

STATE OF NEVADA

Department of Conservation and Natural Resources

Division of Environmental Protection

Bureau of Mining Regulation and Reclamation

Water Pollution Control Permit

Permittee: **Klondex Gold & Silver Mining Company
Fire Creek Infiltration Project
6110 Plumas Street, Suite A
Reno, NV 89519**

Permit Number: **NEV2013102**
Review Type/Year/Revision: **Renewal 2019, Revision 00**

Pursuant to Nevada Revised Statutes (NRS) 445A.300 through 445A.730, inclusive, and regulations promulgated thereunder by the State Environmental Commission and implemented by the Division of Environmental Protection (the Division), this Permit authorizes the Permittee to construct, operate, and close the **Fire Creek Infiltration Project**, in accordance with the limitations, requirements, and other conditions set forth in this Permit. The Permittee is authorized to discharge and infiltrate, via rapid infiltration basins, up to a maximum of **2,160,000 gallons per day**, and up to a maximum of **43,200,000 gallons in any 30-day period**, of mine dewatering water and waste-rock drainage that is treated in accordance with this Permit.

The facility is located in east-central Lander County and westernmost Eureka County, in Sections 9, 10, 14, 15, 22, 23, and 24, Township 30 North (T30N), Range 47 East (R47E), and Sections 19 and 20, T30N, R48E, Mount Diablo Baseline and Meridian (MDBM), approximately 4 miles northwest of the town of Crescent Valley, Nevada.

The Permittee must comply with all terms and conditions of this Permit and all applicable statutes and regulations.

This Permit is based on the assumption that the information submitted in the application of 16 April 2013, as modified by subsequent approved amendments, is accurate and that the facility has been constructed and is being operated as specified in the application. The Permittee must inform the Division of any deviation from, or changes in, the information in the application, which may affect the ability of the Permittee to comply with applicable regulations or Permit conditions.

This Permit is effective as of **23 March 2019**, and shall remain in effect until **24 February 2024**, unless modified, suspended, or revoked.

Signed this 7th day of **March 2019**.



Joseph Sawyer, P.E.
Chief, Bureau of Mining Regulation and Reclamation

I. Specific Facility Conditions and Limitations

A. In accordance with operating plans and facility design plans reviewed and approved by the Division the Permittee shall:

1. Construct, operate, and close the facility in accordance with those plans;
2. Except for the approved infiltration beneath the rapid infiltration basins (RIBs), contain within the fluid management system all dewatering water, including all meteoric waters that enter the system as a result of the 25-year, 24-hour storm event; and
3. Not release or discharge any contaminants from the fluid management system that would result in degradation of waters of the State.

B. Schedule of Compliance:

1. By 1 January 2020, the Permittee shall submit an updated hydrologic and chemical model of the infiltration mound that incorporates updated model assumptions and predicted discharge rates, and is calibrated to fit all available monitoring data from monitoring wells and piezometers in the vicinity of the mound.

The schedule of compliance items above are not considered complete until approved in writing by the Division.

C. The water management system covered by this Permit consists of the following components:

1. High-density polyethylene (HDPE) discharge pipeline from the Water Treatment Plant Permeate Tanks and a clean underground dewatering source at 5,340 feet above mean sea level to the RIBs;
2. Two earthen RIBs (North RIB and South RIB); and
3. Pipes, valves, air vents, flow meters, staff gauges, piezometers, monitoring wells, and any other equipment used in conveyance, control, or detection of dewatering water.

