



Fort Knox

**ANNUAL ACTIVITY REPORT  
for  
REPORTING YEAR 2023**



February 2024

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## **LIST OF ABBREVIATIONS**

ADEC	Alaska Department of Environmental Conservation
ADNR	Alaska Department of Natural Resource
ADF&G	Alaska Department of Fish and Games
APDES	Alaska Pollutant Discharge Elimination System
BCWRD	Barnes Creek Waste Rock Dump
H&S	Health and Safety
BCHL	Barnes Creek Heap Leach
FGMI	Fairbanks Gold Mining, Inc.
FMSL	Feet Above Mean Sea Level.
WCHL	Walter Creek Heap Leach
WSR	Water Supply Reservoir
GPM	Gallon Per Minutes

# 1. INTRODUCTION

Fairbanks Gold Mining, Inc. (FGMI), a wholly owned subsidiary of Kinross Gold Corporation, has prepared this annual report to comply with the conditions described in Section 11.b. of the Amended and Restated Millsite Lease ADL Nos. 414960 and 414961 and the ADEC Waste Management Permit 2020DB0002 for the Fort Knox Mine.

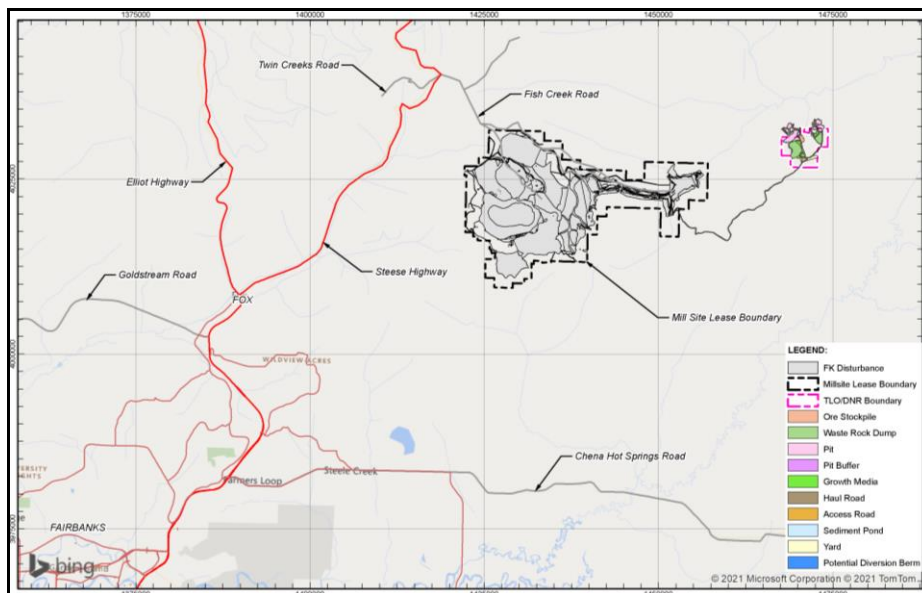
The FGMI Fort Knox Mine includes the open pit mine, mill, tailings storage facility, water storage reservoir, the Walter Creek Heap Leach Facility, and the Barnes Creek Heap Leach Facility. Ore is also sourced from the Gil Mine satellite pits to Fort Knox. The Gil Mine is located approximately eight miles from Fort Knox. The Gil mine mining commenced in 2021. Major reclamation activities at the True North Mine were completed in 2012 and the leased land was returned to the Alaska Department of Natural Resources (ADNR) for public use in 2020. Fort Knox Gold Mine, The Gil Mine, and the True North Mine facilities are located within the Fairbanks North Star Borough, approximately 25 highway miles northeast of Fairbanks, Alaska (Figure 1 1).



The milling and mining operations at Fort Knox continue to operate 24 hours a day, 365 days a year. As of the end of 2023, FGMI employed 767 people. Fort Knox produced 290,652 gold equivalent ounces in 2023.

This report describes the permitting, mining, milling, heap leach and reclamation activities during calendar year 2023 and planned activities for 2024.

