MINISTRY OF ENVIRONMENT

PERMIT

263

Under the Provisions of the *Environmental Management Act*

GLENCORE CANADA CORPORATION

Suite 718
22 - 2475 Dobbin Road
West Kelowna BC V4T 2E9

is authorized to discharge effluent to MacDonald Creek, tributary to Trepanier Creek, from a closed mining operation located near Peachland, British Columbia, subject to the terms and conditions listed below. Contravention of any of these conditions is a violation of the *Environmental Management Act* and may lead to prosecution.

This Permit supersedes and amends all previous versions of Permit 263 issued under Part 2, Section 14 of the *Environmental Management Act*.

1. AUTHORIZED DISCHARGES

Authorized Source

1.1. This section applies to the discharge of effluent from a WASTEWATER TREATMENT PLANT. The site reference number for this discharge is E226070.

1.1.1. The average rate of discharge is 3,100,000 cubic metres per year.

1.1.2. The maximum rate of discharge is 6,000,000 cubic metres per year.

1.1.3. The characteristics of the discharge must be equivalent to or better than:
Dissolved Copper:
Maximum: 0.03 mg/L

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Total Iron:
Maximum: 0.30 mg/L and subject to Section 2.12
Dissolved Manganese:
Maximum: 0.25 mg/L, and subject to Sections 2.1 and 2.11
Dissolved Molybdenum:
Maximum: 0.25 mg/L and subject to Section 2.1
Dissolved Zinc:
Maximum: 0.2 mg/L
Total dissolved solids:
Maximum: 850 mg/L
pH Maximum: 8.5 pH units Minimum: 6.5 pH units
Dissolved Sodium :
Maximum: 100 mg/L
Dissolved Sulfate:
Maximum: 500 mg/L, and subject to Section 2.1
Total Suspended Solids:
Maximum: 15 mg/L

1.1.4 The authorized works are a wastewater treatment plant (including a polishing pond), tailings pond, open pit, seepage collection works and related appurtenances approximately located as shown on Site Plan A.

1.1.5 The location of the facilities from which the discharge originates is DL 5159, Osoyoos Division Yale District and comprising mineral leases 319, 320, 323, 324, 325, 326 and 327.

1.1.6 The location of the point of discharge is the new channel of MacDonald Creek, downstream of the polishing pond, DL 5159, latitude N 49 52' 06", longitude W 119 55' 58", approximately as shown on the attached Site Plan A.

1.2 **Authorized Source**

This section applies to the discharge of under-drain molybdenum sludge from a wastewater treatment plant to a SLUDGE MANAGEMENT FACILITY and subsequent discharge of leachate to the tailings impoundment. The site reference number for this discharge is E252369.

1.2.1 The maximum rate of discharge is 2750 cubic metres per year.

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1.2.2 The characteristics of the discharge (dry basis), for information purposes only, include molybdenum at approximately 5%, by weight, iron at approximately 40%, by weight, sulphate at approximately 12%, by weight, silica at approximately 2%, by weight, and the remainder being oxygen (as oxy-hydroxide cations), minor quantities of other metals and other cations.

1.2.3 The authorized works are a sludge management facility, seepage collection works and related appurtenances approximately located as shown on Site Plan A.

1.2.4 The location of the facilities from which the discharge originates and the point of discharge is DL 5159, latitude N 49 51' 53", longitude W 119 57' 32".

1.2.5 The permittee must ensure that seepage collected from the sludge management facility is contained within the catchment area of the tailings impoundment.

2. GENERAL REQUIREMENTS

2.1 Water Quality Objectives

The permittee must ensure that the following water quality objectives are maintained as a result of the discharge, in the entire reach of Trepanier Creek below the discharge, as measured at the District of Peachland intake works:

Molybdenum:
Maximum monthly concentration: less than or equal to 0.03 mg/L
in any single sample,
from June 1 to September 30: less than or equal to 0.03 mg/L
from October 1 to May 31: less than or equal to 0.06 mg/L

Dissolved Manganese:
In any single sample, less than or equal to 0.05 mg/L.

Sulphate:
less than or equal to 100 mg/L annual average
less than or equal to 250 mg/L in any single sample.