D. Monitoring Requirements:

| <u>Identification</u> | <u>Parameter</u> | <u>Frequency</u> |
|------------------------------------------------------------------------|-------------------------------------------------------------------|---------------------|
| 1. <u>Discharge Water</u> At point of discharge to RIBs | Profile I ⁽¹⁾ | Monthly when active |
| 2. <u>RIB Discharge Rate and Water Depth</u> North RIB South RIB | Volume discharged (gallons) and water depth (feet) at staff gauge | Weekly |

| <u>Identification</u> | <u>Parameter</u> | <u>Frequency</u> |
|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------|
| 3. <u>Groundwater Monitoring Wells</u> RIB Upgradient Well: GW-3 RIB Downgradient Wells: GW-4, GW-5, GW-6 | Static water and collar elevations (feet AMSL); Profile I ⁽¹⁾ | Monthly; Quarterly |
| 4. <u>Infiltration Mound Piezometers</u> North RIB Piezometers: PZ-1, PZ-2 South RIB Piezometers: PZ-3, PZ-4 | Water and collar elevations (feet AMSL) | Monthly |
| 5. <u>Springs, Seeps, and Creeks</u> Surface Water Present in Area Referenced in Part I.B.2. | UTM Easting ⁽²⁾ , UTM Northing ⁽²⁾ (meters), and Profile I | Quarterly |

The Permittee may request a reduction of the monitoring frequency after four quarters of complete monitoring based on justification other than cost. Such reductions may be considered modifications to the Permit and require payment of modification fees.

Abbreviations and Definitions:

RIB = rapid infiltration basin; AMSL = above mean sea level; SU = standard units; mg/L = milligrams per liter; CaCO₃ = calcium carbonate; N = nitrogen; NDEP = Nevada Division of Environmental Protection (the Division); UTM = Universal Transverse Mercator projection; pH = the negative of the base 10 logarithm of the activity of the hydrogen ion;

Footnotes:

(1) Profile I:

| | | | |
|------------------------------------|----------|------------------------------|------------------------|
| Alkalinity (as CaCO ₃) | Cadmium | Magnesium | Silver |
| Bicarbonate | Calcium | Manganese | Sodium |
| Total | Chloride | Mercury | Sulfate |
| Aluminum | Chromium | Nitrate + Nitrite (as N) | Thallium |
| Antimony | Copper | Nitrogen, Total (as N) | Total Dissolved Solids |
| Arsenic | Fluoride | pH (± 0.1 SU) ⁽³⁾ | Zinc |
| Barium | Iron | Potassium | - |
| Beryllium | Lead | Selenium | - |

(2) Report easting and northing coordinates in meters, Universal Transverse Mercator (UTM) projection, NAD 83 datum, with accuracy of 10 meters or less.

- (3) All sample analyses resulting in a pH value less than or equal to 5.0 SU shall also be analyzed for acidity (mg/L, as CaCO₃ equivalent).
- E. Quarterly and annual monitoring reports and release reporting shall be in accordance with Part II.B.
- F. All sampling and analytical accuracy shall be in accordance with Part II.E.
- G. Permit Limitations
1. Failure to meet a Schedule of Compliance date or requirement.
 2. The floor of each RIB shall be excavated to, and be maintained at, a minimum of 30 feet below the elevation of the lowest point on the native ground surface surrounding the RIB.
 3. The facility shall not degrade waters of the State to the extent that applicable water quality standards, and background concentrations, are exceeded.
 4. Water discharged to the RIBs shall not exceed the following maximum concentrations for dissolved parameters, and shall be free from floating debris, oil, grease, scum, and other pollutants that have a potential to degrade waters of the State or to adversely affect the performance of the RIBs.

| | | | |
|-----------|------------|--------------------------|------------|
| Aluminum | 0.20 mg/L | Magnesium | 150 mg/L |
| Antimony | 0.006 mg/L | Manganese | 0.10 mg/L |
| Arsenic | 0.01 mg/L | Mercury | 0.002 mg/L |
| Barium | 2.0 mg/L | Nitrate + Nitrite (as N) | 10 mg/L |
| Beryllium | 0.004 mg/L | Nitrogen, Total (as N) | 10 mg/L |
| Cadmium | 0.005 mg/L | pH (± 0.1 SU) | 6.5-8.5 SU |
| Chloride | 400 mg/L | Selenium | 0.05 mg/L |
| Chromium | 0.1 mg/L | Silver | 0.1 mg/L |
| Copper | 1.0 mg/L | Sulfate | 500 mg/L |
| Fluoride | 4.0 mg/L | TDS | 1000 mg/L |
| Iron | 0.6 mg/L | Thallium | 0.002 mg/L |
| Lead | 0.015 mg/L | Zinc | 5.0 mg/L |

