



STATE OF ALASKA  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
610 UNIVERSITY AVE.  
FAIRBANKS, AK 99709-3643

WASTE MANAGEMENT PERMIT

for

**Northern Star (Pogo) LLC**

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**Permit 2018DB0001**

**Date: November 1, 2018**

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This Waste Management Permit is issued to Northern Star (Pogo) LLC (Pogo Mine), P.O. Box 145, Delta Junction, Alaska 99737, for the disposal of mine tailings, waste rock and other solid wastes as defined in section 1.2 of this permit, from a gold recovery facility to an approximately 81-acre Dry Stack Tailings Facility (DSTF), and the mine underground workings located within Sections 13, 14, 22-27 and 34-36, T5S, R14E; Sections 18, 19 and 29-34, T5S, R15E; Sections 1-3, 10-15 and 36, T6S, R14E; Sections 3-11, 14-23 and 29-32, T6S, R14E, Fairbanks Meridian. This permit is issued under the provisions of Alaska Statute (AS) 46.03.100, AS 46.03.110, and AS 46.03.120, and the Alaska Administrative Code (AAC), 18 AAC 15, 18 AAC 60, 18 AAC 70 and 18 AAC 72, as amended or revised, and other applicable state laws and regulations. This permit is effective **November 1, 2018** and expires after **May 23, 2023**. It may be terminated or modified in accordance with AS 46.03.120.

This permit is subject to the conditions and requirements contained in sections 1 - 5. This permit incorporates by reference Pogo Mine's January 6, 2017 Waste Management Permit renewal application including *2017 Pogo Plan of Operations Revision 1* (February 2017), *Pogo Mine Monitoring Plan* (January 2017), *Pogo Quality Assurance Plan* (January 2017), *Pogo DSTF Construction and Maintenance Plan Revision 5* (January 2017), *RTP Operating and Maintenance Manual Revision 3* (December 2016), *Pogo Reclamation and Closure Plan* (February 2017) and *Basis of Reclamation Cost Estimate Pogo Mine, Alaska* (February 14, 2017). Changes to the documents incorporated herein must be approved by the Department of Environmental Conservation (department) if they affect this permit. If the department approves the changes, they become part of this permit.

After completing reclamation activities and terminating active wastewater treatment, the department requires the permittee to conduct post-closure maintenance and monitoring for a minimum of 30 years after closure. The permittee shall assess conditions at the facility and respond accordingly throughout the post-closure care period. At the end of the post-closure period, the department will determine whether post-closure care and monitoring should be extended beyond 30 years, based upon the information collected by that time.

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Gene McCabe  
Program Manager

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## 1 SPECIFIC PERMIT CONDITIONS

### 1.1 PERMIT COVERAGE

- 1.1.1 This permit covers disposal and containment of waste in the Dry Stack Tailings Facility (DSTF), underground mine workings, waste rock and ore stockpiles, and Recycle Tailings Pond (RTP). In addition to disposal of wastes listed above, this permit covers hazardous chemical storage and containment, groundwater and surface water containment systems used to prevent the discharge of wastewater, reclamation and closure activities related to all the facilities at the mine site, and financial responsibility. This permit also requires monitoring and reporting associated with waste disposal. This permit does not authorize the discharge of wastewater to surface water.
- 1.1.2 In addition to conditions of this permit, the permittee shall adhere to the applicable requirements of 18 AAC 60 Solid Waste Management Regulations, 18 AAC 70 Alaska Water Quality Standards (WQS), and 18 AAC 72.500–600 Non-Domestic Wastewater Disposal Regulations. The permittee shall also adhere to the terms of the *2017 Pogo Plan of Operations Revision 1* (February 2017), *Pogo Mine Monitoring Plan* (January 2017), *Pogo Quality Assurance Plan* (January 2017), *Pogo DSTF Construction and Maintenance Plan Revision 5* (January 2017), *RTP Operating and Maintenance Manual Revision 3* (December 2016), and *Pogo Reclamation and Closure Plan* (February 2017), as approved by the department. When the terms of this permit differ from the terms of the mine documents, the most recent term, approved in writing by the department, is controlling. If there is doubt as to which conflicting term is newer, this permit shall control. Mine documents must also be updated within 90 days from the date of issuance of this permit incorporating any changes necessary to be consistent with the terms of this permit.
- 1.1.3 While this permit is in effect, the permittee is authorized to dispose of solid and liquid waste as specified in this permit into the DSTF, underground mine workings, RTP, waste rock stockpiles, and associated drainage and seepage control systems at Pogo Mine, which are considered treatment works. Under 18 AAC 70.010(c), WQS contained in 18 AAC 70 do not apply to treatment works.
- 1.1.4 For purposes of this permit, compliance points are identified as monitoring wells MW12-500, MW12-501, MW12-502, MW11-001A, MW11-001B, MW04-213, and MW11-216. See the facility map in section 5.

### 1.2 LIMITATIONS

- 1.2.1 The DSTF is limited to a maximum of 20 million tons of inert solid waste with an approximate deposition rate of 22,250 tons per week, consisting of about five parts flotation tailings to four parts waste rock, and meeting the conditions in this permit. Also covered under this section is the non-mineralized waste

rock stockpile, which can store up to 355,000 tons of non-mineralized waste rock. Waste rock with a content greater than 0.5 percent sulfur or exceeding 600 milligrams per kilogram arsenic shall be classified as mineralized; whereas, waste rock below both of those criteria shall be classified as non-mineralized. Mineralized waste rock must be disposed of in either the DSTF or underground. The permittee is expected to place wastes underground to the maximum extent practicable over the life of the facility. To promote this activity, no volume limit is placed on disposal of paste backfill tailings (consisting of about half of the total flotation tailings and all of Carbon-in-Pulp [CIP] tailings from the cyanidation circuit) or waste rock in the underground workings.