Toxicity:
The discharge shall be non-toxic to freshwater aquatic species, as measured using a standard LC50 trout bioassay.

Definitions of Terms Used Within Section 2.1:
"Monthly concentration" means the arithmetic mean of concentration values within a calendar month, including background levels.

2.2 Maintenance of Works and Emergency Procedures

The Permittee must inspect the authorized works regularly and maintain them in good working order. In the event of an emergency or condition beyond the control of the Permittee, which prevents continuing operation of the approved method of pollution prevention, the Permittee must immediately notify the Director and take appropriate remedial action.

2.3 Process Modifications

The Permittee must notify the Director prior to implementing changes to any process that may affect the quality and/or quantity of the discharge.

2.4 Unauthorized Discharges and Spill Reporting

Effluent spills or spills of hazardous contaminants must be reported to the Provincial Emergency Program Duty Officer immediately after occurrence, in accordance with the Spill Reporting Regulations, by calling the following toll-free telephone number:

1 (800) 663-3456

2.5 Seepage Collection and Return Works

The permittee must utilize seepage collection works located downstream of the main tailings dam, the saddle dam and the sludge management facility, and return recovered seepage to the tailings impoundment, the pit, or the water treatment plant.

2.6 Surface Diversion Works

The permittee must maintain diversion works to minimize the impact on the quality of surface water from mining activities by directing runoff from waste rock dumps and other disturbed areas to the tailings impoundment or to the pit or to the water treatment plant, and by diverting upstream waters around disturbed areas. The permittee must make application to the Regional Water Manager for approval of the installation of any surface diversion works.

The permittee may make application to the Director and the Regional Water Manager to return diverted waters to pre-disturbance surface watercourses following reclamation and re-vegetation activities. As part of that evaluation, the permittee may be required to provide appropriate monitoring results in order to demonstrate that the water quality objectives of the downstream waters will not be compromised.

2.7 Pollution Prevention Initiatives

The permittee must investigate measures designed to reduce the concentration of source pollutants, including, but not limited to: waste rock dump management, covering and re-vegetation, biological treatment processes (in-situ and ex-situ) and reclamation of disturbed areas, in compliance with authorizations from other agencies having jurisdiction, with the objective of creating a long term self-sustaining pollution prevention system at the site.

The permittee must include a detailed summary of pollution prevention activities at the site in the annual report, referred to in Section 4.3.

2.8 Provision of Alternate Water Supplies

If, at any time, there is insufficient flow in Trepanier Creek to provide the dilution necessary for the permittee to attain the required water quality objectives referred to in Section 2.1, the permittee may, at the permittee's discretion, cease to discharge, reduce the discharge to a sufficient level to attain the appropriate water quality objectives, or in exceptional circumstances, continue to discharge while providing alternate water supplies for the licensed users of Trepanier Creek. The quality of any alternate water supplied must be equal to or better than the water quality objectives required under this Permit for the uses for which that water is licensed.

The permittee must contact the Regional Water Manager on a frequency of not less than once per year and request a current list of licensed water users. Information obtained from a government web site will suffice, if available and current.

2.9 Prevention of Habitat Loss During Spring Freshet

The permittee must cease to discharge during any period that the flow in Trepanier Creek exceeds ninety-nine per cent of the maximum instantaneous recorded flow, in order to minimize the loss of gravel and incubating eggs through stream scouring.

2.10 Sludge Management Plan

The permittee has characterized the quantity and quality of the sludge produced by the water treatment process, and submitted the following reports in support of a sludge management plan:

- "Sludge Disposal – Study of Options and Feasibility Design, Brenda Mine, British Columbia", prepared by AMEC Earth & Environmental Limited, dated January 26, 2001;
- "Design Optimization for Phase 1 Sludge Disposal Facility, Brenda Mines, West Bank (sic), British Columbia", June 2001, prepared by AMEC Earth & Environmental Limited
- Phase 1 Sludge Disposal Facility – Material Permeabilities/Dam Toe Drain", September 2001, prepared by AMEC Earth & Environmental Limited

The permittee must implement the plan for long-term management of sludge, proposed and designed in these three reports, with the following conditions:

2.10.1 That the permittee undertake a monitoring program to include the requirements of Section 3.7;

2.10.2 That a toe drain collection system be maintained and that monitoring and analysis of collected leachate be undertaken according to the requirements of Section 3.7;

2.10.3 That the permittee install perimeter fencing to exclude wildlife and livestock from the area of the sludge impoundment, the toe drain and collection structures, and that the fencing be constructed to standards recommended by the Ministry's Wildlife Program; and

2.10.4 That the permittee install flow-measuring devices to record the volumes of sludge delivered to the storage facility and leachate flowing from the collection system to the tailings impoundment.