Figure 1: Facility Locations



## 2. SUMMARY OF ACTIVITIES

In 2023, numerous production and construction activities were underway at the Fort Knox Mine. In summary, these activities included:

- Completion of basic construction for the Gil Mine;
- Completion of construction of Stage 4 and a portion of Stage 5 of Barnes Creek Heap Leach Facility;
- Discharge 410.7 million gallons of APDES permitted effluent at Outfall 002;
- Continued mining Phase 9 and Phase 10;
- Continued Victoria Creek Waste Rock Dump;
- Completion of the Yellow Pup Waste Rock Dump; and
- Completion of the Barnes Creek Waste Rock Dump.



Major 2024 activities planned include:

- Continued mining of Phase 9;
- Continued mining of Phase 10;
- Continued mining of Main Gil Pit;
- Continued mining Sourdough Gil Pit;
- Continued mining North Gil Pit;
- Continued ore stacking on Barnes Creek Heap Leach Facility; and
- Completing construction of Stage 5 of Barnes Creek Heap Leach Facility;

## 3. PERMITTING ACTIVITIES

The following is a list of the approved plans and permits issued to FGMI in 2023:

- In April, ADNR issued Fort Knox Burn Permit FAS-23-001;
- In May, ADEC issued the authorization/registration for APMA 9156-Gil Exploration Site
- In September, Fort Knox *Updated Solid Waste Management Plan* was approved by ADEC. Under the plan, spill material can be dumped into TSF impoundment and Walter Creek Heap Leach.
- In September, FGMI received the APMA 2883 approval from ADNR.
- In September, ADEC issued Waste Management Permit 2020DB0002 modification to process and dispose Manh Choh ore.
- In November, ADNR Dam Safety issued the COAO including for portions of Stage 5 for Barnes Creek Heap Leach.
- In November, ADNR Dam Safety issued Certificate of Approval to Operate FY2024-10-AK00315 for the Barnes Creek Heap Leach Pad Dam.
- In December, ADNR Dam Safety issued Certificate of Approval to Operate FY2024-15-AK00310 for the Walter Creek Heap Leach Pad Dam.

Planned permitting activities for FGMI in 2024 include:

- Gil 1450 Expansion Permitting; and
- Gil APDES Permitting.

#### **4. LAND STATUS**

The Fort Knox Mine and facilities, including Gil, encompass approximately 10,075 acres, of which there are no federal lands. The project area includes the following leases and land agreements:

- Amended and Restated Millsite Lease (ADL 414960, 414961);
- Fort Knox Upland Mining Lease, entered into with the Alaska Mental Health Trust Land Authority (ADL 535408);
- State of Alaska Upland Mining Lease (ADL 233238);
- Gil Millsite Lease (ADL 233700);
- Alaska Mental Health Trust Ground Lease Agreements for Gil (MHT9400735, MHT9400736);
- Alaska Mental Health Trust Ground Lease Agreement for Victoria Creek (MHT9400734); and
- Private lands.

## 5. SAFETY

### PEOPLE

Putting people first is a Kinross core value, supporting a belief that we must never, under any circumstances, compromise on safety. Health and Safety is our number one priority – among employees, contractors, suppliers and the communities in which we operate. Kinross is committed to applying industry standards, best management practices, responsible science, and meeting regulatory requirements.



The Kinross Fort Knox Mine is subject to all the Kinross corporate and Kinross Fort Knox health and safety policies. These policies commit Kinross employees and contractors to be accountable for safe project execution, commissioning and eventual operation. The policies are designed to prevent harm to people, processes and property and provide the minimum standard to which the project will be executed.

Since early infrastructure work was completed over twenty years ago, major health and safety procedures have been developed put into practice and matured into the world class safety culture we have today.

As the mine advances, the risk profile and appropriate mitigation plans are continually and implemented to a higher level of detail and, in many cases, as other projects of the past. Hazard identification and risk assessments are undertaken at all of our projects to ensure that risks are managed at the earliest possible stage.

