.001
BARIUM (TOTAL & DISSOLVED)	ALL SITES, EXCEPT FINAL TAILS PUMP BOX, DISSOLVED ONLY AT GROUNDWATER SITES	0.0005
BORON (TOTAL & DISSOLVED)	ALL SITES, EXCEPT FINAL TAILS PUMP BOX, DISSOLVED ONLY AT GROUNDWATER SITES	0.1
CADMIUM (TOTAL & DISSOLVED)	ALL SITES, EXCEPT FINAL TAILS PUMP BOX, DISSOLVED ONLY AT GROUNDWATER SITES	0.0005
CALCIUM (TOTAL & DISSOLVED)	ALL SITES, EXCEPT FINAL TAILS PUMP BOX, DISSOLVED ONLY AT GROUNDWATER SITES	0.2
CHROMIUM (TOTAL & DISSOLVED)	ALL SITES, EXCEPT FINAL TAILS PUMP BOX, DISSOLVED ONLY AT GROUNDWATER SITES	0.005
COBALT (TOTAL & DISSOLVED)	ALL SITES, EXCEPT FINAL TAILS PUMP BOX, DISSOLVED ONLY AT GROUNDWATER SITES	0.001
COPPER (TOTAL & DISSOLVED)	ALL SITES, FINAL TAILS PUMP BOX, DISSOLVED ONLY AT GROUNDWATER SITES	0.001
IRON (TOTAL & DISSOLVED)	ALL SITES, EXCEPT FINAL TAILS PUMP BOX, DISSOLVED ONLY AT GROUNDWATER SITES	0.02
MAGNESIUM (TOTAL & DISSOLVED)	ALL SITES, EXCEPT FINAL TAILS PUMP BOX, DISSOLVED ONLY AT GROUNDWATER SITES	0.05
MANGANESE (TOTAL & DISSOLVED)	ALL SITES, EXCEPT FINAL TAILS PUMP BOX, DISSOLVED ONLY AT GROUNDWATER SITES	0.0005
MOLYBDENUM (TOTAL &	ALL SITES, EXCEPT FINAL TAILS PUMP	0.0005

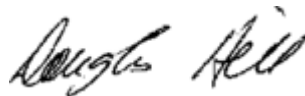
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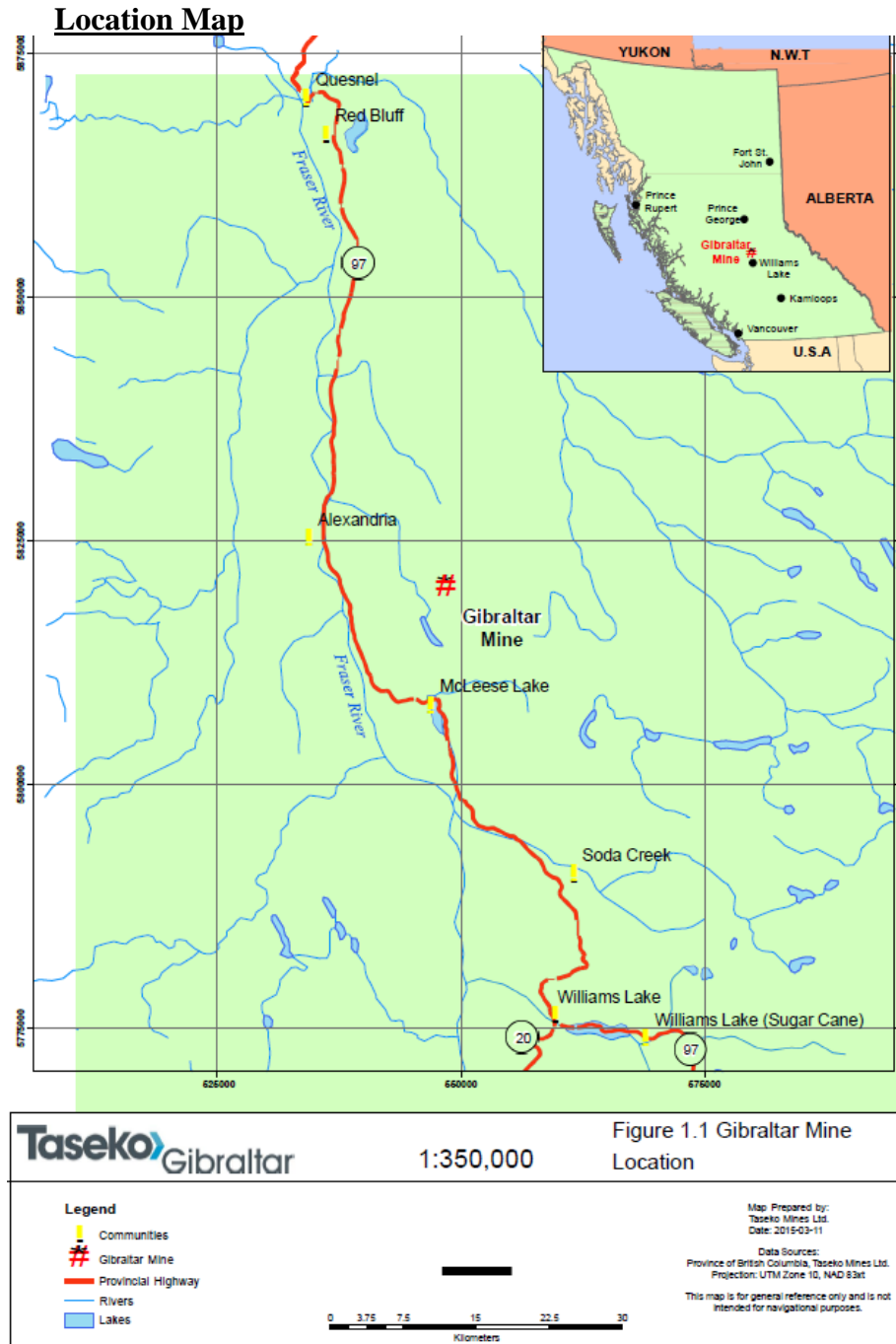
DISSOLVED)	BOX, DISSOLVED ONLY AT GROUNDWATER SITES	
NICKEL (TOTAL & DISSOLVED)	ALL SITES, EXCEPT FINAL TAILS PUMP BOX, DISSOLVED ONLY AT GROUNDWATER SITES	0.005
POTASSIUM (TOTAL & DISSOLVED)	ALL SITES, EXCEPT FINAL TAILS PUMP BOX, DISSOLVED ONLY AT GROUNDWATER SITES	0.5
SELENIUM (TOTAL & DISSOLVED)	ALL SITES, EXCEPT GROUNDWATER SITES & FINAL TAILS PUMP BOX	0.0005
	ALL GROUNDWATER SITES, DISSOLVED ONLY	0.001
STRONTIUM (TOTAL & DISSOLVED)	ALL SITES, EXCEPT FINAL TAILS PUMP BOX, DISSOLVED ONLY AT GROUNDWATER SITES	0.001
ZINC (TOTAL & DISSOLVED)	ALL SITES, EXCEPT FINAL TAILS PUMP BOX, DISSOLVED ONLY AT GROUNDWATER SITES	0.01
