MINES ACT PERMIT

Annual Reclamation Report – General Information and Format Requirements

Updated December 2022

A.   GENERAL INFORMATION

1.   Public Disclosure

Annual Reclamation Reports (ARR) are public documents and are made available upon request. Annual Reclamation Reports are now posted on the BC Mine Information website.

Although the ARRs are screened under the *Freedom of Information Act* harms assessment process prior to public posting, this is a reminder to please refrain from including sensitive information in reports that you do not want publicly released.

The Province reserves the right not to accept copyrighted ARRs.

2.   Purpose of the Annual Reclamation Report

The ARR is an annual reporting requirement of the *Health, Safety and Reclamation Code for Mines in BC* (the Code) (Part 10, S10.4.4) for mines in BC. In some cases, where S10.4.4 does not apply to a particular mine, the ARR is required as per conditions of the *Mines Act* permit. Conditions of a *Mines Act* permit may also spell out specific reportion requirements to include in the ARR. Submission of the ARR is necessary to maintain compliance with the *Mines Act* and the Code.

The Ministry of Energy, Mines and Low Carbon Innovation (EMLI) views the ARR submission as a synopsis of mining and reclamation activities, and as an opportunity to demonstrate compliance with approved plans, permit conditions, and best practices. It also allows for tracking effectiveness of monitoring programs for key mitigations implemented, identification of potential issues and liabilities that will require mitigation, and documentation of information gathered throughout life of mine. It is acceptable to provide the required information in appendices or external reports (submitted); however, if supplementary information is included as part of the submission, it must be included within the body of the report and outline why its pertinent to the ARR requirements.

Proponents must include information that highlights where plans have changed in comparison with previous reports and provide commentary on lessons learned and adaptive management actions in the relevant sections.

The format requirements below are intended to provide guidance to proponents on the Chief Inspector's expectations of minimum content.

REMINDER: The mine is responsible for ensuring compliance with all conditions under the *Mines Act*, the Code, and site-specific permits. Please ensure that all information required by the permit is included in the Annual Reclamation Report.

3.   Changes to Mine Plan, Environmental Protection Program, or Reclamation and Closure Plan

The ARR is not to be used as a mechanism for notifying EMLI of any proposed changes to the approved Mine Plan and Reclamation Program. Proposed changes must be submitted to the Chief Permitting Officer as a permit amendment application, or as a Notice of Departure.

4.   Submission Instructions

Submission of the ARR is due by March 31st of the following year.

The ARR and associated spatial files can be submitted electronically in two ways:

1.   Email to the EMLI Permitting and Reclamation inbox at permrecl@gov.bc.ca
       o   For large files, the use of a File Transfer Protocol (FTP) site is preferred. If submitting by other methods, please provide details via email for tracking purposes.

2.   Through the government mining industry web portal MineSpace at https://minespace.gov.bc.ca.
       o   Proponents can login to MineSpace using a personal or business BCeID once they register with the Mines Digital Services (MDS) team at mds@gov.bc.ca.

NOTE: Submission of hardcover copies of the ARR are no longer required

5.   Cover Letter/Email

The ARR submission must be accompanied by a cover letter that includes the following data in the tabulated format shown below:

Company:		
Mine Name:		
Mines Act Permit #:		
	Previous Report (e.g.,2021)	Current Report (e.g.,2022)
Total Disturbance Area (ha)		
Total Reclaimed Area (ha)		
Total Exempt Area (ha) (e,g., pit walls)		
Mining Production (annual total)		
Milling Production (annual total)		
Total Reclamation Liability Estimate		
Date for next Five Year Mine Plan and Reclamation Plan update (if required)		

6.   Shapefile/Digital Spatial Data

EMLI requires that digital spatial files (i.e. shapefiles) be submitted with all ARRs. Please note that the areas identified in the shapefile should correspond to the areas reported in Table 1 of the ARR. EMLI requires that the spatial data submitted as part of prior year's reporting is updated to reflect any new disturbance and/or reclamation in the current reporting year. Any changes from shapefiles submitted in previous years must be clearly explained in the ARR.

EMLI requests spatial data for the following:

- Disturbance areas; and,
- Revegetated areas and areas where reclamation activities are ongoing.

     Please note: EMLI requires the submission of ONE shapefile which depicts both the mine disturbance and reclamation information.