2.11 **Dissolved Manganese Exceedances in Polishing Pond Effluent**

2.11.1 Where it is necessary, for the protection of the integrity of the tailings impoundment structures (and, hence, public safety), to treat and discharge tailings supernatant with elevated manganese concentrations, the permittee is authorized to exceed the permitted discharge standard of Section 1.1.3, provided that the water quality requirement for manganese at the Peachland Irrigation Intake, in Section 2.1, is not exceeded at any time.

2.11.2 The permittee must notify the Director, in writing, of any potential exceedances of the discharge standard of Section 1.1.3 and include a plan to manage the discharge in order to comply with the requirements of Section 2.1

2.12 **Total Iron Discharge - Additional Requirements**

During the next five year period- until October 30, 2016 - the permittee may occasionally discharge treated effluent with a maximum total iron concentration of 0.60 mg/L, provided the water quality at the District of Peachland's Trepanier water intake does not exceed 0.30 mg/L on an annual average.

The permittee must undertake benthic invertebrate monitoring in the fall of 2014 or earlier if required by the Director in writing, to determine whether aquatic life is being impacted. As part of the benthic invertebrate monitoring program Trepanier Ck U/S MacDonald Cr (0500362) and Trepanier Ck D/S MacDonald Ck (0500079) and two locations on Macdonald Creek (see sites listed in Appendix 02) must be sampled in September employing methods consistent with the Environment Canada CABIN protocol. Also during the 2014 benthic invertebrate monitoring program, MacDonald Creek optional sampling sites (E220725 and E220726) must be monitored in accordance with the surface water monitoring program (discharge related), listed in section 3.8 of the permit.

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3. MONITORING AND REPORTING REQUIREMENTS

3.1 Sampling and Monitoring

The permittee must undertake the attached Sampling and Monitoring Program and the results thereof submitted to the Director. The need for increased or decreased monitoring will be based on the results submitted as well as any other data obtained by the Ministry of Environment in connection with these discharges.

Sampling is to be carried out in accordance with procedures described in the latest version of "British Columbia Field Sampling Manual for Continuous Monitoring plus the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment and Biological Samples (permittee edition)."

A copy of the above manual may be purchased from Queen's Printer Publications Centre. A copy of the manual may also be available for inspection at Environmental Protection Program offices.

3.2 Chemical Analyses

Analyses are to be carried out in accordance with procedures described in the latest version of "British Columbia Environmental Laboratory Manual for the Analysis of Water, Wastewater, Sediment and Biological Materials, (permittee edition)", or by suitable alternative procedures as authorized by the Director.

A copy of the above manual may be purchased from Queen's Printer Publications Centre. A copy of the manual may also be available for inspection at all Environmental Protection Program offices.

3.3 Quality Assurance Plan (QAP)

Throughout all sample collection and analysis activities, the permittee must use Quality Assurance/Quality Control procedures, protocols and guidelines described in the QA/QC section of the latest edition of BC Field Sampling Manual.

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The permittee must amend the facility-specific QAP whenever there is a modification in sample collection, sample analysis, or other procedure addressed by the QAP. A copy of the QAP must be kept on site and made available to EPD staff upon request.

3.4 Toxicity

The Director may impose further requirements for toxicity measurements in the future.