ORTHO-PHOSPHORUS	FRASER RIVER OUTFALL, SADDLE DAM SEEPAGE AT WEIR, OUTLET OF ARBUTHNOT CREEK WETLAND	1
MERCURY (TOTAL)	FRASER RIVER OUTFALL, SADDLE DAM SEEPAGE AT WEIR	0.00001

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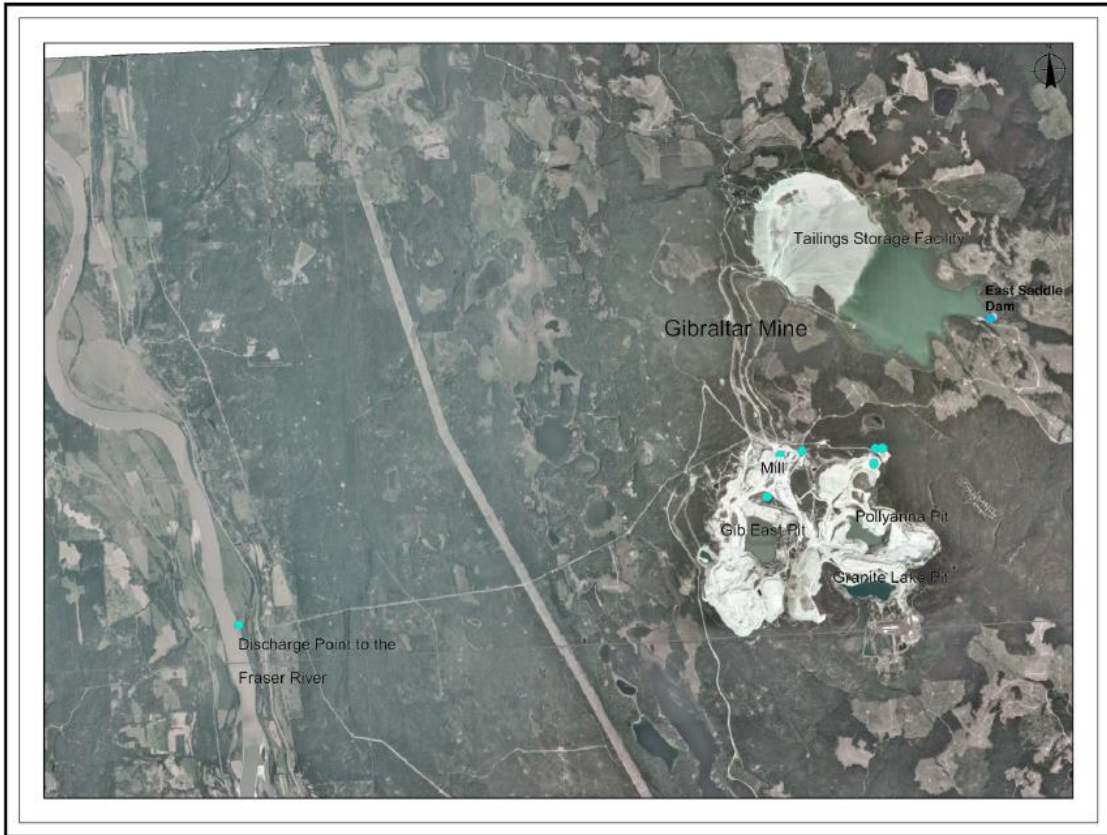




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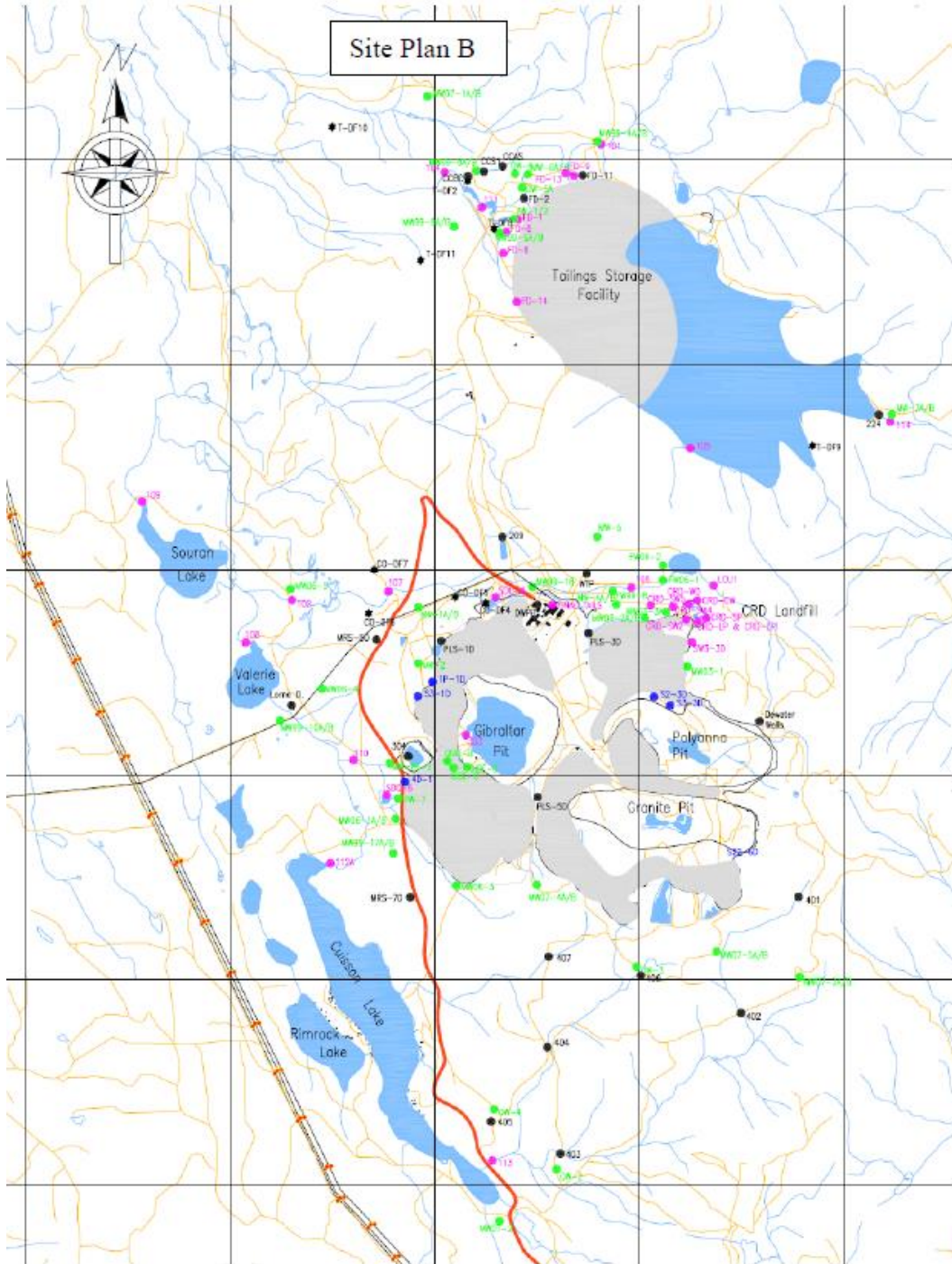
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**Site Plan B**



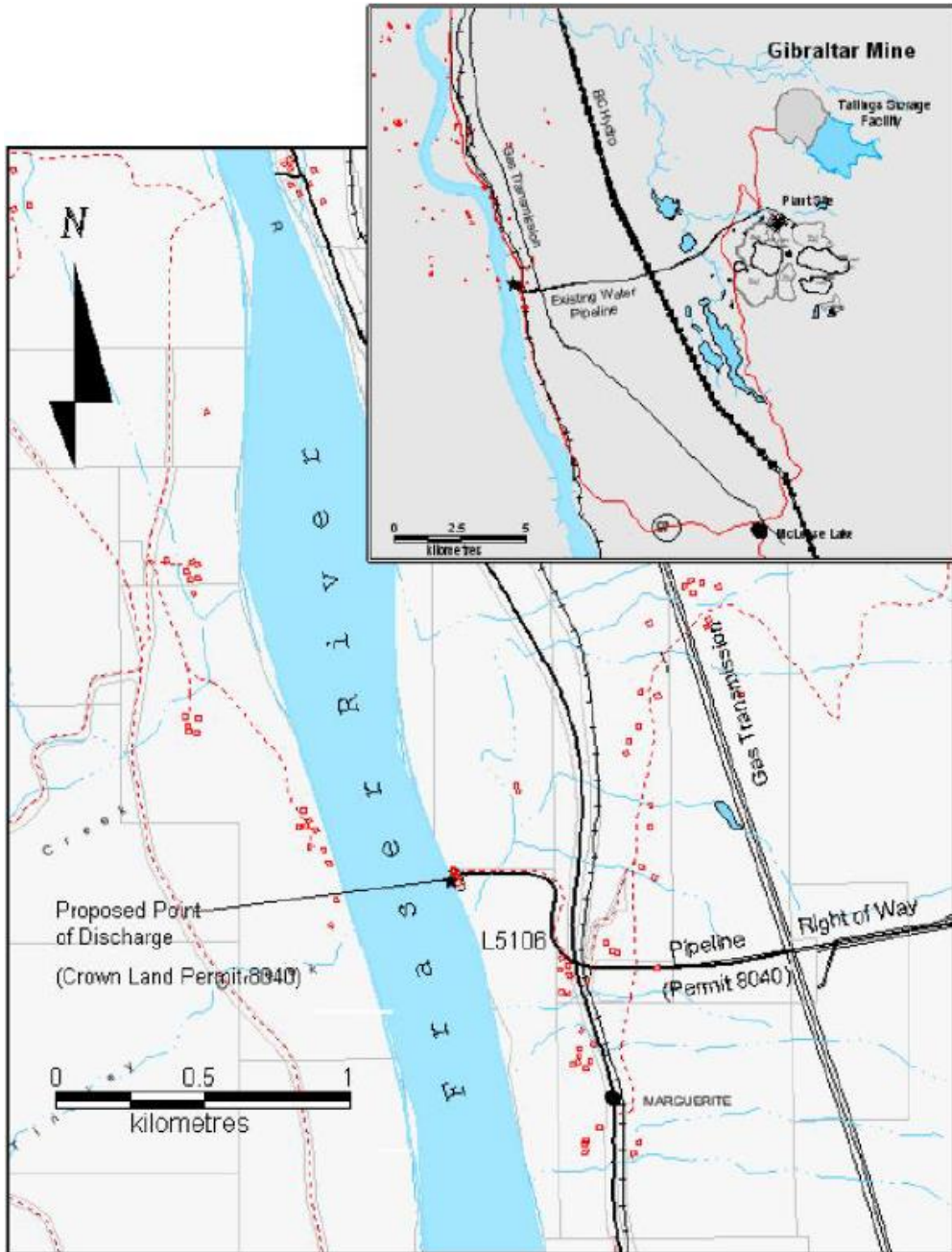
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Site Plan C



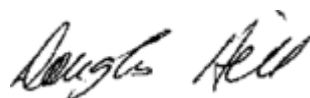
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**Appendix A: Gibraltar Mine Leases and Claims**

TENURE #	NAME	TYPE	ISSUE DATE	GOOD TO DATE	AREA (HA)
850473		Claim	2011/apr/01	2013/jul/24	471.3488
850475		Claim	2011/apr/01	2013/jul/24	491.0131
850482		Claim	2011/apr/01	2013/jul/24	471.3729
946877		Claim	2012/feb/07	2013/jul/24	58.9876
207491		Lease	1972/jul/26	2013/jul/26	116.03
207492		Lease	1972/jul/26	2013/jul/26	35.12
207493		Lease	1972/jul/26	2013/jul/26	82.26
207494		Lease	1972/jul/26	2013/jul/26	57.53
207495		Lease	1972/jul/26	2013/jul/26	69.07
207496		Lease	1972/jul/26	2013/jul/26	66.56
207497		Lease	1972/jul/26	2013/jul/26	73.56
207498		Lease	1972/jul/26	2013/jul/26	143.87
207499		Lease	1972/jul/26	2013/jul/26	95.11
207500		Lease	1972/jul/26	2013/jul/26	12.37
207501		Lease	1972/jul/26	2013/jul/26	16.85
207502		Lease	1972/jul/26	2013/jul/26	3.12
207503		Lease	1972/jul/26	2013/jul/26	119.47
207504		Lease	1972/jul/26	2013/jul/26	0.51
207505		Lease	1972/jul/26	2013/jul/26	28.72
207506		Lease	1972/jul/26	2013/jul/26	172.61
207507		Lease	1972/jul/26	2013/jul/26	0.06
207508		Lease	1972/jul/26	2013/jul/26	36.62
207515		Lease	1973/oct/11	2013/oct/11	28.34
207516		Lease	1973/oct/11	2013/oct/11	72.71