     Spatial Data Submission Standards are provided in Attachment 1, and additional file format information is available at Annual Reclamation Reports - Province of British Columbia (gov.bc.ca)

7.   Standard Tables

Several tables are provided to assist mine proponents to report information required by the Chief Inspector. The following tables may be required for your project. If it is deemed not necessary to include one or more of the tables, please provide a brief rationale for the omission in the ARR. Note that it may be necessary to modify the table to accommodate the specific activities conducted at your site. The following tables are required:

- Table 1: Summary of Areas Disturbed and Reclaimed
  - o Ensure that the exempt area reported is not double-counted under the different classifications. In the body of the report, the exempt areas must be specified, rationale provided for the exemption, and maps included depicting the exempt areas.

- Table 2: Quantities of Waste Rock, Tailings, Low Grade Ore, Coarse Reject, and Other Mine Waste
  - o Ensure that all waste types (including any water treatment wastes and contaminated soil), disposal areas and volumes are included even if waste was not added in the reporting year. Ensure maps include all waste disposal areas.

- Table 3: Monthly Mining and Milling Production
  - o Ensure all areas mined are included in the table.

- Table 4: Monthly Custom Milling Production
  - o Ensure that information on volumes of various ore feeds is reported in the table. Summarize the number of ore and tailings samples that have been collected to characterize the ML/ARD potential of the materials milled. Include all raw data and data interpretation in the report.

- Table 5: Quantities of Soil and Overburden Salvaged and Stockpiled for Reclamation Use
  - o Ensure that characterization data are provided in the report that represent the materials salvaged and stockpiled, and maps included depicting stockpile locations.
  - o Ensure that areas that could not be salvaged due to safety or other reasons are identified in the report, along with a supporting rationale.
  - o Include volumes of imported growth medium material, if applicable.

- Table 6: Summary of New Disturbance Through Departure of Approvals
  - o Identify the area of new disturbance (include disturbance to previously revegtated areas), associated with Departures from Approvals.

B. <u>REPORT FORMAT REQUIREMENTS</u>

The ARR must describe activities conducted in the previous year (or years), describe plans for activities to be conducted in the upcoming year, and follow the general format provided below.

COVER PAGE
- "Annual Reclamation Report for 2022" *Mines Act* Permit Number: _____
- Name of Property:
- Company Name:
- Names and Phone Numbers of Mine Manager AND Person Responsible for Reclamation/Environment:
- Company and Authors of Reclamation Report (if different from above):
- Date:

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EXECUTIVE SUMMARY

- Summarize the essential information in less than a page.

1.0 INTRODUCTION

- Provide a brief history of the project.
- Describe the general location of the site and provide a location map.
- Describe baseline and/or regional environmental/ecological conditions.
- Describe regional management plans.
- Identify the goals and objectives of the reclamation program, including approved end land use(s) and land capability objectives.
- Summarize all reclamation activities conducted at the site and tabulate areas reclaimed (**Table 1**).
- Discuss how the current program fits into the concept of "progressive and ongoing reclamation".

2.0 MINING PROGRAM

Describe:
- Surface development to date.
- Current life of mine plan.
- Surface development in the past year.
- Surface development projected over the next five years.

Discuss:
- Areas disturbed (location, aspect, and size in hectares).
- Disposal/storage locations and volumes of tailings, waste rock, coarse rejects, ore, low grade ore, overburden, water treatment wastes, and other (**Table 2**).
- Mining and milling production (**Table 3**).
- Custom Milling production (**Table 4**).
- Stockpiling of surface soil materials (location, volume, and characteristics) (**Table 5**).
- Areas disturbed by Departures from Approval (**Table 6**).

3.0 ENVIRONMENTAL PROTECTION PROGRAM

Describe the Environmental Protection Program over the <u>past year</u> and <u>next year</u> (in detail), and projected for the <u>next 5 years (in summary)</u>, including the following (where applicable):