In 2023, Kinross Fort Knox further advanced its safety culture by implementing the Human Organizational Performance philosophy. This safety and health philosophy focuses on what we do right in the act of safety as humans in our daily activities, the presence of safety and health processes proactively, and building the capacity of our workforce to work safely. This model additionally further develops the individuals' empowerment to engage in their own personal safety and with their coworkers.

All Kinross employees strive for excellence in safety by utilizing leading indicators to drive performance and behavior. A leading indicator is a measure preceding or indicating a future event used to drive and measure activities carried out to prevent and control harm.

Leading indicators such as Corrected Hazards and Field Engagements will:

- Allow individuals working in FGMI to see improvements in performance;
- Measure the positive by identifying what people are doing versus what people are failing to do;
- Enable frequent feedback to all stakeholders;
- Be credible (meaningful) to performers;
- Be predictive;
- Increase constructive problem solving around safety;

- Make it clear what needs to be done to get better; and
- Track Impact versus Intention

## **CORRECTED HAZARDS**

A hazard that has been identified and appropriate action taken to correct it and make safe. This focuses on two drivers of safety performance (1) Engagement of the entire workforce in the process of identifying and addressing hazards, and (2) Demonstration of management commitment to continuously improving safety through the act of addressing hazards Identified.

## **FIELD ENGAGEMENTS (BY UPPER MANAGERMENTS)**

A workplace engagement performed by upper management with a frontline employee involves a discussion focused on understanding how work is done and the associated Health & Safety (H&S) aspects. A workplace engagement is an intentional discussion about work as done, the hazards involved and what is needed to help the employee perform the work safely and efficiently.

This indicator measures the active presence of upper management at the workplace supporting employees to work safely and promoting safety as a priority.

Additionally, as a corporation, the Kinross mines have implemented a Critical Risk Management Program to reduce high potential incidents and support a supporting the ideology of being a learning company.

## **MINE ACCESS**

FGMI continues to maintain the mine access roads from the Steese Highway to Fort Knox and True North (Figure 1). The road surface is graded to ensure a smooth running surface and proper drainage. During the winter months, the Fort Knox road is kept free of snow and is sanded as necessary to maintain safe operating conditions. The True North road is plowed of snow as needed during the winter



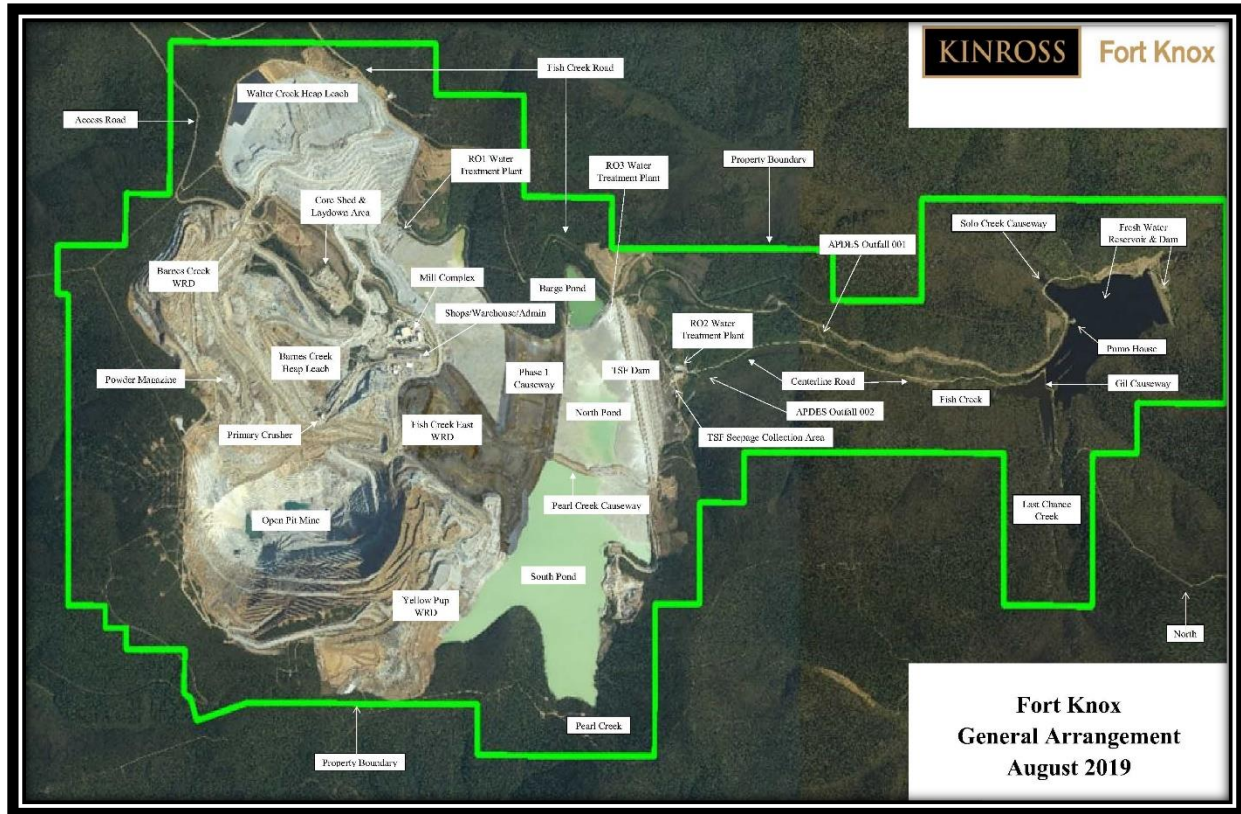
months since access to the True North Mine is not routinely required. In the summer months, FGMI uses calcium chloride and water for dust suppressants on the Fort Knox access and mine-site roads (Figure 2). These measures have limited the amount of fugitive dust on these roads.