- 1.2.2 Currently, there are no inert solid waste landfills at the mine site. The permittee must receive written department approval before establishing an inert solid waste landfill, and the following materials may not be disposed into the DSTF, underground, or any department-approved inert solid waste landfill, unless specifically approved by the department in writing.
- 1.2.2.1 Other than interstitial waters entrained in the tailings or paste backfill tailings, treated or untreated process water with a constituent concentration exceeding WQS in 18 AAC 70;
  - 1.2.2.2 Chemical containers with fewer than three rinses, and discarded, unused chemicals;
  - 1.2.2.3 Uncombusted household waste;
  - 1.2.2.4 Laboratory wastes other than wash waters, neutralized acids and neutralized bases; however, disposal of refinery slag is permitted under the Bevill Amendment; additionally, fire assay crucibles and cupels, if nonhazardous, are permitted for recycling through the grinding and leaching circuit;
  - 1.2.2.5 Sewage solids that are untreated or have less than 10% solids by weight;
  - 1.2.2.6 Asbestos waste;
  - 1.2.2.7 Hazardous wastes, as defined by 40 CFR Part 261, and radioactive material, explosives, strong acids, untreated pathogenic waste, glycol, solvents, oily wastes, waste oil, greases, paints, chemical wastes, transformers, and packing material or associated equipment; however, this prohibition does not preclude disposal of Bevill excluded waste, natural minerals found in mine rock or residual wastes included as byproducts of the beneficiation process, which may be discarded into the DSTF or underground mine, as long as they are in quantities that would not cause significant impact on mine closure, reclamation, or water quality;

- 1.2.2.8 Fuels, oil, transformers, paint, equipment, and packing material;
  - 1.2.2.9 Glycol and solvents;
  - 1.2.2.10 Lead-acid vehicle batteries; or
  - 1.2.2.11 CIP tailings, which have not been subjected to cyanide detoxification as required by section 1.2.3.
- 1.2.3 Prior to disposal as paste backfill tailings, the CIP tailings shall be subjected to cyanide detoxification using the  $\text{SO}_2$  /air process or other suitable cyanide detoxification process approved by the department. The interstitial water samples from detoxified CIP tailings shall contain fewer than 10 milligrams per liter (mg/L) of weak acid dissociable (WAD) cyanide as a monthly average and none of the samples shall contain more than 20 mg/L of WAD cyanide.
- 1.2.4 Washwater from the vehicle maintenance shop may go into the RTP provided that oily water goes through an oil/water separator, and it does not have a sheen prior to entering the RTP. Dry methods of cleanup shall be used for initial cleanup of oil spills in the maintenance shop.
- 1.2.5 Activities at the site, which will cause a greater amount of waste material to be treated and disposed of than contemplated in this section of the permit, are prohibited without the prior approval by the department.
- 1.2.6 The water in compliance monitoring wells MW12-500, MW12-501, and MW12-502 must not exceed the triggers listed in Table 1. MW12-500, MW12-501, and MW12-502 serve to detect escape of water from the RTP, which is a zero discharge facility. Monitor compliance wells MW12-500, MW12-501, and MW012-502 according to section 1.5.4. If any of those triggers are exceeded, corrective action designated in section 1.7 must be implemented.

**Table 1: Upper Tolerance Limit Concentrations Triggering Corrective Action**

Parameter <sup>1</sup>	Units	Location		
		MW12-500	MW12-501	MW12-502
antimony	µg/L <sup>2</sup>	0.36	0.35	0.35
arsenic	µg/L	47.8	47.6	45.0
chloride	mg/L <sup>3</sup>	0.79	1.23	1.06
cyanide, WAD <sup>4</sup>	µg/L	5.2	5.2	5.2
nitrate as nitrogen	mg/L	1.28	2.66	2.39
potassium	mg/L	3.18	3.69	3.27
selenium	µg/L	1.35	0.99	0.64
sodium	mg/L	5.41	5.27	3.90
<sup>1</sup> Measure dissolved concentrations because water samples come from monitoring wells, and the presence of non-dissolved constituents, including antimony and arsenic, is considered negligible. <sup>2</sup> micrograms per liter <sup>3</sup> milligrams per liter <sup>4</sup> For WAD cyanide, 20 µg/L is the minimum level of quantification (ML) and the compliance level. The method detection level (MDL) is 10 µg/L.				