Environmental Protection Program:	Report Requirement:
Environmental Management Systems/Plans/Audit	- Summarize the environmental management plans implemented. - Summarize the audit undertaken to review the EMS, EMPs, and SOPs. - Document and provide a schedule for the revisions necessary to address the audit findings.
ML/ARD Characterization and Mine Waste Management	- Describe static and kinetic testing programs. - Provide raw, cumulative, summary data and interpretation (e.g., acid base accounting, mineralogical, and elemental composition). - Provide an inventory of volumes of all materials excavated, exposed, created or disturbed during mining (e.g., waste rock, tailings, ore, low grade ore, coarse reject and other) by ML/ARD classification (Table 2). - Summarize the effectiveness of mine waste handling and management programs. Identify any issues encountered or expected and actions that have or will be undertaken to address.
Surface Water Quality and Quantity	- Summarize the drainage monitoring program, including flows and water quality at monitoring locations both on and off of the mine property. - Include data range and central tendencies for data summaries. - Include maps depicting hydrologic features and monitoring locations. - Include figures illustrating time series of parameters including pH, sulphate, alkalinity, acidity, base cations, major metals, trace elements, and major nutrients. - Identify any water quality trends or issues and any actions that have or will be undertaken to address.
Groundwater Quality and Quantity	- As above under Surface Water Quality and Quantity.
Water Quality Prediction, Mitigation, and Treatment	- Include a comparison of predicted water quality versus measured water quality, including key source terms used in predictions. - Summarize and assess effectiveness of water quality protection and mitigation measures for the mine, including ML/ARD. Identify any issues encountered or expected and actions that have been or will be undertaken to address.
Water Management	- Describe and map pre-mining drainages/watersheds. - Describe and map the current configuration of water management conveyance features and infrastructure, and changes to natural drainages/watersheds.
Erosion and Sediment Control	- Describe erosion and sediment control activities (project-specific, routine, seasonal/event-based). - Describe ESC effectiveness monitoring programs (and summarize results).
Soil Salvage and Stockpiling	- Map of soil and overburden stockpiles. - Tabulate volumes of soil and overburden stockpiled and identify sources of origin (i.e., salvage locations) **Table 5**. - Describe soil characteristics and suitability for reclamation. - Describe activities conducted to protect soil stockpiles.
Landfarm Management	- Describe landfarming activities (material volumes, contaminants, treatment, monitoring, use/disposal), if applicable.
Vegetation Management	- Describe vegetation monitoring and management (e.g., construction clearing, invasive plant species, and metal uptake).
Wildlife Protection	- Summarize programs for preventing wildlife-human interactions and wildlife monitoring. - Provide results were applicable (including summary of incidental observations).
Archaeological Resources	- Describe archaeological and heritage sites identified.

4.0   RECLAMATION PROGRAM

Describe the Reclamation Program over the <u>past year</u> and <u>next year</u> (in detail) and projected for the <u>next 5 years</u> (in summary), including the following (where applicable):

Reclamation Standard/Activity:	Report Requirement:
End Land Use	- Document/map the end land use plan over the site based on pre-mining uses and ecosystem targets.
Land Capability	- Document/map the land capability pre-mining versus the predicted post-mining land capability over the site based on biogeoclimatic site series.
Long-Term Stability	- Stability of waste dumps, dams, impoundments, pits, borrows, roads, and watercourses.
Revegetation	- Describe revegetation treatments, application area, species selection, application specifications, amendments/fertilizers, locations, objectives (such as trials, erosion control, and final reclamation for specified end land use). - Provide a map identifying the location of revegetation activities. - Describe the revegetation evaluation/effectiveness program(s) for revegetation treatments.
Growth Medium	- Describe soil replacement depth/volumes, locations, application area, surface preparation, decompaction, and drainage/erosion control. - Provide a map identifying the location of soil replacement activities - Describe the soil monitoring program.
Landforms	- Describe landscaping, contouring, and resloping previously conducted (specify application area). - Provide a map identifying the location of surface preparation activities.
Structures and Equipment	- Describe removal of equipment, scrap/recyclables, and treatment of foundations.
Waste Dump Reclamation	- Describe progressive and final reclamation on waste dumps (include details such as material characteristics, locations, elevations/heights, size of areas, slope angles, and aspects).
Watercourse Reclamation	- Describe progressive and final reclamation for watercourses.
Open Pit Reclamation	- Describe progressive and final reclamation for open pits.
Tailings Storage Facility and/or Impoundment Reclamation	- Describe progressive and final reclamation for impoundments.
Road Reclamation	- Describe progressive and final reclamation for access and mine haul roads.
Infrastructure Decommissioning/ Reclamation	- Describe decommissioning/reclamation of infrastructure (e.g., buildings, power distribution and transmission lines, fuel farms, etc).
Securing Openings	- Describe activities conducted to secure potentially dangerous surface areas and underground openings.
Disposal of Hazardous Materials, Chemicals and Reagents	- Describe removal and disposal activities for hazardous materials. - Describe programs for investigating contaminated sites, remediation of contaminated media, and hazardous materials and chemical management and disposal.
Reclamation Research	- Describe research activities, for example, plant species selection, optimal soil depths for specified end land uses, surface preparation/erosion control/compaction treatment techniques, native species collection, propagation, transplanting, landforming, drainage

	modeling, and water body reclamation.
	- Describe research collaborations and outreach.
	- Detailed research programs documented in standalone reports may be submitted separately.
5 Year Reclamation Plan	- Describe the nature and scope of reclamation and research programs for the next 5 years.

