THE STATE of ALASKA
GOVERNOR BILL WALKER

Department of Natural Resources
DIVISION OF MINING, LAND & WATER
Mining Section

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January 26, 2018

Mark Huffington
Environmental Superintendent
Fairbanks Gold Mining, Inc.
PO Box 73726
Fairbanks, AK 99709-3726

Subject: Fort Knox Mine Reclamation Plan Approval Amendment 2 – Gilmore Phase 9 Expansion

Dear Mr. Huffington,

On December 19, 2017, the Division of Mining, Land and Water (DMLW) received correspondence from Fairbanks Gold Mining, Inc. (FGMI) requesting approval to amend the Fort Knox Reclamation and Closure Plan for the Gilmore Phase 9 Expansion. Facility changes addressed in this request include the pit, Barnes Creek Heap Leach, Barnes Creek Waste Rock Dump, Yellow Pup Waste Rock Dump, Fish Creek East Waste Rock Dump, and associated infrastructure for mining operations.

The DMLW has reviewed the proposed amendment and consulted with the Alaska Department of Environmental Conservation and the Alaska Department of Fish and Game.

The requested amendment, as proposed and illustrated in your December 19, 2017 submission, includes activities upon land privately owned by FGMI. The DMLW hereby approves these activities as ***Fort Knox Mine Reclamation and Closure Plan Approval F20149852RCP.2*** **(RCPA).** The DMLW has reviewed the associated reclamation cost estimate for proposed activities and concurs with that projected amount for financial assurance. It is expected that FGMI will update the Financial Assurance prior to initiating activities proposed in these amendments to account for the additional reclamation obligations. Nothing in this decision changes the conditions of the original RCPA dated March 28, 2014. Additional activities beyond the current permit cycle will need to be incorporated in the next update to the Reclamation and Closure Plan and associated closure cost estimate.

Please be advised that this authorization does not eliminate the potential need for authorization of your activity from other Federal, State or local divisions or agencies.

A person affected by this decision may appeal it, in accordance with 11 AAC 02. Any appeal must be received within 20 calendar days after the date of "issuance" of this decision, as defined in 11 AAC 02.040(c) and (d) and may be mailed or delivered to the Commissioner, Department of Natural Resources, 550 W. 7th Avenue, Suite 1400, Anchorage, Alaska, 99501; faxed to 1- 907-269-8918, or sent by electronic mail to dnr.appeals@alaska.gov. If no appeal is filed by the appeal deadline, this decision becomes a final administrative order and decision of the department on the 31st calendar day after issuance. An eligible person must first appeal this decision in accordance with 11 AAC 02 before

appealing this decision to Superior Court. A copy of 11 AAC 02 may be obtained from any regional information office of the Department of Natural Resources.

If you have any questions regarding this approval, please contact Brent Martellaro at 907-451-2788.

Sincerely,

Russell Kirkham
Acting Mining Section Chief

Enclosure: Copy of FGMI's December 19, 2017 amendment request

cc: Bartly Kleven, FGMI
Brent Martellaro, ADNR
Carolyn Curley, ADNR
David Schade, ADNR
Tim Pilon, ADEC
Ellen Lyons, USACE
Mark Huffington, FGMI
Stephanie Lovell, FGMI
Kyle Moselle, ADNR
Charlie Cobb, ADNR
Audra Brase, ADF&G

FORT KNOX MINE

RECLAMATION AND CLOSURE PLAN AMENDMENT 2

Prepared By:

Fairbanks Gold Mining, Inc.
(a subsidiary of Kinross Gold Corporation)
PO Box 73726
Fairbanks, Alaska 99707-3726

JANUARY 2018

FORT KNOX MINE
RECLAMATION AND CLOSURE PLAN AMENDMENT 2

Submitted to:

Alaska Department of Natural Resources
Division of Mining, Land and Water
3700 Airport Way
Fairbanks, Alaska 99709

Alaska Department of Environmental Conservation
Division of Air and Water Quality
610 University Avenue
Fairbanks, Alaska 99709-3643

Submitted by:

Fairbanks Gold Mining, Inc.
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P.O. Box 73726
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JANUARY 2018

CONTENTS

TABLES

FIGURES

LIST OF ABBREVIATIONS

ACOE	Army Corp of Engineers
ADNR	Alaska Department of Natural Resources
ac-ft	acre-feet
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Division of Fish and Game
ADNR	Alaska Department of Natural Resources
FMSL	Feet Mean Sea Level
ARD	acid rock drainage
BMP	Best Management Practice
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CIC	Carbon-In-Columns
COO	Chief Operating Officer
cm/sec	centimeters per second
FA	Financial Assurance
FGMI	Fairbanks Gold Mining, Inc.
FWR	Fresh Water Reservoir
GVEA	Golden Valley Electric Association
HDPE	high density polyethylene
HDR	HDR Alaska
INCO	Company name-patented cyanide destruction process
KGC	Kinross Gold Corporation
LCRS	Leachate Collection and Recovery System
LLDPE	Linear Low Density Polyethylene
MHTLO	Mental Health Trust Land Office
mg/L	milligrams per liter
MSHA	Mining Safety & Health Administration
MWS	Maximum Water Surface
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NWS	Normal Water Surface
PCMS	Process Component Monitoring System
PJD	Preliminary Jurisdictions Determination
PMC	Plant Materials Center, ADNR
PMP	Probable Maximum Precipitation
ppm	parts per million
PSS	palustrine scrub-shrub
QA/QC	Quality Assurance/Quality Control
RVP	Regional Vice President
SRCE	Standardized Reclamation and Closure Estimator