207517		Lease	1973/oct/11	2013/oct/11	152.04
306737		Lease	1973/oct/11	2013/oct/11	8.81
207518		Lease	1973/oct/11	2013/oct/11	33.71
207519		Lease	1973/oct/11	2013/oct/11	20.46
207520		Lease	1973/oct/11	2013/oct/11	37.75
207514		Lease	1972/oct/23	2013/oct/23	113.14
207511		Lease	1972/oct/23	2013/oct/23	64.98
207513		Lease	1972/oct/23	2013/oct/23	58.56
207512		Lease	1973/jun/11	2014/jun/11	109
352646		Lease	1997/jun/25	2014/jun/25	60.74
1017923		Lease	2013/mar/19	2014/mar/19	104
1017924		Lease	2013/mar/19	2014/mar/19	281
516589		Claim	2005/jul/10	2015/dec/09	236.238
516591		Claim	2005/jul/10	2015/dec/09	157.456
516593		Claim	2005/jul/10	2015/dec/09	59.062
516602		Claim	2005/jul/10	2015/dec/09	196.851
516603		Claim	2005/jul/10	2015/dec/09	98.403

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**Appendix B: Gibraltar Legacy Claims and Overlapping Claims**

TENURE #	NAME	TYPE	ISSUE DATE	GOOD TO DATE	AREA (HA)
516604		Claim	2005/jul/10	2015/dec/09	78.787
516605		Claim	2005/jul/10	2015/dec/09	117.999
516876		Claim	2005/jul/11	2015/dec/09	630.379
516878		Claim	2005/jul/11	2015/dec/09	177.208
516881		Claim	2005/jul/11	2015/dec/09	433.009
516883		Claim	2005/jul/11	2015/dec/09	531.226
516887		Claim	2005/jul/11	2015/dec/09	78.683
516995		Claim	2005/jul/11	2015/dec/09	39.351
516996		Claim	2005/jul/11	2015/dec/09	59.005
516997		Claim	2005/jul/11	2015/dec/09	59.01
517212		Claim	2005/jul/12	2015/dec/09	59.003
517366		Claim	2005/jul/12	2015/dec/09	412.925
207649	AL #4	Claim	1964/jul/02	2015/dec/09	25
207651	AL #6	Claim	1964/jul/02	2015/dec/09	25
207653	AL #8	Claim	1964/jul/02	2015/dec/09	25
207655	AL #10	Claim	1964/jul/02	2015/dec/09	25
207657	AL #12	Claim	1964/jul/02	2015/dec/09	25
207682	EV #9	Claim	1965/oct/19	2015/dec/09	25
207683	EV #10	Claim	1965/oct/19	2015/dec/09	25
207684	EV #11	Claim	1965/oct/19	2015/dec/09	25
207685	EV #12	Claim	1965/oct/19	2015/dec/09	25