The Gil Mine is accessed via an 8.75 mile road that connects Fort Knox to the Gil Mine. The road is maintained by the mining contractor and Fort Knox personnel. The road is designed to safely accommodate haul truck traffic transporting ore to Fort Knox. For safety purposes, the general public is restricted from using the road.



FGMI Security continues to patrol the mine site and access roads to ensure the safety of employees, contractors, guests, and the public. Access is limited based on need and function. Safety training is tailored in a similar manner.

Figure 2: Local Roads and Mine Facilities



## RECREATIONAL TRAILS

During the initial Millsite Lease application process a series of public meetings were held to identify trail systems that would potentially be affected by mining activities. In 2011, Fort Knox initiated meetings with ADNR Trails and Easement Section to start the process of rerouting trails for future use. Meetings with ADNR continued in 2013. A formal application was submitted to the Trails and Easement Section with an alternate route in 2013. As part of this process, a public notice and comment period occurred in 2014. In 2015, ADNR executed the entry authorization for the approved Administrative Reroute of RST 644 Cleary Summit to Gilmore Dome Trail.

In 2018, FGMI submitted an application to Relocate Portions of RST644 and RST1931 trails to ADNR, Land. ADNR approved the application and construction was completed (Figure 3).

Figure 3: RSTs 644 and 1931 Partial Relocations



## 6. MINE OPERATIONS

### PIT PRODUCTION

In 2023, FGMI mined 70.79 million tons of ore and waste from the Fort Knox pit with an average production rate of 193.9 thousand tons per day (Table 1).