- 1.2.7 The water in compliance monitoring wells MW11-001A, MW11-001B, MW04-213, and MW11-216 must not demonstrate a statistically significant increase in constituent concentrations above background groundwater quality and exceed WQS. Monitor compliance wells according to section 1.5.4. If these thresholds are surpassed, corrective action designated in section 1.7 must be implemented.
- 1.2.8 The permittee must comply with 18 AAC 60.815 and prevent the escape of waste or leachate from disposal facilities. Monitor according to section 1.5.2.1. If damage or potential damage to a waste disposal-related facility is discovered that could lead to an exceedance of WQS or harm to wildlife, corrective action designated in section 1.7 must be implemented.
- 1.2.9 The limitations in section 1.2 do not preclude the surface storage prior to treatment/disposal of waste rock or the stockpiling of non-mineralized waste rock prior to use in construction or erosion control. Mineralized waste rock shall be disposed in the DSTF or underground as soon as practicable. The limitations also do not preclude, and authorization is hereby given for, disposal of non-hazardous incidental wastes either underground or in discrete cells in the DSTF, such as (i) settled solids from sumps, ditches, and degritting basins; (ii)

settled solids from the water treatment plant; (iii) dewatered water treatment plant sludge; (iv) dewatered sewage sludge meeting the requirements of section 1.2.2.5; (v) incinerator ash and residue; (vi) ash from combustion of scrap wood material; (vii) iron (drill steel, balls, empty case, etc.); (viii) used ventilation tubing and used filter press cloth; (ix) empty plastic and glass containers; (x) inert domestic waste; (xi) construction debris; (xii) tires; (xiii) spill cleanup debris approved by the department; (xiv) non-terne plated used oil filters that have been gravity hot-drained; (xv) concrete slabs, scrap lumber, pipe and similar wastes; (xvi) empty drums and containers that have been triple-rinsed; (xvii) non-lead acid batteries; and (xviii) such other material as would otherwise be disposed of in a surface landfill without special handling.

- 1.2.10 For WAD cyanide with a site- specific MDL equal to 10 µg/L and site-specific ML equal to 20 µg/L (which is the compliance level), values between the MDL and ML provide a margin of safety indicating increasing trends prior to any exceedances. Based on the rate and magnitude of a trend, the department may require corrective action according to section 1.7 to prevent environmental harm. When lab results are between the MDL and ML, the permittee shall verbally notify the department within 60 days of the end of the calendar quarter when it occurred and provide written notification within seven days of verbal notice.
- 1.2.11 The department may set or modify permit conditions based on monitoring results or changes in facility processes, after consultation with the permittee, and according to permit amendment or modification procedures.

### 1.3 SITE MAINTENANCE

- 1.3.1 Information on engineering changes to the mill, changes to the waste treatment processes, changes to the groundwater monitoring well system, and addition of new point sources that discharge into the RTP must be submitted to the department, and approval must be obtained prior to any such changes or discharges.
- 1.3.2 The permittee must provide and maintain secondary containment for all process piping and chemical mix tanks containing hazardous or toxic materials. Secondary containment must be at least 110% of the largest tank volume within a given containment or the total volume of manifolded tanks. The permittee must design and install secondary containment structures in a manner that ensures that solid waste and leachate will not escape from the structures. Facilities to prevent such discharges shall be maintained in good working condition at all times by the permittee.
- 1.3.3 Secondary containment of all hazardous substances, as defined at AS 46.03.826(5), must be impermeable to those stored hazardous substances.
- 1.3.4 The permittee must design all process piping and chemical mix tanks to allow

for routine inspections for leaks. Process piping outside of the mill building must not be buried unless secondary containment is used that provides the ability to inspect for leaks. This stipulation does not apply to the RTP water return lines.

- 1.3.5 The permittee shall develop the site in accordance with the plans submitted by the applicant as required by this permit and approved by the department, and approved amendments to those plans.

#### 1.4 SITE CONSTRUCTION & OPERATION

- 1.4.1 Discharge of water from the facility to surface water is prohibited except as permitted under Alaska Pollutant Discharge Elimination System (APDES) Permit No. AK0053341, APDES Multi-Sector General Permit No. AKR060000 or other effective APDES permit specifically authorizing a discharge at the facility.
- 1.4.2 The permittee shall construct and maintain a seepage collection system below the RTP dam. The seepage collection system shall be constructed and maintained such that all seepage from the RTP is captured and pumped back to the RTP. The seepage system shall be operated to ensure that the Pogo Mine operates as a zero discharge facility, except for the discharge permitted under APDES Permit No. AK0053341, APDES Multi-Sector General Permit No. AKR060000 or other effective APDES permit specifically authorizing a discharge at the facility, which are excluded from this permit.
- 1.4.3 The permittee shall adhere to the *Pogo DSTF Construction and Maintenance Plan*, as approved by the department and adopted by reference in this permit, including:
  - 1.4.3.1 The permittee shall take reasonable measures to control particulates that may occur from wind-blown tailings by wetting or other effective measures;
  - 1.4.3.2 The permittee shall minimize run-on water from entering the DSTF from upgradient sources of surface and groundwater;
  - 1.4.3.3 The permittee shall minimize infiltration of water into the DSTF tailings facility during the routine operations, closure, and post-closure care periods;
  - 1.4.3.4 The permittee shall ensure geotechnical stability of waste materials and cover systems, including minimizing the potential for liquefaction within the DSTF tailings facility in the event of a maximum credible earthquake event; and