5.0   RECLAMATION LIABILITY COST ESTIMATES

Provide a detailed estimate of the total expected costs of outstanding reclamation obligations of the mine, including all long-term costs for monitoring, maintenance, and water treatment. Development of Reclamation Liability Cost Estimates are to follow the Interim Major Mines Reclamation Security Policy (EMLI 2022).

Proponents are remined that estimated costs should be calculated over the next 100 years. Clearly indicate estimated liability costs associated with work completed under Notice of Departures for the year.

If the detailed cost estimates are expected to be filed as a separate confidential report, please clearly specify in the report cover letter. The total reclamation liability estimated for the site should still be provided in the Cover Letter Summary Table.

A sites the reclamation liability cost estimate may not be the same as the reclamation security held under the *Mines Act* permit, and the detailed cost estimates are required to be reported annually to reflect the outstanding liabilities.

6.0   NOTICE OF DEPARTURES

As per EMLI's Departure from Approval Guidance for Major Mine Permit Holders (2020), proponents are required to report Departures from Approval in the Annual Reclamation Report. Provide details related to new disturbances associated with Notice of Departures (Table 6), estimate of the new liability, and map of all new disturbances.

7.0   MAPS AND PHOTOS

Maps and photos should be included within the body of the text where possible. Large maps and photo series can be included in appendices, however page references or hyperlinks should be provided to help reviewers locate the information.

In addition to the shapefiles required, maps must also be provided within the report document, such as:

- Maps of the current *Mines Act* permit boundary, including disturbed areas, mine components/facilities, waste disposal locations, and soil stockpiles depicted graphically on contour maps, ortho-photo mosaic overlays, or other similar methods, at a scale of 1:10,000 or better. Clearly indicate the map projection used.

- Reclamation areas must be shown on contour maps or ortho-photo mosaic overlays at the same scale as the surface development map. If it is not possible to provide maps in the body of the report, please ensure that the specific location maps are provided and that Appendices are clearly identified.

- Representative and annotated photos should be included that complement the written descriptions of activities conducted on-site.

- Include a map showing the location and extent of all new disturbances created through Notice of Departures for the year.

ATTACHMENT 1

Spatial Data Submission Standards

Mines Act Permit
Annual Reclamation Report Format Requirements Addendum
Shapefile Submission Data Standards

The Ministry of Energy, Mines and Petroleum Resources (EMPR) has established an initiative to develop spatial data capabilities for permitting and tracking of mine activities. As part of this initiative, EMPR is requesting that digital spatial files be submitted with all Annual Reclamation Reports. As this has been a requirement since 2015, EMPR expects that the spatial data submitted as part of prior year's reporting will be updated to reflect any new disturbance and/or reclamation in the current reporting year. EMPR would like to receive a collective spatial data for the following:

- disturbance areas; and,
- revegetated areas and areas where reclamation activities are ongoing.
- Please note that starting with the 2020 Annual Reclamation Report submission, EMPR now only requires the submission of ONE shapefile which depicts both the above mine disturbance and reclamation information

The shapefile should be submitted with the Annual Reclamation Report for each mine, which is due by March 31, following the reporting year. The information below provides guidance on how to construct the shapefile with the attributes that EMPR requires.

Disturbance and Reclamation shapefile should correspond to areas reported in tables and maps provided in the Annual Reclamation Report. To simplify reporting, EMPR asks that you indicate the status of reclamation activities by using "none", "ongoing" "re-vegetated" or "exempt". In order for an area to be recorded as "re-vegetated", it must have supported vegetation that will lead to the designated land use objective for at least one year. Note that the "re-vegetated" classification does not mean that EMPR has accepted or signed off on the reclamation.