Table 1: Fort Knox Annual Mining Rates

Year	Mill Ore (Million Tons)	Transition Grade Ore (Million Tons)	Leach Grade Ore (Million Tons)	Waste (Million Tons)	Total (Million Tons)
1996	.96	.36	0	15.36	16.68
1997	12.57	4.88	0	14.93	32.38
1998	13.83	5.27	0	14.19	33.29
1999	14.10	4.09	0	12.16	30.35
2000	15.51	2.20	0	17.89	35.60
2001	12.09	1.24	0	12.62	25.95
2002	11.73	.86	0	12.00	24.59
2003	11.08	2.09	0	17.43	30.60
2004	10.80	6.80	0	24.09	41.69
2005	13.23	5.86	0	44.16	63.25
2006	12.39	3.68	0	35.00	51.07
2007	11.71	10.31	0	23.92	45.94
2008	12.78	3.82	13.3	16.40	46.30
2009	11.96	4.11	12.70	20.03	48.80
2010	11.95	1.35	8.52	20.59	42.41
2011	3.96	.13	4.76	25.70	34.55
2012	10.42	3.19	14.98	34.53	63.12
2013	9.38	4.88	9.59	39.43	63.28
2014	6.83	4.94	4.64	32.83	49.24
2015	10.94	3.35	10.80	35.77	60.86
2016	10.93	7.38	16.69	30.24	65.24
2017	8.95	4.77	15.33	31.40	60.45
2018	5.89	5.76	15.51	44.69	71.85
2019	6.94	2.85	18.16	49.9	77.87
2020	10.73	3.39	17.37	39.82	71.32
2021	8.98	6.05	23.33	37.91	76.28
2022	7.91	0.01	50.75	20.09	78.76
2023	6.01	0	26.1	38.68	70.79
<b>Total</b>	<b>284.56</b>	<b>103.62</b>	<b>262.53</b>	<b>761.76</b>	<b>1412.51</b>

Mining operations continue 24-hours a day, 365-days per year at the Fort Knox Mine. Ore and waste are mined using standard drilling and blasting techniques with shovel and haul truck fleets to move the material. Blast holes are sampled and assayed for production grade control purposes and material is hauled to the rock dumps, primary crusher, or heap leach stockpiles depending on grade.

Phase 7 stripping commenced in the 4<sup>th</sup> quarter of 2008. Stripping for phase 7 continued into 2012 before sustained ore was achieved. In 2015, mining within the Fort Knox open pit occurred in Phase 7 and Phase 8. Phase 7 is now incorporated into Phases 8, 9, and 10 mining areas (Figure 4).