5. The total discharge rate to the RIBs shall not exceed 2,160,000 gallons per day, or 43,200,000 gallons in any 30-day period.
6. The water depth in each RIB shall be managed such that it does not exceed 3 feet above the RIB floor.
7. The infiltration mound of subsurface saturation shall not rise to less than 10 feet below the bottom of a RIB or to less than 40 feet below the ground surface, as determined by the piezometers in Part I.D.4. No surface discharges, surface

seeps, artificial springs, liquefaction, or sink holes shall be caused to form. Regular drying cycles, a decreased discharge rate to the RIBs, or other approved measures shall be utilized as necessary to prevent, or mitigate for, exceedance of this Permit limit.

Exceedances of these limitations may be Permit violations and shall be reported as specified in Part II.B.4.

- H. The Project shall maintain an automated device or a calibrated rain gauge, which shall be monitored daily, to record daily precipitation. A written and/or electronic record of all daily accumulations of precipitation shall be maintained on site.
- I. The Permittee shall inspect all control devices, systems, and facilities weekly, and during (when possible) and after major storm events. These inspections are performed to detect evidence of:
 - 1. Deterioration, malfunction, or improper operation of control or monitoring systems;
 - 2. Sudden changes in the data from any monitoring device (if applicable);
 - 3. Unauthorized discharges; and
 - 4. Severe erosion or other signs of deterioration in RIBs, dikes, diversions, or other fluid management components.
- J. Prior to initiating permanent closure activities at the water management facility, or at any water management process component or other source within the facility, the Permittee must have an approved final plan for permanent closure.
- K. The Permittee shall remit an annual review and services fee in accordance with NAC 445A.232 starting July 1 after the effective date of this Permit and every year thereafter until the Permit is terminated or the facility has received final closure certification from the Division.
- L. The Permittee shall not dispose of or treat Petroleum-Contaminated Soil (PCS) on the mine site without first obtaining from the Division approval of a PCS Management Plan.
- M. When performing dust suppression activities, the Permittee shall use best management practices (BMPs) and appropriate selection of water source and additives to prevent degradation of waters of the State. If a dust suppressant exceeds a water quality standard and the corresponding natural background water concentration in the area where dust suppression will occur, the Permittee shall demonstrate no potential to degrade waters of the State.
- N. Continuing Investigations
 - 1. The Permittee shall submit to the Division for review and approval an updated hydrologic and chemical model of the infiltration mound with each Permit renewal and with any new Permit application that could affect the predicted subsurface hydrology or water quality downgradient of the discharge outfall. The model must incorporate updated model assumptions and predicted

discharge rates, and must be calibrated to fit all available monitoring data from monitoring wells and piezometers in the vicinity of the mound. Approval may require modification of the Permit and payment of new Permit application fees.

II. General Facility Conditions and Limitations

A. General Requirements

1. The Permittee shall achieve compliance with the conditions, limitations, and requirements of the Permit upon commencement of each relevant activity. The Administrator may, upon the request of the Permittee and after public notice (if required), revise or modify a Schedule of Compliance in an issued Permit if he or she determines good and valid cause (such as an act of God, a labor strike, materials shortage or other event over which Permittee has little or no control) exists for such revision.
2. The Permittee shall at all times maintain in good working order and operate as efficiently as possible, all devices, facilities, and systems installed or used by the Permittee to achieve compliance with the terms and conditions of this Permit.
3. Whenever the Permittee becomes aware that he or she failed to submit any relevant facts in the Permit application, or submitted incorrect information in a Permit application or in any report to the Administrator, the Permittee shall promptly submit such facts or correct information. Any inaccuracies found in this information may be grounds for revocation or modification of this Permit and appropriate enforcement action.