3.5 Discharge Monitoring Program

The permittee must sample the discharge to MacDonald Creek twice per week, and analyze the samples for the following parameters:

1. Dissolved molybdenum
2. Dissolved sodium
3. Dissolved sulphate
4. pH
5. Total iron
6. Hardness
7. Conductivity
8. Dissolved manganese
9. Dissolved copper
10. Dissolved zinc
11. Dissolved solids
12. Suspended solids
13. Turbidity

3.6 Groundwater Monitoring Program

Once every 5 years (next sampling period in 2018), preferably in September, at piezometers numbered 86-01-1, 86-01-2, 86-02-1, 86-02-2, 86-03-1, and 86-03-2 (referenced in Appendix 01), the permittee must record the water level, sample the water, and analyze the samples for the following parameters:

1. dissolved molybdenum
2. dissolved copper
3. dissolved nitrate plus nitrite nitrogen

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4. dissolved sodium
5. dissolved sulphate
6. dissolved manganese
7. pH
8. conductivity

3.7 Sludge Management Facility Monitoring Program

During periods of wastewater treatment plant operation, the permittee must record the daily volume of sludge delivered to the storage facility and the daily volume of leachate flowing from the collection system to the tailings impoundment

3.8 Surface Waters Monitoring Program (Discharge Related)

The permittee must obtain representative samples from surface waters monitoring sites according to the schedule referenced in Appendix 02, and analyze for the following parameters:

1. dissolved molybdenum
2. dissolved copper
3. dissolved sodium
4. dissolved sulphate
5. dissolved chloride
6. pH
7. conductivity
8. total dissolved solids
9. turbidity
10. hardness
11. dissolved iron
12. dissolved manganese
13. total suspended solids

With the exception of Station 5 - Trepanier Cr. U/S MacDonald Cr, Station 6 -Trepanier Cr. D/S Macdonald Cr, Station 7- Trepanier Creek @ Irrigation Intake and Station 8 -Trepanier Cr @ Okanagan Lake which do not require dissolved chloride, total dissolved solids and turbidity from the above parameter list.

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If, in any single sample, the water quality limit for any parameter exceeds the limits of Section 2.1, the schedule for Section 3.8 must revert to daily sampling and analysis, until such time as the standard is re-attained.

3.9 Pit Monitoring Program

Sample the pit water at the surface, at depths of 5 meters and 10 meters, and at 10-meter depth intervals thereafter, once every ten years, and analyze for the parameters listed in Section 3.6, plus dissolved oxygen and temperature (in degrees Celsius). According to this schedule, the next pit profile is due in 2023.

3.10 Surface Waters Monitoring Program (Non-discharge Related)

The permittee must obtain representative samples from surface waters monitoring sites according to the schedule referenced in Appendix 03, and analyze for the following parameters:

1. dissolved molybdenum
2. dissolved copper
3. pH
4. conductivity
5. dissolved sulphate

3.11 Flow Measurement

Once per day, during periods of discharge, the permittee must measure the flow of effluent discharge, in litres per second.

4. REPORTING REQUIREMENTS

4.1 Maintenance of Records

Maintain records of pump rates, discharge volumes, tailings impoundment water levels, pit water levels, field measurements, chemical analyses and any other monitoring or reporting requirements of this permit, for a minimum of seven years.

4.2 Monthly Report

Maintain data of analyses and flow measurements required under Sections 3.5, 3.7, 3.8, and 3.11 for inspection, and submit the data, suitably tabulated,

to the Director on a monthly basis in electronic format. The monthly reports must be submitted within 30 days of the end of the month in which the data was collected.

The permittee must ensure that the analytical laboratory performing chemical and biological analyses electronically upload the results directly to the Ministry's data base, once the results are finalized.

4.3 Annual Report

The permittee must compile an annual report consisting of, but not limited to, summaries of the operation of the treatment facility, the discharge quality and quantity, operation of the sludge management facility, sampling and analytical requirements, pit water elevations, analyses of attainment and trends in environmental monitoring (both source and impact), pollution prevention activities completed and in progress pursuant to Section 2.10, public and agency consultation undertaken and proposals for action to resolve existing and potential problems with the operations on site, environmental impacts or attainment of environmental quality objectives.

Annual reports must be submitted within 60 days of the end of the calendar year.

4.4 Performance Review

A joint review of submitted reports, compliance with permitted limits and attainment of standards may be conducted by the permittee, the Ministry of Environment, the Ministry of Energy, Mines and Petroleum Resources any public surveillance committee which may be in place from time to time. Review of longer-term requirements, such as attainment of longer-term objectives and sludge management may also be conducted, in a like manner, every ten years. The ten-year review must also include:

a) A review of wastewater treatment technologies to evaluate whether or not new information or new technologies have become available to either replace or enhance the ferric co-precipitation treatment technology.
b) A review of any new documented reports or findings regarding the effect of molybdenum on human and environmental health.