- 1.4.3.5 The permittee shall minimize the potential for development of acid rock drainage conditions by burying mineralized waste rock within the compacted tailings.
- 1.4.4 The permittee shall prevent disposal of waste materials from exceeding the design capacity of the disposal facilities.
- 1.4.5 The permittee shall control and treat surface water, groundwater, and leachate as necessary to prevent off-site water quality exceedances; shall not place solid waste in water; and shall not allow solid waste to wash away from the facility.
- 1.4.6 The permittee must notify the department in writing at least 15 days before the introduction of a new chemical into the process or waste treatment streams. Safety Data Sheets on new chemicals must be forwarded to the department and maintained on site.
- 1.4.7 The permittee must submit plans to the department and receive approval of any changes that will significantly modify the quality or quantity of a discharge, significantly modify the operation of a waste treatment component, significantly modify a disposal facility, or create a new disposal site at least 60 days before construction of the modification.
- 1.4.8 The permittee must notify the department in writing at least 15 days before introducing process solutions into an existing process or waste treatment component that has been significantly modified.
- 1.4.9 The permittee must submit to the department within 90 days after completing construction of a significant modification to an existing process component:
  - 1.4.9.1 As built drawings of the process component(s), which show any changes of those aspects that would affect performance of that process component as required in 18 AAC 72.600;
  - 1.4.9.2 A summary of the quality control activities that were carried out during construction; and
  - 1.4.9.3 The final operating plans that reflect modifications made during construction.
- 1.4.10 The permittee shall report spills of hazardous substances according to 18 AAC 75 or as required under an agreement with the department's Spill Prevention and Response Program at <http://dec.alaska.gov/spar/spillreport.htm>.

## 1.5 MONITORING

- 1.5.1 The *Pogo Mine Monitoring Plan*, submitted in January 2017, is incorporated into this permit. Otherwise, department-approved changes to the plan that do

not increase detrimental environmental impacts will be included as amendments to the *Pogo Mine Monitoring Plan* and do not require public notice.

- 1.5.2 The *Pogo Mine Monitoring Plan* must be updated within 90 days of permit issuance, as necessary to be consistent with the terms of this permit and shall contain the following:
  - 1.5.2.1 Conduct weekly visual monitoring of the facility checking for signs of damage or potential damage from settlement, ponding, leakage, erosion, or operations at the site. Visual monitoring shall be documented. If damage or potential damage to a waste disposal-related facility is discovered that could lead to an exceedance of WQS or harm to wildlife, corrective action designated in section 1.7 must be implemented;
  - 1.5.2.2 Surface water and groundwater analyses for parameters at frequencies and locations that will ensure sample results are representative and statistically valid;
  - 1.5.2.3 Monitoring of the CIP tailings prior to placement in the paste backfill to ensure that the limitations contained in section 1.2.3 are met;
  - 1.5.2.4 A water balance including flow monitoring that accounts for all inflows to and outflows from facility water containment structures including water discharged into and from the RTP, water discharged into and from the mine, process water recycled to the mill, water treated, and water discharged;
  - 1.5.2.5 A biological visual survey program to monitor wildlife interaction with the surface waste disposal facilities; and
  - 1.5.2.6 A program to track the classification and segregation of the mineralized and non-mineralized waste rock produced at the facility to ensure that the cutoff criteria contained in section 1.2.1 are being met.
- 1.5.3 The permittee must implement the *Pogo Quality Assurance Plan (QAP)* for all monitoring required by this permit. The *QAP* must be updated within 60 days of the effective date of this permit and made available upon request. Any changes made to the existing *QAP* shall be completed according to section 1.5.3.3.
  - 1.5.3.1 The *QAP* must be designed to assist in planning for the collection and analysis of effluent and receiving water samples in support of the permit and in explaining data anomalies when they occur.
  - 1.5.3.2 Throughout all sample collection and analysis activities, the permittee must use Quality Assurance/Quality Control (QA/QC) chain-of-custody

procedures described in the most recent editions of *Requirements for Quality Assurance Project Plans* (EPA/QA/R-5) and *Guidance for Quality Assurance Project Plans* (EPA/QA/G-5). The *QAP* must be prepared in the format which is specified in these documents.

- 1.5.3.3 The permittee must amend the *QAP* whenever there is a modification in sample collection, sample analysis, or other procedure addressed by the *QAP*.
- 1.5.3.4 A copy or copies of the *QAP* must be kept on site and made available to the department upon request.
- 1.5.4 Groundwater, surface water, process water, and tailings solids sampling locations and frequency shall be in conformance with the most recent *Pogo Mine Monitoring Plan* and *QAP*. Groundwater monitoring shall be conducted and provide water quality data used to evaluate impacts to the surrounding areas from the following wells: MW11-001A and MW11-001B (downgradient of the DSTF and upgradient of the RTP); MW12-500, MW12-501, and MW12-502 (downgradient of the RTP); and MW04-213 and MW11-216 (downgradient of the mine).
- 1.5.5 All samples collected, as required by section 1.5.1, shall be analyzed in conformance with the most recently submitted *Pogo Mine Monitoring Plan* and *QAP*.
- 1.5.6 The permittee shall maintain a log of all wastes disposed into the DSTF, underground mine workings, and the surface landfill. The log shall include the date of disposal, estimated volume of waste, and a description of the waste. A summary log of waste disposed shall be included in the annual report required in section 1.6.3.
- 1.5.7 In the event of corrective action, groundwater and surface water monitoring shall be conducted according to section 1.7, 18 AAC 60 Solid Waste Management Regulations, and the most recently submitted *Pogo Mine Monitoring Plan* and *QAP*.
- 1.5.8 The department may modify monitoring requirements, including the establishment of additional compliance points, after consultation with the permittee, in response to trends showing changes in the concentration of parameters being monitored.
- 1.5.9 The permittee shall establish and follow monitoring procedures to:
  - 1.5.9.1 Ensure samples are analyzed by a laboratory that follows EPA-approved procedures, quality control requirements, reporting, and documentation procedures;