SWS	Schlumberger Water Services
TDS	total dissolved solids
TSF	Tailings Storage Facility
USACE	United States Army Corps of Engineers
WAD CN	weak acid dissociable cyanide
WEWG	Wetlands Evaluation Working Group
WSR	Water Supply Reservoir

1 INTRODUCTION

1.1 Purpose

Fairbanks Gold Mining Inc. (FGMI), a wholly owned subsidiary of Kinross Gold Corporation (KGC), has prepared this second amendment to the Reclamation and Closure Plan Rev 2 dated November 2013 F20149852RCP. This amendment will be incorporated into the next revision due by March 27, 2019. This plan is submitted to:

- Alaska Department of Natural Resources, Division of Mining (ADNR) in accordance with AS 27.19.010 et. seq. and 11 AAC 97.100 et. seq.
- Alaska Department of Environmental Conservation (ADEC), Division of Air and Water Quality, as required by Waste Management Permit 2014DB0002, Modification #1
- U.S. Army Corps of Engineers (ACOE) as required by the Clean Water Act Section 404 Permit No. N-920574, Fish Creek 23

Due to the constantly changing regulatory framework and the introduction of new reclamation methods, the reclamation plan may be amended as deemed necessary (11AAC 97.330 Amendment of Reclamation Plan).

1.2 Applicant Information

Fairbanks Gold Mining, Inc.
A Subsidiary of Kinross Gold Corp.
P.O. Box 73726
Fairbanks, AK 99707-3726
Telephone: (907) 488-4653

Fairbanks Gold Mining, Inc. Officer Completing Application
Name: Eric Hill
Title: Vice-President and General Manager
Telephone: (907) 490-2225

Designated Contact Person
Name: Bartly Kleven
Title: Environmental Manager
Telephone: (907) 490-2207

Kinross Gold Corp. Information
Address: 25 York Street (17th Floor)
Toronto, Ontario
Canada, M5J 2V5
(416) 365-5123

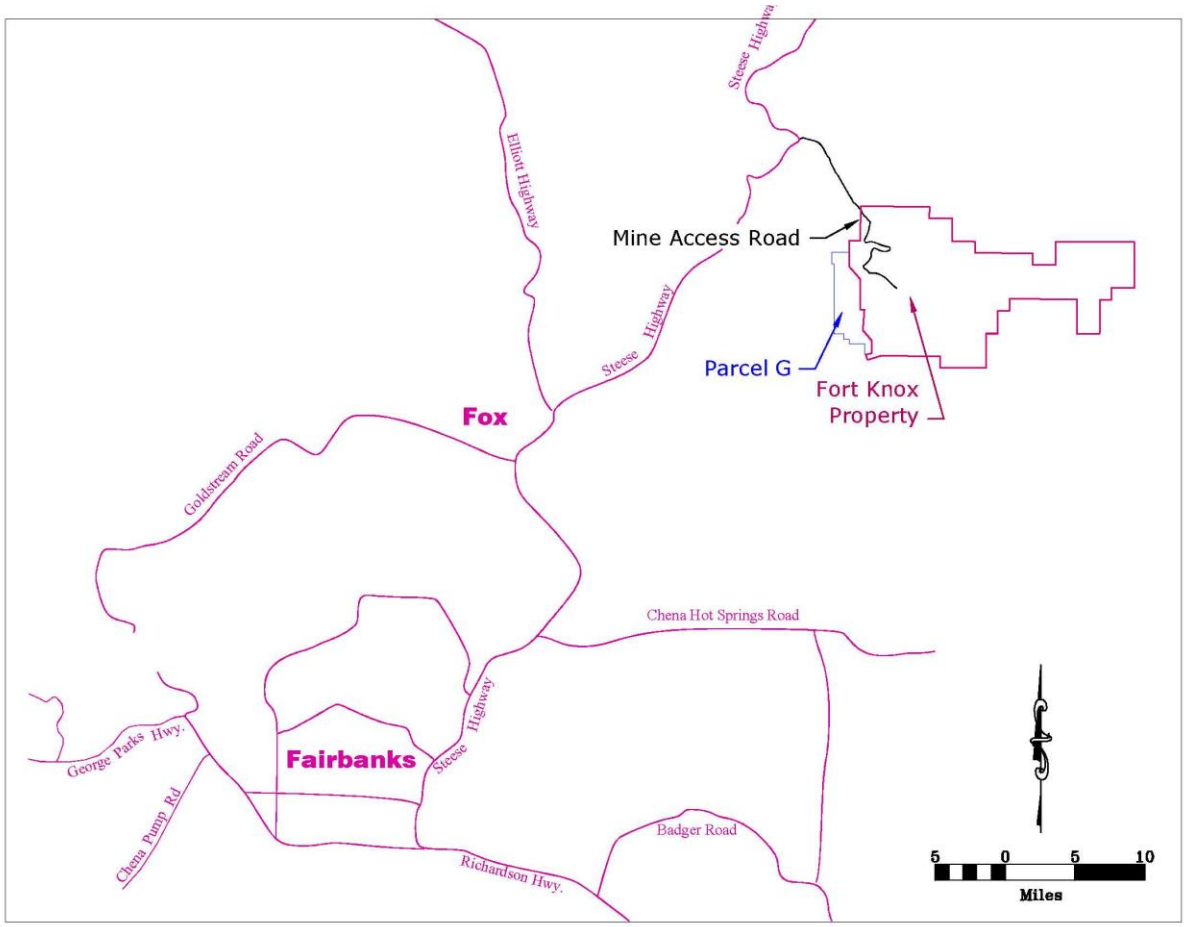
Chief Executive Officer: Paul Rollinson
President & COO: Lauren Roberts
Director of Environmental Affairs: John Mudge
Executive Vice President & CFO: Tony Giardin
Fairbanks Gold Mining, Inc. is a wholly owned subsidiary of Kinross Gold Corporation

Alaska Registered Agent
Name: Fairbanks Gold Mining, Inc.
Address: c/o C. T. Corporation System (Agent)
240 Main Street, Suite 800
Juneau, Alaska 99801

1.3 Location and Land Status

The Gilmore Phase 9 project is located within Parcel G. The project site is located approximately 25 miles northeast of Fairbanks, Alaska, at the western boundary of the existing Fort Knox Gold mine, as shown on Figure 1.1. It is located within the Gilmore Creek watershed. The legal description of the Parcel G property according to the State of Alaska Record of Survey: A parcel of land located within Sections 7, 8, 17, 18, 19, and 20, Township 02 North, Range 02 East, Fairbanks Meridian.