Following submission of a review of historical monitoring results, including

trends and analyses of attainment of water quality standards and objectives, the permittee may apply to modify the sampling and monitoring program.

5. FURTHER WORKS REQUIRED

The Director may, for the protection of human health and/or the environment, require new works or actions to be undertaken by the permittee if standards and objectives, referred to in Section 2.1 are not being attained as a result of the permittee's operations.

6. PUBLIC PARTICIPATION

The permittee must promote public participation as a means of providing an avenue or mechanism for public input and consultation for addressing public concerns regarding the discharge authorized by Permit PE-263. The permittee's promotion of such public participation must include:

a) Supporting the formation of a public awareness committee as the need arises.
b) Extending an invitation to First Nations to participate in the committee.
c) Co-operating with the District of Peachland in witnessing the monitoring program of Permit PE-263, and sharing monthly results of the Peachland intake water quality.

7.0 PROVISION OF INFORMATION ACCESSIBLE ON THE INTERNET

The permittee must during periods of discharge, on a monthly basis, prepare a newsletter which illustrates in graphical form the water quality monitoring results for molybdenum, sodium, sulphate and hardness at the Peachland Irrigation District Intake on Trepanier Creek.

a) The format of information may be revised as directed by the director;
b) Have the information accessible and maintained on the Internet, consider a permanent link on the District of Peachland website to the permittee water quality web page; and,
c) once per year, submit a written report to the Director describing compliance with the requirements of this section.

8.0 MONITORING AND EVALUATION OF RECEIVING

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ENVIRONMENT IMPACT

The Director may impose further requirements for long term monitoring and evaluation of receiving environment impacts.

APPENDIX 01

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GROUNDWATER MONITORING SITES
(REFERENCE SECTION 3.6)

SITE	DESCRIPTION	PIEZOMETER	AMS NO.	EMS NO.
MW1	Low Grade Stockpile Piezometer Nest	86-02-01	32	E220716
		86-02-02	33	E220717
MW2	Piezometer Nest Near MacDonald Creek	86-01-01	34	E220718
		86-01-02	35	E220719
MW3	Screening Plant Piezometer Nest	86-03-01	36	E220720
		86-03-02	37	E220721

APPENDIX 02

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SURFACE WATER MONITORING SITES - DISCHARGE RELATED
(REFERENCE SECTIONS 3.5 and 3.8)

STATION	DESCRIPTION	SAMPLING FREQUENCY	AMS NO.	EMS NO.
1	Tailings Impoundment	SPRING (mid-freshet) and FALL (low flow conditions)	1	0500358
2	Lower Reclaim Pond	SPRING (mid-freshet) and FALL (low flow conditions)	2	0500361
3	D/S Lower Reclaim	SPRING (mid-freshet) and FALL (low flow conditions)	3	0500044
22	Discharge to MacDonald Creek	See Section 3.1.1	41	E226070
5	Trepanier Cr. U/S MacDonald Cr.	QUARTERLY, (winter quarter excluded)	5	0500362
6	Trepanier Cr. D/S MacDonald Cr.	MONTHLY, during discharge periods, then QUARTERLY (winter months excluded)	6	0500079
7	Trepanier Cr. @ Irrigation Intake	WEEKLY, during discharge periods, then QUARTERLY	7	0500352
8	Trepanier Creek @ Okanagan Lake	QUARTERLY	8	0500078
19	MacDonald Creek d/s Gravel Pit	OPTIONAL	38	E220725
20	MacDonald Creek @ Trepanier Cr.	OPTIONAL	39	E220726

APPENDIX 03

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SURFACE WATER MONITORING SITES - NON-DISCHARGE RELATED
(REFERENCE SECTION 3.10)