- 1.5.9.2 Analyze collected samples using methods set out in *Methods for Chemical Analysis of Water and Wastes* (EPA-600/4-79-020); *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA-600/4-82-057); *Standard Methods for the Examination of Water and Wastewater* (edition in effect at the time of sampling); or other methods approved by the department. Each result must be accompanied by a reference, such as the method number, to the method that was used to perform the analysis;
- 1.5.9.3 Conduct inspections of the DSTF in conformance with the *Pogo DSTF Construction and Maintenance Plan*; and
- 1.5.9.4 Conduct inspections of the RTP in conformance with the current *Certificate of Approval to Operate a Dam* issued by Alaska Department of Natural Resources (ADNR), Division of Mining, Land and Water, Dam Safety and Construction Unit.
- 1.5.10 If the permittee monitors any influent, effluent, receiving water, or solid waste characteristic, in addition to those identified in this permit, more frequently than required, the results of such monitoring shall be available for inspection by the Commissioner or his/her representative at the project site, or other location proposed by the permittee and agreed upon by the department. The permittee shall provide copies of the results to the department upon request.

## 1.6 REPORTING

- 1.6.1 When a statistically significant increase in the concentration of a constituent above WQS is discovered at a groundwater monitoring location, or if an exceedance of the limits established in sections 1.2, 1.3, or 1.4 is discovered, the permittee shall verbally notify the department no later than the end of the next State of Alaska working day after discovery and shall conduct corrective actions according to section 1.7.2.
- 1.6.2 The permittee shall provide the department with quarterly monitoring reports summarizing inspection and monitoring results required in section 1.5. Reports shall satisfy the following conditions.
  - 1.6.2.1 Due Dates - Reports for the first three calendar quarters are due within 60 days after the quarter ends, and the report for the fourth calendar quarter shall be submitted by March 1<sup>st</sup> of the following year.
  - 1.6.2.2 Form – Reports shall be provided in electronic form using commercially available software or according to other electronic reporting requirements approved by the department. Paper copies of the reports are not required unless specifically requested.
  - 1.6.2.3 Content - Reports shall contain a narrative portion discussing data and information collected during the preceding quarter.

- 1.6.2.4 Graphing - Reports shall present water quality data in graphical form to indicate trends as well as the margin of compliance with limits.
  - 1.6.2.4.1 Graphs of concentration measurement versus time must include at least the past five years' data, if available, and may contain all historic data.
  - 1.6.2.4.2 The graphs must also include the parameter, units, and applicable permit limit or WQS.
  - 1.6.2.4.3 Multiple stations, identified using symbols in a legend, may be included in the same graph.
  - 1.6.2.4.4 Scales shall be proportioned to display the limit or WQS, as indicated by a highlighted line, near the top of the graph or when data exceeds the limit, the maximum value shall be near the top of the graph.
  - 1.6.2.4.5 Formatting shall allow addition of new data to each graph's cumulative data when producing the next quarterly report.
  - 1.6.2.4.6 For graphical purposes, non-detect values shall be plotted at one half the MDL, and values between the ML and MDL shall be plotted at the value of the qualified measurement.
- 1.6.3 Annual Report - In addition to meeting the requirements of section 1.6.2, the fourth quarter report shall serve as an annual report. The annual report shall:
  - 1.6.3.1 Be submitted to the department by March 1<sup>st</sup> of the following year;
  - 1.6.3.2 Contain an electronic copy (preferably Excel) of the water quality data for the reporting year, including the past five years' data, if available, and may contain all historic data in spreadsheet form. When a value is less than the ML, it must be identified as less than the ML, and the ML must be provided. Non-detect values must be identified as less than the MDL or non-detect and the MDL must be provided in the electronic water quality data spreadsheets; and
  - 1.6.3.3 Address the adequacy of the financial responsibility. The permittee shall review the Pogo Reclamation and Closure Plan and facility conditions assessing changes that have significantly impacted the financial responsibility amount. The permittee is not required to complete a detailed engineering review or submit a new reclamation cost model with the annual report.
- 1.6.4 The permittee shall provide the department with copies of any amendments to the *Pogo Mine Plan of Operations*, when they affect the waste disposal operations authorized by the permit.

- 1.6.5 All records and information and reports resulting from the monitoring activities required by this permit, including but not limited to all records of analyses performed, calibration and maintenance of instrumentation, and recordings from continuous monitoring instrumentation, shall be retained in Alaska for observation by the department for a minimum of five years. Upon request from the department, the permittee shall submit certified copies of such records.
- 1.6.6 Any onsite wildlife casualties associated with facility activities shall be verbally reported to the department within one working day of discovery.
- 1.6.7 All written reports submitted under the requirements of this permit shall be sent to:

Dept. of Environmental Conservation  
Division of Water, Compliance Program  
555 Cordova St.  
Anchorage, AK 99501

## 1.7 CORRECTIVE ACTIONS

- 1.7.1 The permittee shall comply with 18 AAC 60.820-860 if a statistically significant increase in a constituent concentration above background groundwater quality and an exceedance of a WQS in any of the groundwater sampling locations is discovered. Statistical significance shall be determined using one of the methods outlined in 18 AAC 60.830(h). The permittee shall comply with the notification requirements in 18 AAC 850(c) upon determining a statistically significant increase in a constituent concentration above WQS.
- 1.7.2 For a single constituent, a statistically significant increase in concentration is discovered at a surface water or groundwater monitoring station and an exceedance of a WQS, or if an exceedance of a limit set out in sections 1.2, 1.3, or 1.4 is discovered, the permittee shall:
  - 1.7.2.1 Orally notify the department no later than the end of the next State of Alaska working day;
  - 1.7.2.2 Determine the extent of the exceedance;
  - 1.7.2.3 In consultation with the department and documented in writing, implement a plan to determine the cause and/or source of the exceedance;
  - 1.7.2.4 Submit to the department, within seven working days after an exceedance is verified, a corrective action plan to prevent adverse environmental impacts and further exceedances of applicable WQS or permit limits; and
  - 1.7.2.5 Implement the corrective action plan as approved by the department.