Figure 1-1 Fort Knox Location



2 PROJECT DESCRIPTION

FGMI operates the Fort Knox Mine located northeast of Fairbanks, Alaska. The mine site is located in the upper headwaters of Fish Creek Valley, approximately four miles southeast of Cleary Summit. The project site is accessible by the Twin Creeks road. The Fort Knox Mine operations include an open-pit mine, two heap leach pads, tailings storage two reverse osmosis water treatment plant and other related milling facilities to recover gold and manage water.

2.1 Project Assumptions

This reclamation and closure plan amendment assumes the approval from Alaska Dam Safety and other regulating bodies. This assumption has been standard practice of previous permit processes.

2.2 Gilmore Phase 9

Gold bearing ore from Phase 9 will go to Barnes Creek Heap Leach or through the mill process circuit depending on grade. The overburden will go to both the Yellow Pup and Barnes Creek waste rock dumps whichever provides the shortest haul distance. See Figures 2.1 and 2.2.

There is approximately 1.4 Mtons or ore that will go through the milling process effectively extending the mill life through November 2020. The Barnes Creek Heap Leach will receive 38 Mtons of low grade ore from Phase 9 which extends the mine life through November 2021. Leach activities are anticipated to conclude in end of 2024. The period of the Barnes Creek heap leach rinse begins early 2025 ending in late 2028.

2.3 Gilmore Phase 9 Pit Expansion

The Phase 9 expansion area of new disturbance is 91.6 acres. The current approved pit design essentially has two pit bottoms one at elevation 430 fmsl and 460 fmsl they are located closer to the east wall of the pit. The Phase 9 has a pit bottom of 670 fmsl located west of the 430 and 460 pit bottoms. Mine sequence allows for the pit to be backfilled from elevation 430 to elevation 670 from the waste tons mined above the 670.

Phase 9 pit expansion includes an infrastructure corridor to the west of the pit rim. The corridor includes pit crest dewatering wells, on-grade electrical lines and water pipelines and lift stations. There will be up to 10 pit crest dewatering wells, six to be drilled and operational in 2018 with the remaining drilled in 2019. The wells will be drilled to a depth of 1,200 bgl. The purpose of these wells is to dewater or deweight the schist then the granite. It is anticipated up to two lift stations will be installed one on the southern side and on the northern side of the infrastructure corridor.

2.4 Barnes Creek Heap Leach Facility

The heap leach design is segmented into six sections. The final section configuration will reach elevation 2340 fmsl equating to a height of 810 feet from toe to crest. The design criteria of a maximum 500-foot vertical ore thickness will be maintained over the pad liner system.

The Phase 9 low grade ore will be hauled to and leached on the Barnes Creek heap leach pad. The Phase 9 ore will bring the heap leach elevation to 1840 fmsl.

2.5 Barnes Creek Waste Rock Dump

The current approved elevation of Barnes Creek Waste Rock Dump is 2,400 fmsl. The Plan of Operations Modification submitted with this Reclamation and Closure amendment is requesting the elevation be increased to 2,600 fmsl and the footprint be expanded by 88.3 acres onto undisturbed ground. The footprint includes the reclaim toe and is within the boundaries of the Fish Creek drainage. Once approved the expansion could start as early as Q1 2018.

2.6 Yellow Pup Waste Rock Dump

The current approved Yellow Pup waste rock dump height is and will remain at elevation 2400 fmsl. Total expansion footprint is 48.6 acres with 17.1 acres over existing tailings and 31.5 acres of new disturbance. The buildout over tailings is anticipated to start in early 2020.

2.7 Fish Creek East Waste Rock Dump

Fish Creek East waste rock dump expansion includes 75.1 acres over tailings and an elevation of 1900 fmsl. The original Fish Creek Waste Rock dump permitted in 2000 were re-categorized as low grade ore. The low grade ore has been mined down to elevation 1515 fmsl, hauled to and leached at the Walter Creek heap leach pad. Backfilling

activities started in 2017. The expansion of the waste rock dump over tailings will start in early 2018 with full buildout in 2020. Mine waste tons will come from the east wall.