STATION	DESCRIPTION	SAMPLING FREQUENCY	AMS NO.	EMS NO.
9	Peachland Creek U/S Mine	EVERY SECOND YEAR	9	0500354
11	Upper Reclaim Pond (Saddle Dam)	TWICE PER YEAR	17	0500787
12	Peachland Creek Diversion U/S Peachland Lake	EVERY THREE YEARS - SPRING (mid-freshet) and FALL (low flow conditions)	12	0500355
13	Peachland Lake near Dam	EVERY THREE YEARS - SPRING (mid-freshet) and FALL (low flow conditions)	13	0500360
14	Peachland Creek @ Ok Lake	EVERY THREE YEARS - SPRING (mid-freshet) and FALL (low flow conditions)	14	0500056
15	Peachland Creek @ P.I.D. Intake	EVERY THREE YEARS - SPRING (mid-freshet) and FALL (low flow conditions)	26	0500856
16	Seepage d/s of Upper Reclaim	TWICE PER YEAR	18	0500788
21	MacDonald/Long Weir @ Confusion Point	TWICE PER YEAR	40	E220727

SITE PLAN

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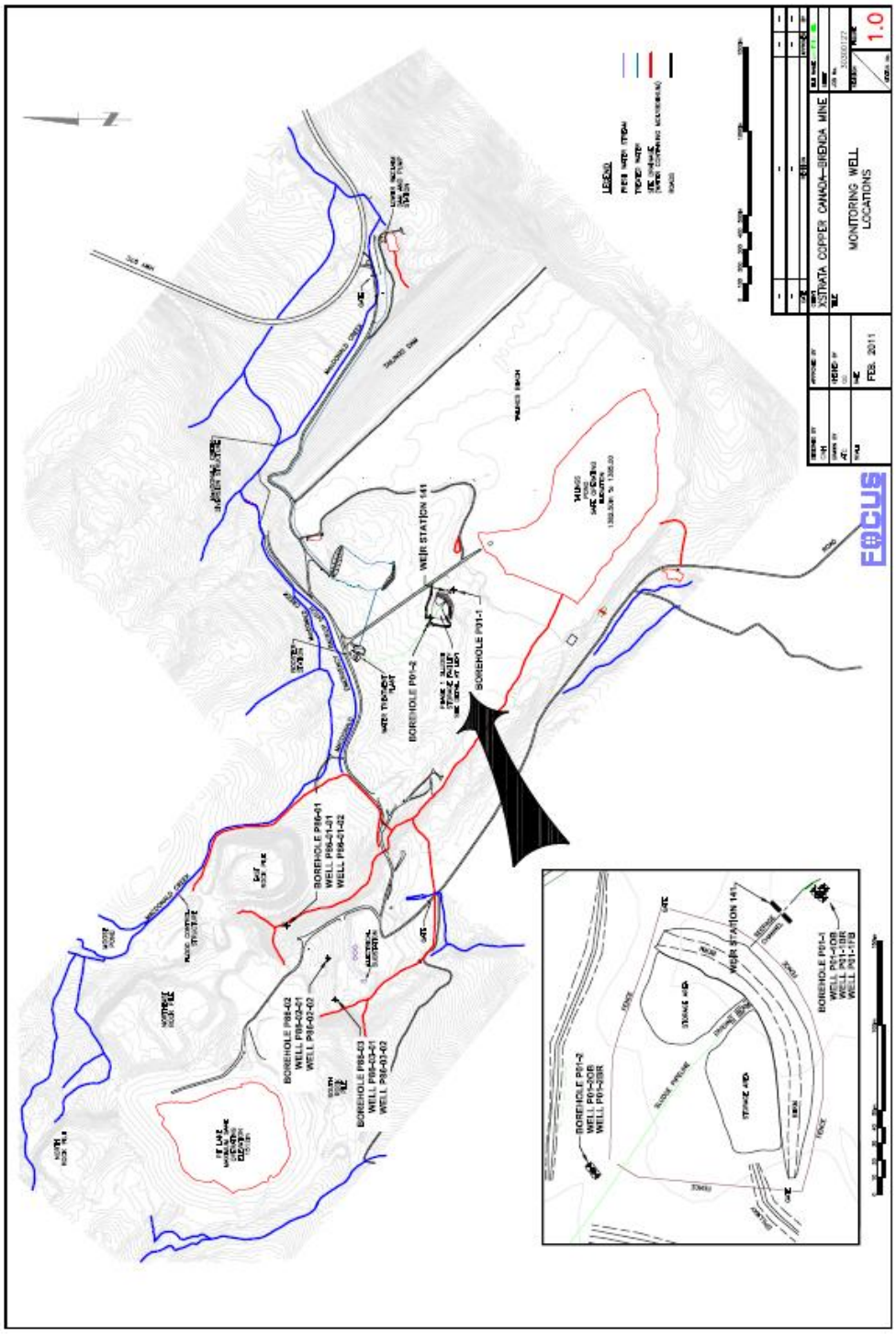