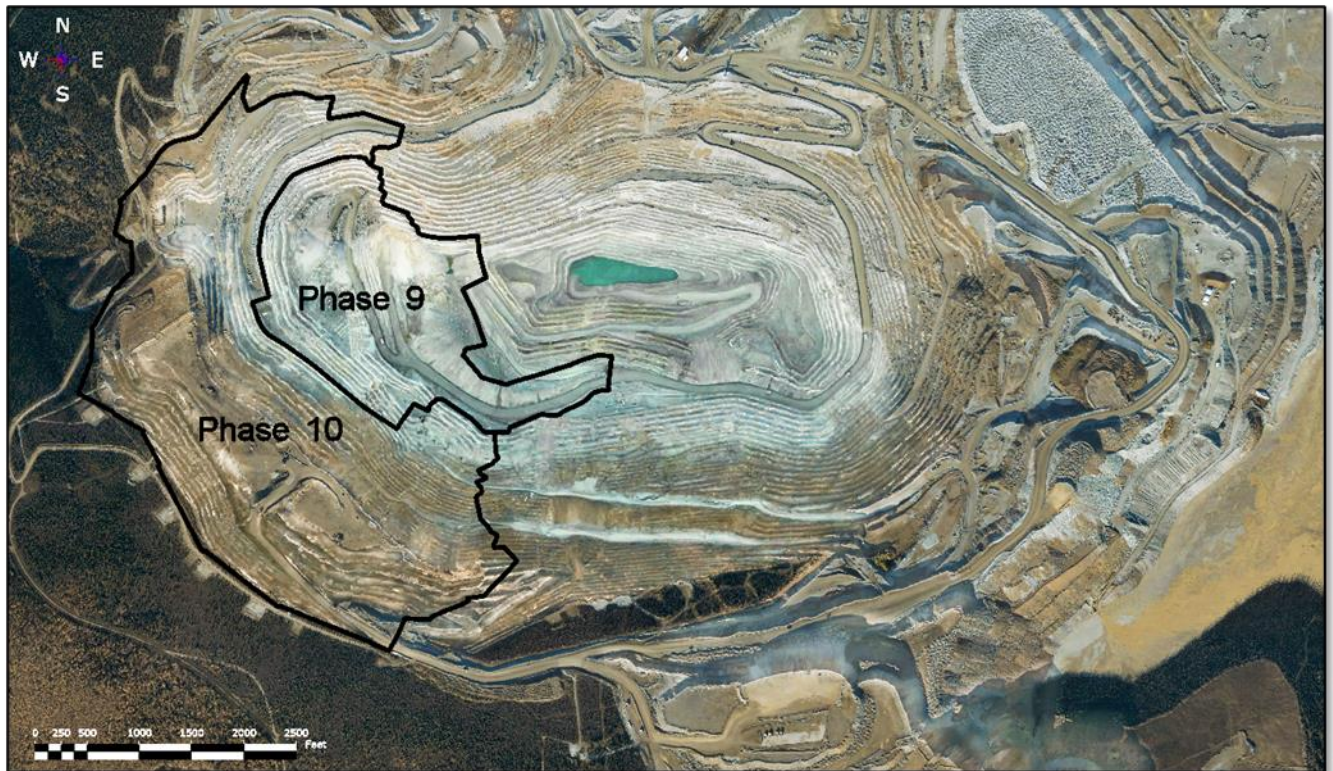


Mining activities continued in 2017 for the pit layback area known as Phase 8. This phase of the pit delivered ore to the mill and the leach pad beginning in 2015 and continued through 2022.

Mining in Phase 9 commenced in June 2019. Ore from this phase is expected to be delivered to the mill and heap leach pad from the first bench and will continue until the phase is mined out in 2024.

Phase 10 mining commenced in 2021 and will continue until mining activities end in 2028.

Figure 4: Fort Knox Pit Phases



Ore production commenced in the Main Gil Pit during October 2021 (see Figure 5). The mining contractor and FGMI mined 9.02 million tons of ore and waste from the Main Gil Pit in 2023

(Table 2). Mining methods at Gil are similar to Fort Knox, but smaller loading and haulage equipment is used. Loading, haulage, and mine support equipment is owned and operated by the mining contractor. Fort Knox personnel perform drilling and blasting and provide technical services support (e.g., mine planning, surveying, and ore control).