207686	EV #13	Claim	1965/oct/19	2015/dec/09	25
207687	EV #14	Claim	1965/oct/19	2015/dec/09	25
207692	EV #15	Claim	1966/jan/17	2015/dec/09	25
207693	EV #16	Claim	1966/jan/17	2015/dec/09	25
207694	EV #17	Claim	1966/jan/17	2015/dec/09	25
207695	EV #18	Claim	1966/jan/17	2015/dec/09	25
207696	EV #19	Claim	1966/jan/17	2015/dec/09	25
207697	EV #20	Claim	1966/jan/17	2015/dec/09	25
207698	BUD #5	Claim	1966/jan/17	2015/dec/09	25
207699	BUD #6	Claim	1966/jan/17	2015/dec/09	25
207705	VAL NO.1	Claim	1966/mar/18	2015/dec/09	25
207706	VAL NO.2	Claim	1966/mar/18	2015/dec/09	25
207707	VAL NO.3	Claim	1966/mar/18	2015/dec/09	25
207708	VAL NO.4	Claim	1966/mar/18	2015/dec/09	25
207709	VAL NO.5	Claim	1966/mar/18	2015/dec/09	25
207710	VAL NO.6	Claim	1966/mar/18	2015/dec/09	25
207711	VAL NO.7	Claim	1966/mar/18	2015/dec/09	25
207712	VAL NO.8	Claim	1966/mar/18	2015/dec/09	25
207713	VAL NO.9	Claim	1966/mar/18	2015/dec/09	25
207714	VAL NO.10	Claim	1966/mar/18	2015/dec/09	25

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TENURE #	NAME	TYPE	ISSUE DATE	GOOD TO DATE	AREA (HA)
207715	VAL NO.11	Claim	1966/mar/18	2015/dec/09	25
207716	VAL NO.12	Claim	1966/mar/18	2015/dec/09	25
207717	VAL NO.14	Claim	1966/mar/18	2015/dec/09	25
207718	VAL NO.19	Claim	1966/mar/18	2015/dec/09	25
207720	VAL NO.21	Claim	1966/mar/18	2015/dec/09	25
207721	VAL NO.22	Claim	1966/mar/18	2015/dec/09	25
207722	VAL NO.27	Claim	1966/mar/18	2015/dec/09	25
207723	FFE #13	Claim	1966/may/16	2015/dec/09	25
207724	FFE #14	Claim	1966/may/16	2015/dec/09	25
207725	FFE #15	Claim	1966/may/16	2015/dec/09	25
207726	FFE #16	Claim	1966/may/16	2015/dec/09	25
207729	BUD 7	Claim	1966/jun/14	2015/dec/09	25
207730	BUD 8	Claim	1966/jun/14	2015/dec/09	25
207731	EV 21	Claim	1966/jun/14	2015/dec/09	25
207732	EV 22	Claim	1966/jun/14	2015/dec/09	25
207749	PINE TREE #1	Claim	1967/jul/04	2015/dec/09	25