## 1.8 SUSPENSION OF OPERATIONS

- 1.8.1 Suspension of operations is defined as a suspension of mining and milling/processing activities for more than 90 days but less than three years. The length of time for the period of suspension may be extended beyond three years by written authorization from the department. The permittee shall submit a conceptual suspension of operations study to the department within 90 days of permit issuance.
- 1.8.2 The permittee must notify the department within three days of suspending operations. The notice shall provide the nature of and reason for the suspension and its anticipated duration.
- 1.8.3 No later than 10 days after operations have been suspended, the permittee shall submit a suspension of operations plan that replaces the suspension of operations study with current information and specific details. The suspension of the operations plan shall address the following:
  - 1.8.3.1 Explanation of what would reasonably result in resuming or permanently terminating mining or milling/processing activities;
  - 1.8.3.2 Reclamation or construction activities during the period of temporary suspension;
  - 1.8.3.3 Procedures, methods, and schedule to be implemented for the treatment, disposal, or storage of process water;
  - 1.8.3.4 The control of surface and groundwater drainage to and from the facility and the surrounding area;
  - 1.8.3.5 The control of erosion from the DSTF, waste rock disposal areas, mill and camp site, and any other disturbed areas within the facility boundary;
  - 1.8.3.6 The secure storage of chemicals during the period of suspended operations;
  - 1.8.3.7 Procedures for maintaining and monitoring the RTP dam and water balance; and
  - 1.8.3.8 Procedures for containing water at the facility and discharging water according to APDES Permit No. AK0053341.
- 1.8.4 The department shall have 15 days to review and approve or request modifications to the suspension of the operations plan.
- 1.8.5 Once a suspension of operations plan has been approved, it becomes enforceable under the conditions of this permit and full implementation of the approved suspension of operations plan is required. The suspension of operations plan can be amended by submitting a revised plan to the department

for approval.

1.8.6 During suspension of operations, the permittee shall:

- 1.8.6.1 Continue pollution control activities associated with the DSTF, including but not limited to: dust control, maintenance of the drainage diversion structures, maintenance of all discharge and leakage control structures and processes, and maintenance of the RTP as specified by this permit, the current *Certificate of Approval to Operate a Dam*, or the suspension plan;
- 1.8.6.2 Continue monitoring and reporting activities of all active portions of the site including the DSTF and the RTP as specified by this permit or the of operations suspension plan; and
- 1.8.6.3 Continue reclamation and corrective action requirements under the *Pogo Mine Reclamation and Closure Plan* in light of the nature of the closure.

1.8.7 Written department approval is required before resuming operations after a period of temporary closure.

1.9 TERMINATION OF MINING & MILLING

- 1.9.1 Termination of mining and milling/processing activities is defined as the permanent cessation of those activities. Updated reclamation and monitoring plans must be submitted for approval within 90 days after commencing termination of mining and milling/processing. The updated plans must address current conditions at the facility. Updates and changes to those plans must be approved in writing by the department.
- 1.9.2 Termination of mining and milling at the site must be implemented and completed according to the conditions of this permit and with the *Pogo Mine Reclamation and Closure Plan* approved by the department and incorporated by reference into this permit.
- 1.9.3 Closure of the waste disposal facilities will be complete when the following criteria are met:
  - 1.9.3.1 A department-approved engineered soil cover system is installed on the DSTF and drainage channels are constructed and stable;
  - 1.9.3.2 A stable vegetative cover is established on the waste rock, recontoured areas, and other infrastructure or other facilities as prescribed in the most recent *Pogo Mine Reclamation and Closure Plan* approved by the department and incorporated by reference into this permit; and
  - 1.9.3.3 The department determines that active water treatment is no longer required for any water discharged from the facility. That is surface water discharge from the mine site and groundwater discharge below the RTP



meet WQS (18 AAC 70) or do not exceed the triggers listed in Table 1.

- 1.9.4 Closure must be achieved before terminating any care and maintenance activities required by section 1.8.6 and the approved suspension of operations plan if a period of suspended operations immediately preceded termination of mining and milling.
- 1.9.5 The permittee shall maintain the facility correcting any erosion or settlement of the RTP dam, DSTF, and waste rock disposal sites that may impair water quality or otherwise threaten the environment until the time that this permit or any successor permit is transferred to another entity or terminated by the department.
- 1.9.6 Demolition debris disposal in the DSTF, waste rock piles, or underground may be approved during closure activities according to a plan approved by the department at the time.
- 1.9.7 Post-closure monitoring of ground and surface water quality and visual monitoring for settlement, seeps, and erosion is required in years 1, 2, 5, 10, 15, 20, and 30 after satisfying the criteria in section 1.9.3. Post-closure monitoring shall be performed according to the current *Pogo Mine Monitoring Plan* approved by the department. This schedule and the parameters monitored may be modified in writing by the department based on the monitoring results received.