B. Reporting Requirements

1. The Permittee shall submit quarterly reports, in both hard copy and a Division-approved electronic format, which are due to the Division on or before the 28th day of the month following the quarter and must contain the following:
 - a. Analytical results of the water collected from monitoring locations identified in Parts I.D.1, I.D.3, and I.D.5, reported on NDEP Form 0190 or equivalent;
 - b. Volume, depth, latitude, and longitude measurements collected from monitoring locations identified in Parts I.D.2 and I.D.5;
 - c. Water and collar elevations for monitoring wells and piezometers identified in Parts I.D.3 and I.D.4; and
 - d. A record of releases, and the remedial actions taken in accordance with the approved Emergency Response Plan on NDEP Form 0490 or equivalent.

Facilities which have not initiated mining, construction, or discharge must submit a quarterly report identifying the status of mining, construction, or discharge. Subsequent to any noncompliance or any facility expansion which provides increased capacity, the Division may require an accelerated monitoring frequency.

2. The Permittee shall submit an annual report, in both hard copy and a Division-approved electronic format, by February 28th of each year, for the preceding calendar year, which contains the following:
 - a. A synopsis of releases on NDEP Form 0390 or equivalent;
 - b. A brief summary of site operations, including the total number of gallons discharged to the RIBs each month of the year, construction and expansion activities, and major problems with the water management system;
 - c. A table of total monthly precipitation amounts recorded in accordance with Part I.H., for either the five-year history previous to the date of submittal or the history since initial Permit issuance, whichever is shorter;
 - d. An updated version of the facility monitoring and sampling procedures and protocols;
 - e. An updated evaluation of the closure plans using specific characterization data for each component of the water management system with respect to achieving stabilization; and
 - f. Graphs of discharge volume, RIB water depth, water elevation, and concentrations of arsenic, chloride, iron, magnesium, manganese, nitrate + nitrite (Total as N), nitrogen (total as N), pH, sulfate as SO₄, and total dissolved solids (TDS), versus time for all fluid monitoring points, as applicable. These graphs shall display either a five-year history previous to the date of submittal or the history since initial Permit issuance, whichever is shorter. Additional parameters may be required by the Division if deemed necessary.
3. Release Reporting Requirements: The following applies to facilities with an approved Emergency Response Plan. If a site does not have an approved Emergency Response Plan, then all releases must be reported as per NAC 445A.347 or NAC 445A.3473, as appropriate.
 - a. A release of any quantity of hazardous substance, as defined at NAC 445A.3454, to surface water, or that threatens a vulnerable resource, as defined at NAC 445A.3459, must be reported to the Division as soon as practicable after knowledge of the release, and after the Permittee notifies any emergency response agencies, if required, and initiates any action required to prevent or abate any imminent danger to the environment or the health or safety of persons. An oral report shall be made by telephone to (888) 331-6337 for in-State callers or (775) 687-9485 for out-of-State callers, and a written report shall be provided within 10 days in accordance with Part II.B.4.b.
 - b. A release of a hazardous substance in a quantity equal to or greater than that which is required to be reported to the National Response Center pursuant to 40 Code of Federal Regulations (CFR) Part 302 must be reported as required by NAC 445A.3473 and Part II.B.3.a.