The reclaimed areas should correspond to the total reported in Table 1 of the Annual Reclamation Report (Summary of Areas Disturbed and Reclaimed to December 31, of the reporting year). The "exempt" status should be used to identify areas exempt from reclamation. If you enter "ongoing", please include the date that reclamation activities began in the "Reclamation Date" field. If you enter "re-vegetated", please include the date that reclamation activities were last completed in the "Reclamation Date" field. The date field may be a null value for polygons with the "exempt" or "none" status. If you wish to include additional details, please do so in the comments field.

Disturbances to be included are described as areas of disturbance in the past or present due to any mining activities covered by the *Mines Act* permit. This includes areas cleared of vegetation and any roads that are currently active or have not yet been deactivated and reclaimed. For this exercise, EMPR requests that the secondary classifier is classified by "Disturbance Type", where the type should match the categories tabulated in Table 1 of the Annual Reclamation Report (Summary of Areas Disturbed and Reclaimed to December 31 of the reporting year). Please DO NOT include reclamation or disturbance information that is not associated with your Mines Act Permit.

Overlapping polygons must be avoided. This means that every area on the mine site is represented by only one disturbance type and one reclamation status (see coding below)

What is a Shapefile?
A shapefile is a simple format for storing the location and attribute information of geographic features. A shapefile can only store one type of geographic feature (e.g., points, lines, polygons), but a single shapefile can hold multiple shapes, with a corresponding record to contain the attributes for each shape.

A complete shapefile consists of the following:
Mandatory Files
- .shp – shape format; the feature geometry itself

- .shx – shape index format; a positional index of the feature geometry to allow seeking forwards and backwards quickly
- .dbf – attribute format; columnar attributes for each shape, in dBASE IV format

Other Files
- .prj – projection format; the coordinate system and projection information, a plain text file describing the projection using well-known text format

Shapefiles submitted with the Annual Reclamation Reports must follow the data standards below.

Geometry
The shapefile <u>must</u> be a **POLYGON** feature type.

Coordinate System Required
The shapefile must be in BC Albers.

Naming Convention
Mine Permit (with understores to replace '-'), underscore, Year, 'ARR', underscore, Mine Name, underscore

> **e.g.,** M_300_2016ARR_GoldMine

Attribute Table Data Standards
Each shapefile's attribute table must conform to the standards below.

Disturbance and Reclamation Fields and Descriptions:

Shapefile Field Description:	Shapefile Field Name:	Data Type:	Example:	Example Description:
Mine Number	MINE_NO	Text – 10	000001	
Mine Permit	PERMIT_NO	Text – 10	M - 999	
Mine Name	MINE_NM	Text – 50	Gold Creek	
Mine Type	MINE_TYP	Text – 6	M	Mineral
Annual Reclamation Report Year	YEAR_	Short Integer – 4	2018	
Disturbance Identifier	DSTB_ID	Text – 6	1	
Reclamation Area Identifier	RECL_ID	Text – 6	1	
Disturbance Type	DSTB_TYPE	Text – 6	RD	Road
Disturbance Year	DSTB_YEAR	Short Integer - 4	2014	2014
Reclamation Activity Status	RECL_ACT	Text - 6	O	Reclamation activities are ongoing.
Reclamation Year	RECL_YEAR	Short Integer – 4	2014	Most recent activities conducted in 2014.
Comments	COMMENTS	Text – 255	Using same camp area in 2018, no need to reclaim this year.	

Attribute Table Fields Data Standards:

The shapefile attribute table for the mining annual summary activities must use these codes:

MINE_TYPE	Mine Type	*Codes for Mine Type:* **C**: Coal; **M**: Mineral; **P**: Placer; **Q**: Quarry; **SG**: Sand and Gravel
RECL_ACT	Status of Reclamation	**N**: None; **E**: Exempt; **O**: Ongoing; **C**: Re-vegetated
DSTB_TYPE	Disturbance Type	*Codes for Disturbance Type:* **ADMIN:** Administrative area/building **CCR**: Coarse Coal Rejects **LI:** Linear **O:** Other (enter comments) **PIT**: Pit **POND**: Seepage/Sediment Pond **PS**: Plant Site **RD**: Road **SP**: Stockpile **TSF**: Tailings Storage Facility General Footprint **WD**: Waste Dump **WTP**: Water Treatment Plant and/or Pond

PLEASE NOTE: If you have modified the Table 1 Disturbance Type categories, you will need to include a description of the codes used if they differ from those provided above.