Figure 2-1 Phase 9 Overview

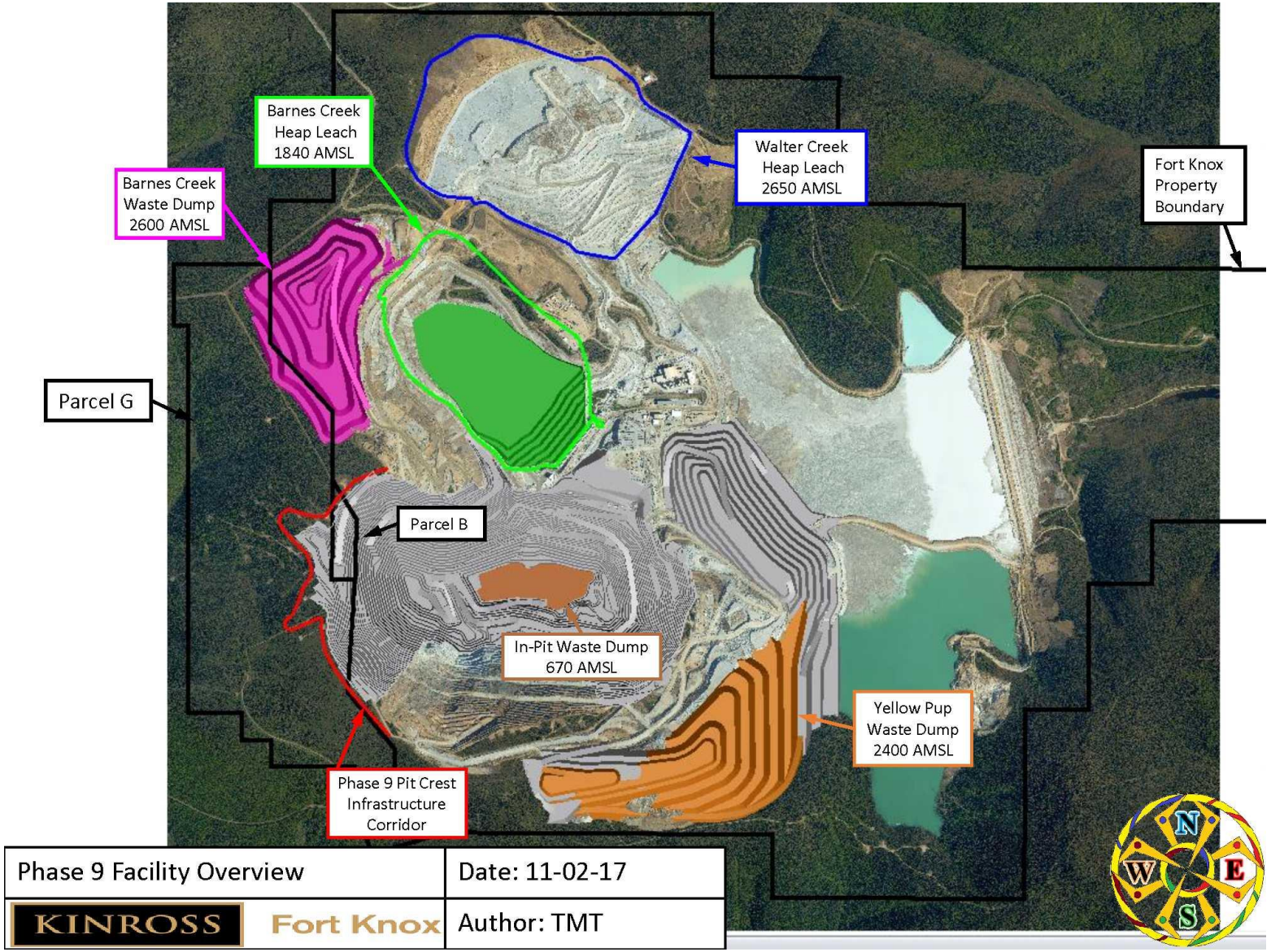


Figure 2-2 Phase 9 Expansion Footprint

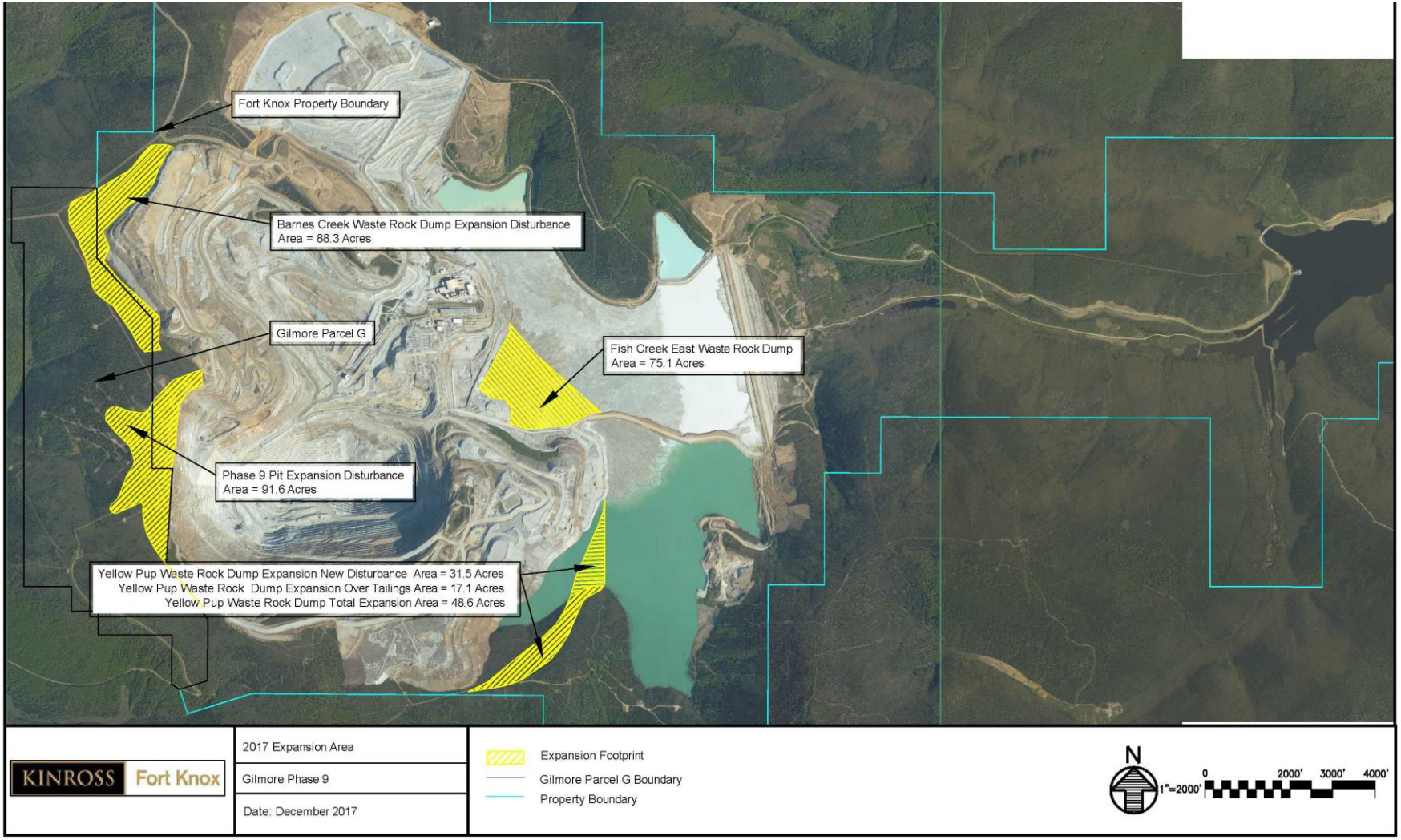
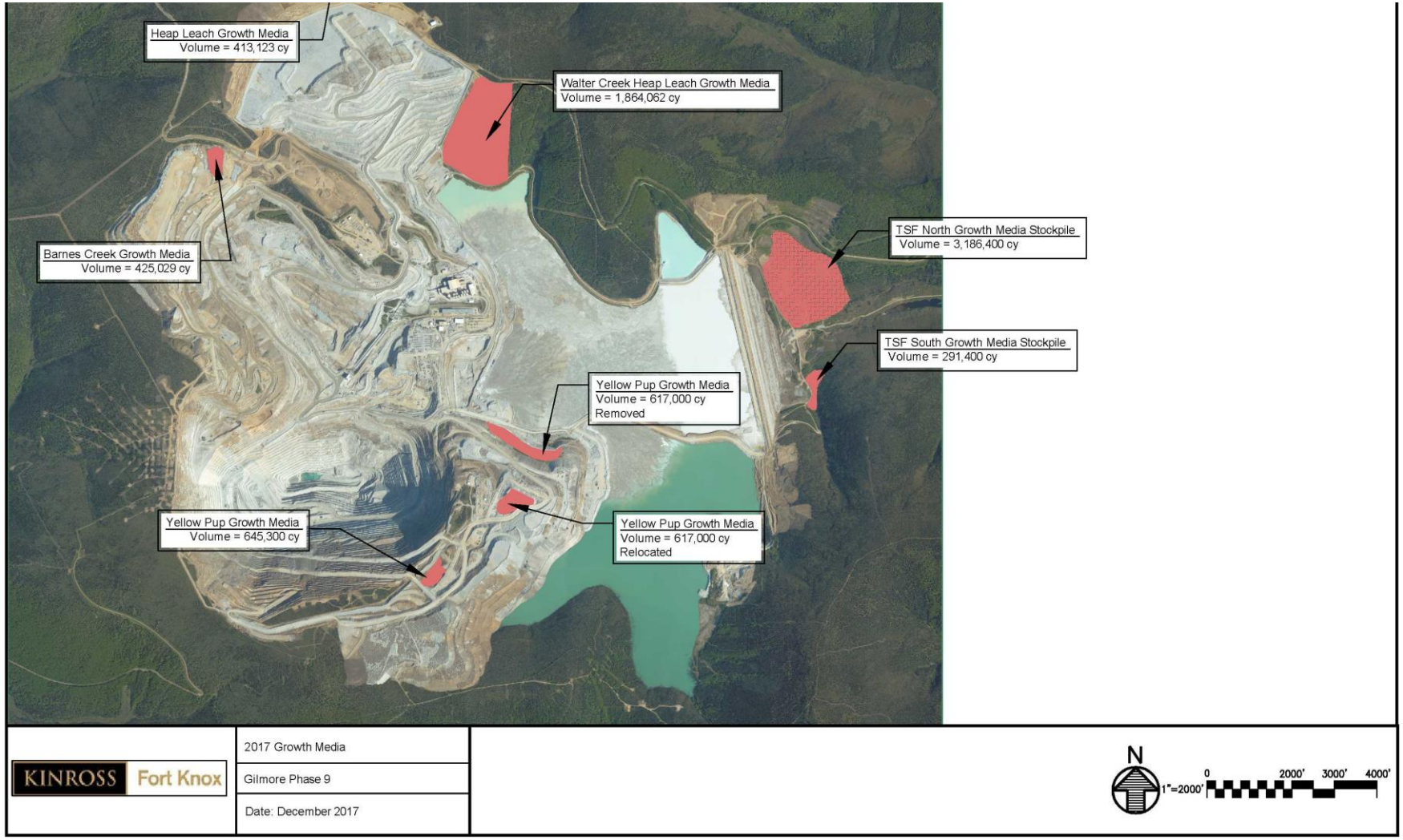


Figure 2-3 Growth Media



3 RECLAMATION PRACTICES

FGMI's long-term goals for reclamation performed during and after mining and milling operations are to contour, stabilize, and revegetated disturbed areas in order to return the land to a safe, stable and productive condition. FGMI is contouring and stabilizing disturbed areas to create ground conditions that promote vegetation development and provide conditions for colonization by native species. Native grass species available commercially are used for rapid soil stabilization.