Figure 5: Gil Project General Arrangement

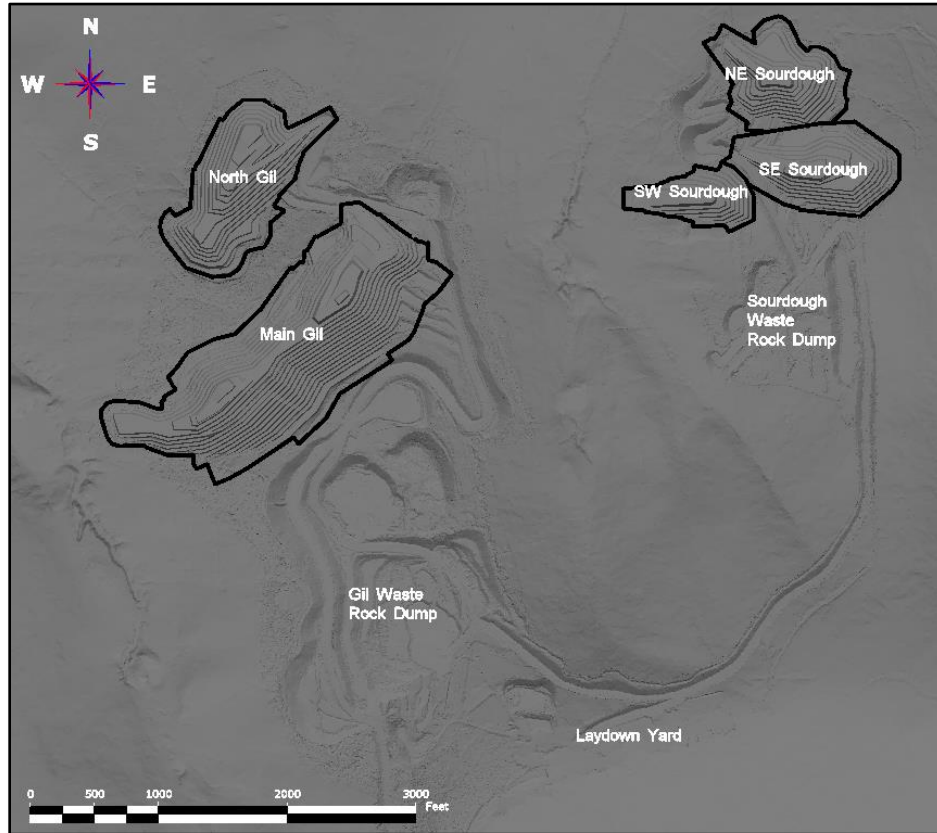


Table 2: Gil Annual Mining Rates

Year	Mill Ore (Million Tons)	Transition Grade Ore (Million Tons)	Leach Grade Ore (Million Tons)	Waste (Million Tons)	Total (Million Tons)
2021	0.16	0	0	0.55	0.71
2022	2.973	0	0.231	7.082	10.286
2023	2.798	0	1.133	5.087	9.018
<b>Total</b>	<b>5.931</b>	<b>0</b>	<b>1.364</b>	<b>12.719</b>	<b>20.014</b>

Mining at the Main Gil Pit commenced during Q3 2021 and is projected to continue through Q2 2024. Mining in the North Gil Pit began in Q2 2023 and is projected to continue through Q3 2024. Mining in the Sourdough Pit began in Q2 2023 and is projected to continue through Q3 2024.

## DEWATERING

As of year-end 2023, approximately 1.55 billion gallons were pumped from the Fort Knox dewatering network. The pit dewatering system is comprised of 44 groundwater dewatering well collars and six Fish Creek well collars. Pit dewatering wells are sited spatially around and within the excavation and range in depths between 400ft to 2000ft deep. The Fish Creek wells are located north of the pit and are cited entirely within the approximately 300' deep waste rock and tailings backfill material placed in the Barnes Creek and Fish Creek drainages. Through the course of 2023, two existing dewatering wells were destroyed by mining advance in the Phase 10 pushback, one existing well experienced a casing failure and was destroyed, three new wells were drilled into the Western pit slopes, and one new well was drilled into the Fish Creek backfill. The wells destroyed by Phase 10 mining advance were DW18-457 and DW18-477 which were out of service since August 2023 or earlier. The well that experienced the casing failure was DW09-211 and had been out of services since September 2021. New well installations along the Western pit are numbered DW23-568, DW23-575, and DW23-579; and the new Fish Creek well is numbered DW23-581. At year-end, all three of new pit wells had contributed water to the dewatering system and the new Fish Creek well was still pending final commissioning. Approximately 553 Million gallons were pumped from the groundwater dewatering wells and production from the Fish Creek wells was approximately 994 Million gallons in 2023

Selected piezometers associated with the permit are monitored weekly for changes in water levels and all piezometers are monitored quarterly.

Since the Tailings Storage Facility (TSF) design did not have capacity to contain all water until the end of mine life, an Alaska Pollutant Discharge Elimination System (APDES) permit application was submitted to the ADEC, Division of Water in early 2012. ADEC granted FGMI an APDES permit in August 2012 and effective October 2012. Since receiving the APDES permit and until March 3, 2015, there was no discharge of water. Discharge began on March 4, 2015. The current APDES permit expires on May 31, 2023. The renewal application was submitted to the ADEC on November 30, 2022. On December 13, 2022, the APDES permit was administratively extended and remains in effect until a renewal is issued by ADEC.

The current APDES permit authorizes a total annual discharge of up to 4.8 billion gallons from two outfalls (Outfall 001 and Outfall 002). There has been no discharge from Outfall 001 since April 2019. Discharge from Outfall 002 began January 2019 and continued through 2023. During 2023, Fort Knox discharged a total 410.74 million gallons from Outfall 002.