207750	PINE TREE #2	Claim	1967/jul/04	2015/dec/09	25
207751	FLO #2 FR.	Claim	1967/aug/03	2015/dec/09	25
207752	FLO #3 FR.	Claim	1967/aug/29	2015/dec/09	25
207753	FLO #4 FR.	Claim	1967/aug/29	2015/dec/09	25
207754	PINE TREE #3	Claim	1967/sep/06	2015/dec/09	25
207755	PINE TREE #4	Claim	1967/sep/06	2015/dec/09	25
207756	PINE TREE #5	Claim	1967/sep/06	2015/dec/09	25
207757	PINE TREE #6	Claim	1967/sep/06	2015/dec/09	25
207758	CAROL #4 FR	Claim	1968/jul/12	2015/dec/09	25
207760	CAROL #7 FR	Claim	1968/jul/12	2015/dec/09	25
207763	H.A. #1	Claim	1968/oct/16	2015/dec/09	25
207764	H.A. #2	Claim	1968/oct/16	2015/dec/09	25
207766	H.A. #4	Claim	1968/oct/16	2015/dec/09	25
207767	HAS 2	Claim	1968/oct/16	2015/dec/09	25
207768	HAS 12	Claim	1968/oct/16	2015/dec/09	25
207769	HAS 13	Claim	1968/oct/16	2015/dec/09	25
207770	HAS 14	Claim	1968/oct/16	2015/dec/09	25
207771	HAS 15	Claim	1968/oct/16	2015/dec/09	25
207772	HAS 16	Claim	1968/oct/16	2015/dec/09	25
207773	HAS 17	Claim	1968/oct/16	2015/dec/09	25
207774	HAS 18	Claim	1968/oct/16	2015/dec/09	25
207776	HAS 20	Claim	1968/oct/16	2015/dec/09	25
207777	VE 21	Claim	1969/apr/28	2015/dec/09	25
207779	VAL #37	Claim	1969/jul/18	2015/dec/09	25
207780	VAL #39	Claim	1969/jul/18	2015/dec/09	25

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207781	VAL #41	Claim	1969/jul/18	2015/dec/09	25
207782	VAL #43	Claim	1969/jul/18	2015/dec/09	25
207783	VAL #45	Claim	1969/jul/18	2015/dec/09	25
207784	VAL #47	Claim	1969/jul/18	2015/dec/09	25
207785	VAL #49	Claim	1969/jul/18	2015/dec/09	25
207787	STU #2 FR.	Claim	1969/jul/18	2015/dec/09	25
207788	STU #3 FR.	Claim	1969/jul/18	2015/dec/09	25
207792	STU #6 FR.	Claim	1969/aug/12	2015/dec/09	25
207793	VAL #35	Claim	1969/aug/12	2015/dec/09	25
207794	VAL #36	Claim	1969/aug/12	2015/dec/09	25
207795	VAL #38	Claim	1969/aug/12	2015/dec/09	25
207796	VAL #40	Claim	1969/aug/12	2015/dec/09	25