The objectives of the reclamation and closure plan are:

1. Stabilization and protection of soil materials from wind and water erosion.
2. Stabilization of steep slopes through contouring to provide rounded land forms with erosion control.
3. Establishment of long-term, self-sustaining vegetation communities conducive to natural invasion and succession.

FGMI will continue working with ADNR, Division of Agriculture Plant Materials Center, and Alaska Department of Fish and Game to achieve the successful implementation and subsequent evaluation of both concurrent and long-term reclamation activities. FGMI considers reclamation to be a progressive process that includes the design, construction, operation, and closure of the mining operation. Reclamation will or has occurred in the following phases, with some overlap:

1. Reclamation completed during and directly after process component construction (includes interim reclamation to stabilize and maintain viability of topsoil stockpiles).
2. Reclamation concurrent with mining.
3. Final reclamation will commence upon cessation of mining, milling and heap leach operations. Final reclamation will include removal of process components, contouring, and placement of growth media unless otherwise approved by ADNR, and revegetation.

3.1 Schedule of Reclamation Activities

3.1.1 *Reclamation Schedule*

Under the current plan, milling is projected to cease in 2020 and mining will cease in 2021. The heap leach operation will continue to have ore loaded through 2023. Cyanide solution will continue for two years after the final ore is loaded on the pad. An additional two years of leaching without applying cyanide is projected to follow the cyanide leaching phase. Following economic leaching, four years of rinsing is expected before the solution will meet water quality standards for the TSF. Once rinsing is complete and ADEC approves, the heap leach liner will be punctured to prevent future ponding within the pad. Three months of draindown are expected, during this time the facility will be regraded and growth media placed. Closure of the heap leach pad is projected to be completed in 2029.

3.2 General Reclamation Procedures

The primary components of reclamation for the Fort Knox Reclamation Plan include earthwork, growth media placement, seedbed preparation, fertilizing, seeding, and monitoring. FGMI will manage these components keeping in mind that the ultimate goal is to achieve a stable, revegetated post-mining land surface that will promote natural invasion by native plants. FGMI will continue to work in coordination with ADF&G, Division of Habitat to develop and enhance the fish and wildlife potential throughout the project area.

3.2.1 *Earthwork*

Waste rock dumps and the heap leach facility will require major grading, contouring, and revegetation. Other disturbed areas will be revegetated; some may require regrading. Generally, slopes will be graded to 2.5H:1V or shallower. Where the waste rock dump footprint is over tailings the maximum grade slope will at a 3H:1V. For the purposes of Financial Assurance (FA) calculations use a slope of 3H:1V.

Earthwork will utilize heavy equipment typical to the industry. It is anticipated that the equipment list will include (or equivalents thereof): D10N Cat., D9N Cat., D8L Cat., rubber-tired scraper, water truck, and motor graders. Other equipment such as (but not limited to) front-end loaders, track and tire mounted backhoes, and haul trucks may be substituted for or included with this general equipment list. Equipment needs and use must and will remain dynamic, as specific conditions require during implementation of the plan.

3.2.2 *Control of Sedimentation*

Implementation of Best Management Practices (BMPs) to control erosion during active mining will be designed to minimize re-disturbance during reclamation. The BMPs will be consistent with those measures and practices identified in Alaska Department of Transportation and Public Facilities, *Alaska Storm Water Guide*, December 2011.

Temporary control devices will be removed when the site-specific potential for erosion has been minimized through earthwork or revegetation.

3.2.3 *Growth Media*

Growth media is defined herein as all native soil (in-place) material with the physical and chemical properties capable of germinating and sustaining vegetation growth with or without amendments. At the Fort Knox site, the term "growth media" is interchangeable with the terms "topsoil" and "overburden". Overburden material, suitable for use as growth media, is the unconsolidated material that lies between the topsoil horizon (where present) and bedrock and exhibits no chemical characteristics that will inhibit vegetation development.

Growth media (topsoil and overburden) will be stockpiled at Fort Knox in anticipation of future reclamation needs. Growth media application depth will be at a depth that will achieve successful vegetation establishment. Growth media will be hauled and placed by dump truck and spread by a dozer. Highly compacted areas such as equipment lots and roads will be ripped in a linear fashion prior to growth media placement if it is required. A final survey to determine the amount of growth media available will be done after construction activities are completed. A portion of the growth media stockpiled and borrow sources have been utilized due to its suitability for use as engineered seal and filter material for the tailings dam and engineered sub-base for the heap leach.

3.2.4 *Seedbed Preparation*

Mine and mine related disturbances can result in compacted surfaces unsuitable for revegetation. Thus, preparation of a seedbed suitable for plant germination and growth can be a critical task in any successful land reclamation project.

At Fort Knox, the general method of seedbed preparation will be ripping or scarifying on the contour 12 to 18 inches deep using a D8N or D10 CAT (or equivalent) equipped with a 2 or 3-shank ripper. The FA accounts for the use of a D10 CAT.

Ripping will occur along contours of sloped areas to promote erosion control in addition to creating a suitable seedbed. The specific site will be prepared for seeding by ripping on the contour to roughen the surface. A broken, roughened surface will serve to trap moisture, reduce wind shear, minimize surface erosion by increasing infiltration, and create micro-habitats conducive to seed germination and development.

3.2.5 *Fertilizer and Fertilization*

Prepared seedbeds will be fertilized prior to, after, or during the seeding operation. Specific fertilization requirements will depend on the quality of growth media used. Growth media will be tested for standard soil agricultural constituents including nitrogen, phosphorus and potassium. Based on available field-testing and soil test results at Fort Knox, the general recommended rate of fertilizer application will range from 100 to 300 pounds per acre of 20N-20P-10K for a spring seeding or 10N-20P-10K for a fall seeding. The FA accounts for 300 pounds per acre and the spring fertilizer ratio. Final fertilizer and application rates for the tailings will consider information acquired from current reclamation and soil tests.