- c. A release of a non-petroleum hazardous substance not subject to Parts II.B.3.a. or II.B.3.b., released to soil or other surfaces of land, and the total quantity is equal to or exceeds 500 gallons or 4,000 pounds, or that is discovered in or on groundwater in any quantity, shall be reported to the Division no later than 5:00 P.M. of the first working day after knowledge of the release. An oral report shall be made by telephone to (888) 331-6337 for in-State callers or (775) 687-9485 for out-of-State callers, and a written report shall be provided within 10 days in accordance with Part II.B.4.b. Smaller releases, with total quantity greater than 25 gallons or 200 pounds and less than 500 gallons or 4,000 pounds, released to soil or other surfaces of land, or discovered in at least 3 cubic yards of soil, shall be reported quarterly on NDEP Form 0390 or equivalent.
 - d. Petroleum Products and Coolants: If a release is subject to Parts II.B.3.a. or II.B.3.b., report as specified in Part II.B.3.a. Otherwise, if a release of any quantity is discovered on or in groundwater, or if the total quantity is equal to or greater than 100 gallons released to soil or other surfaces of land, report as specified in Part II.B.3.c. Smaller releases, with total quantity greater than 25 gallons but less than 100 gallons, released to soil or other surfaces of land, or if discovered in at least 3 cubic yards of soil, shall be reported quarterly on NDEP Form 0390 or equivalent.
4. The Permittee shall report to the Administrator any noncompliance with the Permit.
- a. Each such event shall be reported orally by telephone to (775) 687-9400, not later than 5:00 P.M. of the next regular work day from the time the Permittee has knowledge of the circumstances. This report shall include the following:
 - i. Name, address, and telephone number of the owner or operator;
 - ii. Name, address, and telephone number of the facility;
 - iii. Date, time, and type of incident, condition, or circumstance;
 - iv. If reportable hazardous substances were released, identify material and report total gallons and quantity of contaminant;
 - v. Human and animal mortality or injury;
 - vi. An assessment of actual or potential hazard to human health and the environment outside the facility; and
 - vii. If applicable, the estimated quantity of material that will be disposed and the disposal location.
 - b. A written summary shall be provided within 10 days of the time the Permittee makes the oral report. The written summary shall contain:
 - i. A description of the incident and its cause;
 - ii. The periods of the incident (including exact dates and times);

- iii. If reportable hazardous substances were released, the steps taken and planned to complete, as soon as reasonably practicable, an assessment of the extent and magnitude of the contamination pursuant to NAC 445A.2269;
 - iv. Whether the cause and its consequences have been corrected, and if not, the anticipated time each is expected to continue; and
 - v. The steps taken or planned to reduce, eliminate, and prevent recurrence of the event.
- c. The Permittee shall take all available and reasonable actions, including more frequent and enhanced monitoring to:
- i. Determine the effect and extent of each incident;
 - ii. Minimize any potential impact to the waters of the State arising from each incident;
 - iii. Minimize the effect of each incident upon domestic animals and all wildlife; and
 - iv. Minimize the endangerment of the public health and safety which arises from each incident.
- d. If required by the Division, the Permittee shall submit, as soon as reasonably practicable, a final written report summarizing any related actions, assessments, or evaluations not included in the report required in Part II.B.4.b., and including any other information necessary to determine and minimize the potential for degradation of waters of the State and the impact to human health and the environment. Submittal of the final report does not relieve the Permittee from any additional actions, assessments, or evaluations that may be required by the Division.

C. Administrative Requirements

1. A valid Permit must be maintained until permanent closure is complete. Therefore, unless permanent closure has been completed and termination of the Permit has been approved in writing by the Division, the Permittee shall apply for Permit renewal not later than 120 days before the Permit expires.
2. Except as required by NAC 445A.419 for a Permit transfer, the Permittee shall submit current Permit contact information described in paragraphs (a) through (c) of subsection 2 of NAC 445A.394 within 30 days after any change in previously submitted information.
3. All reports and other information requested by the Administrator shall be signed and certified as required by NAC 445A.231.
4. All reports required by this Permit, including, but not limited to, monitoring reports, corrective action reports, and as-built reports, as applicable, and all applications for Permit modifications, shall be submitted in both hard copy and a Division-approved electronic format.