#### 1.10 PROOF OF FINANCIAL RESPONSIBILITY

- 1.10.1 The permittee shall provide the department with proof of financial responsibility for closure of the facility and post-closure monitoring. The proof of financial responsibility shall cover costs incurred for closure and post-closure monitoring of the facility, shall cover the activities set out in section 3, and shall be in the amount shown in section 3. The area covered by the financial responsibility required in this section is shown on the map attached as section 5.
- 1.10.2 The department in consultation with ADNR will review, and modify if appropriate, the financial responsibility requirements, including adjustments for inflation, concurrent reclamation, expansion, or other changes to the operation of the facility annually or during the renewal, modification, or amendment of this permit. The permittee shall address the adequacy of the financial responsibility in the annual report required in section 1.6.3.
- 1.10.3 The proof of financial responsibility may be in the form of a trust fund, surety bond, letter of credit, insurance, or any other mechanism approved by the department.
- 1.10.4 Approved proof of financial responsibility must remain available through the post-closure period, up to 30 years, and may not be released until the

department certifies in writing that closure of the facility and the required post-closure monitoring have been successfully concluded, or that another entity will assume responsibility for permit compliance and/or post-closure monitoring.

- 1.10.5 It shall be the responsibility of the permittee to provide acceptable proof of financial responsibility. The department will accept or reject the financial surety as expeditiously as possible, but in no event later than 30 days after its receipt.
- 1.10.6 If the permittee is unable to provide proof of financial responsibility, which is acceptable to the department and is approved by the department in writing within the time periods stated above, this permit will expire automatically at that time, notwithstanding any other approvals to the contrary, unless the department's failure to act is responsible for the delay in accepting or rejecting this proof.
- 1.10.7 If the permittee fails to comply with the terms and conditions of this permit, as written, modified, or amended and if the department concludes that such failure may prevent, inhibit or delay satisfactory closure or post-closure monitoring of the facility, then the department may exercise its rights under the approved mechanism for financial responsibility to access the funds and use them for appropriate closure and post-closure activities.

#### 1.11 FACILITY AUDIT

A third-party environmental audit shall be completed during the final year of the permit term or sooner if final closure starts during the permit term. However, the field inspection portion of the audit shall be conducted during the snow free season the year before permit expiration. The audit will include all aspects of this Waste Management Permit. The environmental audit shall verify Pogo Mine's compliance with applicable environmental laws associated with this permit. The third party contractor should be mutually agreed on by the State and Pogo Mine, but in the event that agreement cannot be reached, the State retains the final contractor selection decision. Costs for the third-party contractor shall be borne by Pogo Mine. The intent of the audit is to evaluate whether both Pogo Mine management and DEC permit administration provide reasonable assurances that the facility and environmental controls are functioning as intended. The environmental audit shall include an evaluation of the adequacy of the approved financial assurance.

## 2 GENERAL PERMIT CONDITIONS

### 2.1 ACCESS & INSPECTION

The permittee shall allow the Commissioner or his/her representative access to the permitted facility at reasonable times to conduct scheduled or unscheduled inspections or tests to determine compliance with this permit, state laws, and regulations.

### 2.2 INFORMATION ACCESS

Except where protected from disclosure by applicable state or federal law, all records and reports submitted in accordance with the terms of this permit shall be available for public inspection at the State of Alaska, Department of Environmental Conservation, 610 University Ave., Fairbanks, Alaska.

## 2.3 CIVIL & CRIMINAL LIABILITY

Nothing in this permit shall relieve the permittee from any potential civil or criminal liability for noncompliance with the permit or with applicable laws.

## 2.4 AVAILABILITY

The permittee shall post or maintain a copy of this permit available to the public at the facility.

## 2.5 ADVERSE IMPACT

The permittee shall take all necessary means to minimize any adverse impacts to the receiving waters or lands resulting from noncompliance with any limitation specified in this permit, including any additional monitoring needed to determine the nature and impact of the noncompliant activity. The permittee shall cleanup and restore all areas adversely impacted by the noncompliance.

## 2.6 CULTURAL OR PALEONTOLOGICAL RESOURCES

Should cultural or paleontological resources be discovered as a result of this activity, work, which would disturb such resources, is to be stopped, and the State Historic Preservation Office, Division of Parks and Outdoor Recreation, Department of Natural Resources (907-465-4563), is to be notified promptly.

## 2.7 APPLICATION FOR PERMIT REISSUANCE

In accordance with 18 AAC 15.090, applications for reissuance of this permit must be made no later than 120 days before the expiration date of the permit.

## 2.8 OTHER LEGAL OBLIGATIONS

This permit does not relieve the permittee from the duty to obtain any other necessary permits from the department or from other local, state, or federal agencies, and to comply with the requirements contained in any such permits. All activities conducted and all plans implemented by the permittee pursuant to the terms of this permit shall comply with all applicable local, state, and federal laws and regulations.

## 2.9 TRANSFER OF OWNERSHIP

In the event of any change in control or ownership of the permitted facility, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Director of the Division of Water at 555 Cordova Street, Anchorage, AK 99501. The original permittee remains

responsible for permit compliance unless and until the succeeding owner or controller agrees in writing to assume such responsibility, and the department approves assignment of the permit. The department will not unreasonably withhold such approval.