3.2.6 *Seed and Seeding*

The grass seed mix presently used at Fort Knox is listed in Table 3.2. The primary purpose of this seed mix is to achieve quick vegetative cover that will help minimize soil erosion. Forb species that may be considered in the future for revegetation include: Silverberry, Lupin, Oxytropis, Wild Sweet Pea, Sweetbroom, Burnet, Siberian Aster, Goldenrod, Alpine Milk Vetch, Wild Sage, Dragonshead Mint and Wild Rhubarb. However, these varieties are not currently available commercially, and a commercial source must be located if they are to be incorporated in the seeding mix. The seed mix may change over time in response to such factors as internal and external research results, changes in technology, changes in land management philosophy, and commercial availability. Native species will be the preferred mix. However, other species may be used in some years due to availability or if deemed to better meet the post-mining land use criteria and approved by ADNR.

Table 3-1 Seed Mix

Seed Type	Mix %
Arctared Fescue	50%
Gruening Alpine Bluegrass	20%
Tundra Glaucous Bluegrass	20%
Nortran Tufted Hairgrass	10%

Seeding will be accomplished using broadcast methods that may include but not be limited to hand broadcasting, dozer or off-road vehicle mounted broadcasting and aerial broadcast application. The application rate for broadcast seeding using the presently proposed grass seed mix will be 9 pounds of pure live seed per acre. The rate has been reduced based on successful results of revegetation efforts at True North and discussions with Plant Materials Center. The need for mulch application will be evaluated if seed germination becomes a limiting factor in the reestablishment of vegetation.

3.2.7 *Revegetation Timing*

Seeding will be conducted as soon as possible following seedbed preparation. Ground conditions suitable for large scale earthwork occur primarily during the spring and summer months. Research and experience with concurrent reclamation will be used to evaluate the potential of dormant seeding. Generally, seeding is implemented after spring break up until mid-July. Such seeding allows the seed to take advantage of the summer moisture period. However,

actual experience has shown that all seedbed preparation on large-scale mine reclamation projects cannot and does not occur at one point in time. Thus, while every effort will be made to conduct the majority of seeding after spring breakup and before mid-July, seeding actually may occur during spring, summer or fall.

FGMI currently uses a native grass seed mix ratio, seed application rate and fertilizer rate recommended by the Plant Materials Center with approval from ADNR. The grass mix was developed during the construction of the wetlands below the tailings impoundment and is still being used for concurrent reclamation projects. Planting of dormant willow cuttings and encouraging the natural invasion of adjacent native species are methods used in the past to promote species diversity. Opportunities to increase species diversity in all areas of the mine site will continue to be pursued.

4 BARNES CREEK HEAP LEACH CLOSURE

4.1 Barnes Creek Heap Leach Closure

The proposed method of closure for the Fort Knox heap leach is based on site-specific conditions, facility design, currently available test work, and the technical analyses completed as part of closure planning. Key aspects of the site and operation that are considered for closure include the following:

1. The climate at the site is characterized by moderate precipitation, moderate evaporation, and cold temperatures. As a result, the long-term drainage from the heap leach after closure is predicted to be minimal.
2. Laboratory test work shows that cyanide concentrations will decrease rapidly through recirculation with freshwater if reagents are not added to maintain process-level concentrations.
3. The tailings impoundment is located directly down gradient from the heap leach and will be used as an integral part of the long-term solution management scheme.
4. To facilitate closure management, solution from the heap leach will be combined with pit lake water once leaching has ended.
5. The facility will be regraded to an overall 3:1 slope and covered with growth media. The regrade design will include erosion control measures as necessary to avoid loss of growth media.
6. The underdrain water quality will be monitored by monitoring wells. The monitoring wells will be installed upstream of the pit dewatering wells through the crest of the existing conveyor causeway and into its foundation just below the interface with the original Barnes Creek ground surface. Heap Leach Closure Procedures and Schedule

4.2 Closure Sequence

1. Residual leaching until uneconomic.
2. Solution recirculation/rinsing to remove cyanide and achieve water quality standards for the TSF.
3. Pump draindown from rinsing to the pit.
4. Once standards are achieved, puncture the liner of in-heap storage pond and allow water to flow to the tailings impoundment.
5. Removal of structures associated with pumping operations.
6. Regrade the pad, place growth media, and scarify and seed.
7. Project specific stipulations from Reclamation and Closure Plan Approval No. F20149852RCP

4.2.1 *Residual Leaching*

Following completion of mining in the pit and final placement of ore on the pad, it is anticipated that there will be 2 years of leaching with cyanide or until it is no longer economically feasible. Gold recovery is projected to continue for approximately 2 years after the last application of cyanide. The criteria for advancing to the rinsing phase will be based on the economics of gold recovery. Heap leach facilities often continue to economically recover gold for a number of years after the addition of cyanide is discontinued. During this period, barren solution will be recirculated to the heap while processing continues to recover gold held in solution inventory. The exact duration of residual leaching will be dependent on continuing gold recovery.

4.2.2 *Solution Recirculation and Rinsing*

Since there is anticipated to be an extended period of residual leaching without the addition of cyanide, rinsing will likely be of short duration. The rinsing rate will be between 16,000 and 24,000 gpm. The actual duration of this step will be controlled by the time required for the water quality to achieve levels suitable for discharge. Rinsing of the heap leach will entail applying water pumped from the pit to the heap leach via the mill then pumping the rinse water collected in the in-heap storage pond to the pit via the mill. This phase of rinsing is projected to have duration of four years.