5. When ordered consistent with Nevada Statutes, the Permittee shall furnish any relevant information in order to determine whether cause exists for modifying, revoking and reissuing, or permanently revoking this Permit, or to determine compliance with this Permit.
6. The Permittee shall maintain a copy of, and all modifications to, the current Permit at the permitted facilities at all times.
7. The Permittee is required to retain during operation, closure and post-closure monitoring, all records of monitoring activities and analytical results, including all original strip chart or data logger recordings for continuous monitoring instrumentation, and all calibration and maintenance records. This period of retention must be extended during the course of any unresolved litigation.
8. The provisions of this Permit are severable. If any provision of this Permit, or the application of any provision of this Permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Permit, shall not thereby be affected.
9. The Permittee is authorized to manage fluids and solid wastes in accordance with the conditions of this Permit. Issuance of this Permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of Federal, State or local law or regulations. Compliance with the terms of this Permit does not constitute a defense to any order issued or any action brought under the Water Pollution Control Statutes for releases or discharges from facilities or units not regulated by this Permit. NRS 445A.675 provides that any person who violates a Permit condition is subject to administrative or judicial action provided in NRS 445A.690 through 445A.705.

D. Division Authority

The Permittee shall allow authorized representatives of the Division, at reasonable times, and upon the presentation of credentials to:

1. Enter the premises of the Permittee where a regulated activity is conducted or where records are kept per the conditions of this Permit;
2. Have access to and copy any record that must be kept per the conditions of this Permit;
3. Inspect and photograph any facilities, equipment (including monitoring and control equipment), practices, or operations regulated by this Permit; and
4. Sample or monitor for any substance or parameter at any location for the purposes of assuring Permit and regulatory compliance.

E. Sampling and Analysis Requirements

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

2. For each measurement or sample taken pursuant to the conditions of this Permit, the Permittee shall record the following information:
 - a. The exact place, date, and time of the inspection, observation, measurement, or sampling; and
 - b. The person(s) who inspected, observed, measured, or sampled.
3. Samples must be taken, preserved, and labeled according to Division approved methods.
4. Standard environmental monitoring chain of custody procedures must be followed.
5. Samples shall be analyzed by a laboratory certified or approved by the State of Nevada, as applicable for the method(s) being performed. The Permittee must identify in all required reports the certified and approved laboratories used to perform the analyses, analytical methods performed (electronic version of report only), laboratory reference numbers, sample dates, and laboratory test dates.
6. The accuracy of analytical results, unless otherwise specified, shall be expressed in mg/L and be reliable to at least two significant digits. The analytical methods used must have a practical quantitation limit (PQL) equal to or less than one-half the reference value for Profile I parameters. Laboratories shall report the lowest reasonable PQL based on in-house method detection limit studies. Samples for Profile I parameters shall be filtered and analyzed for the dissolved fraction, unless otherwise required by the Division.

F. Permit Modification Requirements

1. Any material modification, as defined at NAC 445A.365, plan to construct a new water management process component, or proposed change to Permit requirements must be reported to the Division by submittal of an application for a Permit modification, or if such changes are in conformance with the existing Permit, by submittal of a written notice of the changes. The Permit modification application must comply with NAC 445A.391 through 445A.399, 445A.410, 445A.412, 445A.414, 445A.4155, 445A.416, 445A.417, 445A.440, and 445A.442, as applicable. The construction or modification shall not commence, nor shall a change to the Permit be effective, until written Division approval is obtained.
2. Prior to the commencement of mining activities at any site within the State which is owned or operated by the Permittee but not identified and characterized in a previously submitted application or report, the Permittee shall submit to the Division a report which identifies the locations of the proposed mine areas and waste disposal sites, and characterizes the potential of mined materials and areas to release pollutants. Prior to development of these areas the Division shall determine if any of these new sources will be classified as process components and require engineered containment as well as Permit modification.

3. The Permittee shall notify the Division in writing at least 30 days before the introduction of dewatering water into a new water management process component or into an existing water management process component that has been materially modified, or of the intent to commence active operation of that water management process component. Before introducing dewatering water or commencing active operation, the Permittee shall obtain written authorization from the Division.
4. The Permittee must obtain a written determination from the Administrator of any planned water management process component construction or material modification, or any proposed change to Permit requirements, as to whether it is considered a Permit modification, and if so, what type.
5. The Permittee must give advance notice to the Administrator of any planned changes or activities which are not material modifications in the permitted facility that may result in noncompliance with Permit requirements.

Prepared by: Michelle Griffin

Date: 4 March 2019

Revision 00: 2019 Renewal