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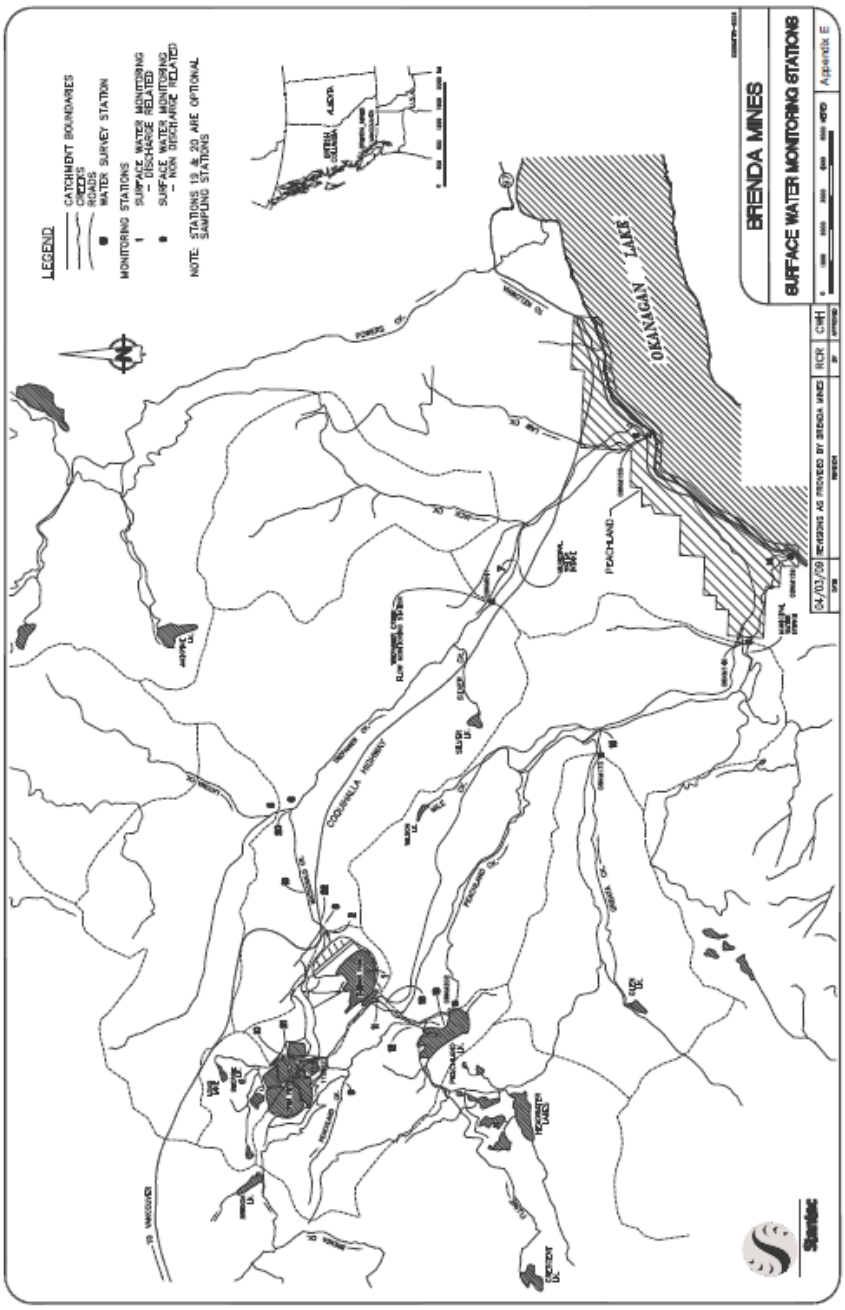
LOCATION MAP



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