4.2.3 *Release of Draindown to the Tailings Impoundment*

After Water Quality Standards for the TSF have been met and following approval by ADEC, preparation for releasing the heap leach water to the tailings impoundment will begin. The pit to the heap leach pumping circuit will be will be terminated, however the heap leach to the pit pumping circuit will continue until he in-heap storage pond is pumped down to a level that is operationally practical. The water remaining in the in-heap storage impoundment will be released by penetrating the primary and secondary liners of the LCRS and the prepared sub-base utilizing a drilling rig. A minimum of three holes will be drilled to allow the water to drain by gravity through the ground water underdrain system that interfaces with the tailings impoundment.

4.2.4 *Release of Minor Long-term Seepage*

Long-term seepage from the heap leach will flow by gravity to the tailings impoundment and be managed according to the closure plan for that facility. Discharge from the heap leach pad will mix with the water of the tailings impoundment.

4.2.5 *Regrading and Cover*

Following completion of rinsing, the heap will be regraded to an overall 3H:1V Approximately twelve inches of growth media will be placed over the regraded area. The growth media will be sourced from stockpiles created during facility construction. The growth media will be scarified and seeded subsequent to placement. An erosion control method is to scarify and seed the growth media, which slows down water migration and allows the water to permeate the ground aiding the success of revegetation.

4.2.6 *Project Specific Stipulations*

From the Fort Knox Mine Reclamation and Closure Plan Approval No. F20149852RCP, the following stipulation is expected to be apply to the Barnes Creek Heap Leach. Section 6.5.6 Heap Leach Closure — Regrading and Cover: The section is modified to include the following language: "Prior to initiation of reclamation of the heap leach, FGMI shall submit to ADNR final facility closure plans and schedule, for review and approval. The final facility closure plans shall include consideration of water quality monitoring (including drain-down quality), required ore geochemical characterization, and the results of any environmental audits. If seepage or run-off from the heap leach facility exceeds water quality standards, ADNR may require the reclamation of the heap leach to minimize infiltration and / or impacts from run-off and may require the cover to include a low-permeability layer, growth medium replacement, seed / fertilizer application and also surface diversion ditches."

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5 MONITORING

The Fort Knox Mine Monitoring Plan (FGMI Inc., 2012) gives a detailed description of the monitoring requirements for the site, including the TSF, heap leach, pit lake, stream corridor/wetlands and the water supply reservoir. The monitoring plan includes:

1. Water quality sampling procedures and analytical profiles and sampling schedules.
2. Characterization of acid rock drainage and processed tailings.
3. Monitoring of inert solid waste landfills.
4. Potable water monitoring requirements.
5. Wildlife mortality reporting procedures.
6. Documentation, record keeping and reporting requirements.
7. Quality assurance/quality control manual.

The closure monitoring plan will include water quality sampling, water level measurements, and observations of the success of revegetation. The frequency of sampling events will be adjusted as appropriate between the reclamation and closure, and post-closure phases based on observed improvements in water quality.

5.1 Inspection of Surface Stabilization

Visual observation of revegetation success will be performed on an annual basis during the pre-stabilization phase. Inspection for erosion and formation of gullies will be completed quarterly.

5.2 Heap Leach Water Quality

The Fort Knox Monitoring Plan, (FGMI, Inc. 2012) outlines the operational monitoring and response plan in detail for the Walter Creek Heap Leach and will be adopted for the Barnes Creek Heap Leach. The principal components of the operational monitoring plan include the LCRS, PCMS, underdrain system, pregnant solution composition and pond levels.

The operational monitoring of solution chemistry and levels will continue while recirculation/rinsing of the heap leach is in progress. During the recirculation/rinsing period samples will be collected on a quarterly basis to assess the composition and the rate at which the solution chemistry is improving. Recirculation/rinsing will continue until water quality is suitable for discharge to the tailings impoundment see Table 5.1

Once solution composition is suitable for discharge to the tailings impoundment, monitoring of the heap leach LCRS and PCMS and the underdrain system will no longer be required. The underdrain system will be sampled on a semi-annual basis for the Profile II list of analytes (Table 5.2). The underdrain system will be sampled via monitoring These monitoring wells will be used to monitor the waters in the underdrain during the active life of the heap leach pad ending the quarter after water quality standards have been met.

Table 5-1 Summary of Heap Leach closure monitoring requirements

Identification	Parameter	Frequency
LCRS	WAD CN/pH	Quarterly (during rinsing)
PCMS	WAD CN/pH	Quarterly (during rinsing)
Groundwater Underdrain (via monitoring wells)	Profile II WAD CN/pH	Quarterly (during rinsing))
Residual Solution (via Storage Pond recovery wells	Profile II WAD CN/pH	Quarterly (during rinsing)
Closure Drainage	Profile II	Quarterly (during rinsing)
Preg Solution	WAD CN/pH	Quarterly (during rinsing)
In-Heap Storage Pond	Elevation	Continuous (automatic)

Table 5-2 Analytical profile II–groundwater inorganic parameters

General Chemistry and Major Ions		Trace Metal Chemistry
Lab pH	Alkalinity (as CaCO3)	Antimony*
Lab Conductivity	Bicarbonate	Arsenic*
Temperature (field)	Chloride	Barium*
Turbidity	Fluoride	Bismuth*
Total Suspended Solids	Nitrogen, Ammonia	Cadmium*
Total Dissolved Solids	Nitrate as Nitrogen	Chromium*
Total Hardness	Nitrite as Nitrogen	Copper*
	Total Phosphorus	Iron*
	Sulfate	Lead*
Total cyanide	Sulfide	Manganese*
WAD Cyanide	Calcium*	Mercury*
	Magnesium*	Nickel*
	Potassium*	Selenium*
	Sodium*	Silver*
	Silicon*	Zinc*

* Dissolved