As between the State and the permittee, no transfer of this permit shall relieve the permittee of any liability arising out of operations conducted prior to such transfer, regardless of whether such liability accrues before or after such transfer.

## 2.10 POLLUTION PREVENTION

In order to prevent and minimize present and future pollution, when making management decisions that affect waste generation, the permittee shall consider the following order of priority options as outlined in AS 46.06.021:

- 1st waste source reduction,
- 2nd recycling of waste,
- 3rd waste treatment, and
- 4th waste disposal

## 3 FINANCIAL RESPONSIBILITY

### 3.1 REQUIREMENTS

Under AS 46.03.100(f), 18 AAC 15.090, and 18 AAC 60.265, the department is required to secure proof of financial responsibility for reclamation and long term care and maintenance, including wastewater treatment and monitoring at the facility.

- 3.1.1 The permittee shall provide the department with proof of financial responsibility for reclamation and closure of the facilities and post-closure monitoring. The proof of financial responsibility shall cover costs incurred for reclamation and closure and post-closure monitoring of DSTF, RTP, underground mine workings, waste rock and ore stockpiles, and surface structures.
- 3.1.2 The department will review and modify if necessary, the financial responsibility requirements including adjustments for inflation, concurrent reclamation, expansion, or other changes to the operation of the facility. The permittee shall address the adequacy of the financial responsibility in the annual report required in section 1.6.3.3.
- 3.1.3 The proof of financial responsibility may be in the form of a trust fund, surety bond, letter of credit, insurance, or another department-approved mechanism.
- 3.1.4 Approved proof of financial responsibility must remain available through the post-closure period, up to 30 years, and may not be released in its entirety until the department certifies in writing that closure of the facility and the required post-closure monitoring have been successfully concluded or that another entity has assumed responsibility for permit compliance, reclamation and closure

activities, and post-closure monitoring.

- 3.1.5 The permittee must provide acceptable proof of financial responsibility within 60 days of the permit's effective date. The department will accept or reject the financial surety as expeditiously as possible but in no event later than 30 days after its receipt.
- 3.1.6 If the permittee is unable to provide acceptable proof of financial responsibility to the department, as approved by the department in writing, within the time period stated above, this permit will expire automatically at that time, notwithstanding any other approvals to the contrary, unless the department's failure to act is responsible for the delay in accepting or rejecting this proof.
- 3.1.7 If the permittee fails to comply with the terms and conditions of this permit and if the department concludes that such failure may prevent, inhibit or delay satisfactory reclamation and closure or post-closure monitoring of the facility, then the department may exercise its rights, under an approved mechanism, to access financial responsibility funds and use them for reclamation and closure and post-closure activities.
- 3.1.8 The permittee can apply to have the amount of the financial responsibility adjusted during the life of the permit, if for example concurrent reclamation has been completed.

### 3.2 AMOUNT OF FINANCIAL RESPONSIBILITY

The total proof of financial responsibility for the life of this permit, unless modified, shall be **\$64,819,000**. A detailed breakdown of the financial responsibility cost estimate can be found in the *Pogo Reclamation and Closure Plan* (February 2017) and *Basis of Reclamation Cost Estimate Pogo Mine, Alaska* (February 14, 2017). The department retains the right to access the total amount of the financial responsibility as provided in Section 3.1.7. The total financial responsibility is based on the information in Table 2.

**Table 2: Financial Assurance**

<b>CLOSURE MAINTENANCE ITEM</b>	<b>FINANCIAL RESPONSIBILITY<sup>1</sup></b>
<b>Direct Costs</b>	
Earthwork/Recontouring	\$7,880,000
Stabilization/Revegetation	\$2,140,000
Detoxification/Water Treatment/Disposal of Wastes	\$5,011,000
Structure, Equipment and Facility Removal, and Misc.	\$8,950,000
Monitoring	\$4,892,300
Construction and Management Support	\$693,000
Closure Planning, General Administration, and Human Resources	\$13,081,000
<b>Direct Cost Subtotal</b>	<b>\$42,647,300.00</b>
<b>Indirect Costs (37.6% of directs) Subtotal</b>	<b>\$14,937,000</b>
<b>Direct + Indirect Subtotal</b>	<b>\$54,688,000</b>
Inflation (8%)	\$4,375,000
<b>Direct + Indirect + Inflation Subtotal</b>	<b>\$59,063,000</b>
<b>Holding Costs (2 years including indirects and inflation)</b>	<b>\$5,756,000</b>
<b><u>TOTAL</u></b>	<b><u>\$64,819,000<sup>2</sup></u></b>
<p>1. Amounts have been rounded to the nearest thousand dollars.  2. The financial responsibility will be reevaluated and adjusted as allowed in sections 3.1.2 or 3.1.8 or as requested by the permittee.</p>	

## **4 GLOSSARY OF ACRONYMS**

AAC	Alaska Administrative Code
ADNR	Alaska Department of Natural Resources
APDES	Alaska Pollutant Discharge Elimination System
CFR	Code of Federal Regulations
CIP	Carbon-in-Pulp
DSTF	Dry Stack Tailings Facility
MDL	Method Detection Limit
ML	Minimum Level of Quantification
QAP	Quality Assurance Plan
RTP	Recycle Tailings Pond
WAD	Weak Acid Dissociable
WQS	Alaska Water Quality Standards (18 AAC 70)



## 5 FACILITY MAP