207797	VAL #42	Claim	1969/aug/12	2015/dec/09	25
207798	VAL #44	Claim	1969/aug/12	2015/dec/09	25
207799	VAL #46	Claim	1969/aug/12	2015/dec/09	25
207800	VAL #48	Claim	1969/aug/12	2015/dec/09	25
207801	VAL #50	Claim	1969/aug/12	2015/dec/09	25
207855	SAP #5 FR.	Claim	1972/jun/21	2015/dec/09	25
207880	HA #5	Claim	1974/may/23	2015/dec/09	25
207881	HA #6	Claim	1974/may/23	2015/dec/09	25
207882	VAL #23	Claim	1974/may/23	2015/dec/09	25
207883	VAL #24	Claim	1974/may/23	2015/dec/09	25
207885	VAL #26	Claim	1974/may/23	2015/dec/09	25
372063	TM7	Claim	1999/sep/28	2015/dec/09	25
375873	HD 12	Claim	2000/apr/19	2015/dec/09	25
375874	HD 13	Claim	2000/apr/18	2015/dec/09	25
375875	HD 14	Claim	2000/apr/18	2015/dec/09	25
375876	HD 15	Claim	2000/apr/18	2015/dec/09	25
376489	HD 7	Claim	2000/may/05	2015/dec/09	175
376490	HD 8	Claim	2000/may/03	2015/dec/09	125
376491	HD 9	Claim	2000/may/01	2015/dec/09	75
204443	HY 19	Claim	1981/mar/24	2015/dec/09	50
204444	HY 20	Claim	1981/mar/24	2015/dec/09	50
204914	HY 22	Claim	1985/jan/02	2015/dec/09	50
207143	TK 1	Claim	1990/aug/23	2015/dec/09	50
207144	TK 2	Claim	1990/aug/24	2015/dec/09	50
207198	TK 3	Claim	1990/sep/12	2015/dec/09	100
207199	TK 4 FR	Claim	1990/sep/12	2015/dec/09	25
207612	GM 31	Claim	1964/mar/02	2015/dec/09	25
207613	GM 32	Claim	1964/mar/02	2015/dec/09	25
207614	GM 33	Claim	1964/mar/02	2015/dec/09	25

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207615	GM 34	Claim	1964/mar/02	2015/dec/09	25
207616	GM 35	Claim	1964/mar/02	2015/dec/09	25
207617	GM 36	Claim	1964/mar/02	2015/dec/09	25
207618	GM 37	Claim	1964/mar/02	2015/dec/09	25
207619	GM 38	Claim	1964/mar/02	2015/dec/09	25
207620	GM 39	Claim	1964/mar/02	2015/dec/09	25
207622	GM 49	Claim	1964/mar/02	2015/dec/09	25
207623	GM 50	Claim	1964/mar/02	2015/dec/09	25
207624	GM 51	Claim	1964/mar/02	2015/dec/09	25
207625	GM 52	Claim	1964/mar/02	2015/dec/09	25
207626	GM 59	Claim	1964/mar/02	2015/dec/09	25
207627	GM 60	Claim	1964/mar/02	2015/dec/09	25
207632	GM 65	Claim	1964/mar/02	2015/dec/09	25
207633	GM 66	Claim	1964/mar/02	2015/dec/09	25
207634	GM 67	Claim	1964/mar/02	2015/dec/09	25
207635	GM 68	Claim	1964/mar/02	2015/dec/09	25
207636	GM 69	Claim	1964/mar/02	2015/dec/09	25
207637	GM 70	Claim	1964/mar/02	2015/dec/09	25
207638	GM 71	Claim	1964/mar/02	2015/dec/09	25
207639	GM 72	Claim	1964/mar/02	2015/dec/09	25
207642	GM 83	Claim	1964/mar/02	2015/dec/09	25
207643	GM 85	Claim	1964/mar/02	2015/dec/09	25
207644	JAN NO. 5	Claim	1964/apr/10	2015/dec/09	25
207645	JAN NO. 6	Claim	1964/apr/10	2015/dec/09	25
207647	AL #2	Claim	1964/jul/02	2015/dec/09	25
207648	AL #3	Claim	1964/jul/02	2015/dec/09	25
207650	AL #5	Claim	1964/jul/02	2015/dec/09	25
207658	SUMMIT NO.7	Claim	1964/jul/20	2015/dec/09	25
207659	SUMMIT NO.8	Claim	1964/jul/20	2015/dec/09	25
207661	GM 104	Claim	1964/aug/21	2015/dec/09	25
207700	IT NO. 1	Claim	1966/feb/14	2015/dec/09	25
207701	IT NO. 4	Claim	1966/feb/14	2015/dec/09	25
207702	IT NO. 5	Claim	1966/feb/14	2015/dec/09	25
207703	IT NO. 6	Claim	1966/feb/14	2015/dec/09	25
207704	IT NO. 8	Claim	1966/feb/14	2015/dec/09	25
207748	GM 48	Claim	1967/jul/07	2015/dec/09	25
207789	STU #4 FR.	Claim	1969/jul/18	2015/dec/09	25
207790	STU #5 FR.	Claim	1969/jul/18	2015/dec/09	25
207844	IT 3	Claim	1971/apr/06	2015/dec/09	25
374757	HD1	Claim	2000/mar/07	2015/dec/09	25
374758	HD2	Claim	2000/mar/07	2015/dec/09	25

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TENURE #	NAME	TYPE	ISSUE DATE	GOOD TO DATE	AREA (HA)
374759	HD3	Claim	2000/mar/08	2015/dec/09	25
374760	HD4	Claim	2000/mar/08	2015/dec/09	25
374761	HD5	Claim	2000/mar/10	2015/dec/09	25
374762	HD6	Claim	2000/mar/10	2015/dec/09	25
406338	TK5	Claim	2003/oct/19	2015/dec/09	500
204539	ZE 3	Claim	1981/aug/17	2015/dec/09	500
204975	ZE 7	Claim	1985/aug/16	2015/dec/09	50
739682	CHRIS	Claim	2010/apr/03	2016/apr/26	39.3135
739702	RANITE MOUNTA	Claim	2010/apr/03	2016/apr/26	39.3347
739722	GRANITE 2	Claim	2010/apr/03	2016/apr/26	393.2894
739742	CHRIS 2	Claim	2010/apr/03	2016/apr/26	393.1019
739783	CHRIS 3	Claim	2010/apr/03	2016/apr/26	392.9831
831129		Claim	2010/aug/05	2016/apr/26	39.3406
831133		Claim	2010/aug/05	2016/apr/26	39.3406
850472		Claim	2011/apr/01	2016/apr/26	412.4648
204115	TIM 1	Claim	1978/aug/28	2017/aug/15	50
204116	COLE 1	Claim	1978/aug/28	2017/aug/15	225
204159	GEOFF 1	Claim	1979/may/29	2017/aug/15	225
204160	DOUG I	Claim	1979/jun/26	2017/aug/15	75
204161	RYAN I	Claim	1979/jun/26	2017/aug/15	25
204162	AARON I	Claim	1979/jun/26	2017/aug/15	25
204217	BARB I	Claim	1979/nov/14	2017/aug/15	300
204218	BRENT I	Claim	1979/nov/14	2017/aug/15	150
204219	JANIS I	Claim	1979/nov/14	2017/aug/15	75
204518	BRUCE I	Claim	1981/jun/29	2017/aug/15	300
204519	PAUL I	Claim	1981/jun/29	2017/aug/15	300
204105	HY 4	Claim	1978/may/01	2017/aug/15	150
204107	HY 7	Claim	1978/may/01	2017/aug/15	75
204301	HY 9	Claim	1980/jun/10	2017/aug/15	50
204302	HY 10	Claim	1980/jun/10	2017/aug/15	300
204303	HY 11	Claim	1980/jun/10	2017/aug/15	225
204304	HY 12	Claim	1980/jun/10	2017/aug/15	350
204305	HY 13	Claim	1980/jun/10	2017/aug/15	150
204306	HY 14	Claim	1980/jun/10	2017/aug/15	175
204307	HY 15	Claim	1980/jun/10	2017/aug/15	150
204308	HY 16	Claim	1980/jun/10	2017/aug/15	100
204309	HY 17	Claim	1980/jun/10	2017/aug/15	50
204378	HY 18	Claim	1980/nov/24	2017/aug/15	25
204104	HY 1	Claim	1978/may/01	2017/nov/28	100
204300	HY 8	Claim	1980/jun/10	2017/nov/28	75
204317	HY 3	Claim	1980/jun/12	2017/nov/28	225

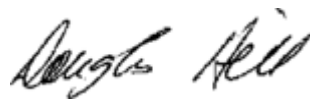
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560525	GL-1A	Claim	2007/jun/12	2021/jun/12	315.0755
604694	GL2	Claim	2009/may/19	2021/may/19	177.2734

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