Fort Knox operates three reverse osmosis (RO) water treatment systems. The first RO system, RO #1, became operational on June 24, 2016. RO #2 and RO #3 became operational on January 15, 2019 and June 22, 2019, respectively. RO #2 treats seepage and intercept water from the TSF. RO #1 and RO #3 treat either pond water from the TSF or groundwater from the Fish Creek Wells.



## 7. MILL OPERATIONS

Mill feed is first crushed to minus 6 inches in the primary gyratory crusher located near the Fort Knox pit and then conveyed to a coarse-ore stockpile located near the mill. The crushed material is conveyed to a semi-autogenous (SAG) mill. The SAG mill



operates in open circuit and feeds two ball mills. The ball mills operate in closed circuit through cyclone packs. The cyclone packs regulate the size of material that is allowed to move beyond the grinding circuit. A gravity gold recovery circuit operates in conjunction with the grinding circuit. It consists of three Knelson concentrators.

Correctly sized material flows into a high-rate thickener and then into leach tanks where cyanide is used to dissolve the gold. Activated carbon is used in the carbon-in-pulp circuit to absorb the gold from the cyanide solution. Carbon particles loaded with gold are removed from the slurry by carbon screens and are transferred to the gold recovery circuit. In this circuit, the gold is stripped from the carbon using a strong alkaline cyanide solution in conjunction with high temperature and high pressure. The gold is recovered from this solution by electro-winning, where it is plated onto a cathode. The gold is removed from the cathode mechanically and melted into doré bars for shipment to an offsite refinery for final processing.

Some hard ore of a critical size is rejected from the SAG mill in order to increase throughput. This material is crushed and stockpiled for use on the Barnes Creek Heap Leach Facility and the mine roads. Mill tailings are discharged into the TSF below the mill.

Table 3 displays a summary of the tonnage milled from November 1996 through December 31, 2023. The mill continues to focus on operational improvements to increase throughput, recovery, efficiency, and reliability. Mill operations in 2024 are expected to be primarily autogenous grind (AG) instead of SAG. The Mill is planning to begin processing Manh Choh ore from 2024.

Table 3: Fort Knox Annual Milling Rates

<b>Year</b>	<b>Mill Production (Million Tons)</b>
1996	0.77
1997	12.16
1998	13.74
1999	13.82
2000	14.99
2001	15.66
2002	15.26
2003	15.08
2004	14.59
2005	14.38
2006	14.84
2007	14.02
2008	15.11
2009	14.14
2010	14.56
2011	14.88
2012	14.55
2013	13.96
2014	14.92
2015	14.82
2016	14.57
2017	13.75
2018	13.00
2019	8.91
2020	10.09
2021	8.88
2022	9.90
2023	8.95
<b>Total</b>	<b>364.3</b>

The projected mill throughput for 2024 is approximately 7.59 million tons.



## 8. HEAP LEACH FACILITIES

### Walter Creek Valley Heap Leach Facility

The Walter Creek Valley Heap Leach Facility (WCHLF) was brought into production in 2009. On October 13, 2009, ADNR issued a Certificate of Approval to operate the heap leach dam. On October 14, 2009, FGMI began filling the in-heap storage pond. In November 2009, FGMI had the first gold pour from heap leach production. In 2022, approximately 373,200 thousand tons of ore were placed on the WCHLF. Since the loading of heap leach ore began in 2009, a total of approximately 293.7 million tons have been placed on the heap leach, and 1.362 million ounces of gold have been produced.



In 2011, construction of Stage 3 of the heap leach pad began and its construction completed in 2013. The Stage 4 construction of the heap leach pad began in 2012 and was completed in 2014. The Stage 5 construction began in 2012 with clearing and grubbing, and construction was completed in 2015. The Booster Pump Station was constructed in 2015. Stage 6 clearing and grubbing occurred in 2015 and construction continued and was completed in 2017. Stage 7 construction began and was completed in 2017. Construction of Stages 8, 9, and 10 were completed in 2018. Projected WCHLF ore placement for 2024 is 0 tons, as stacking on WCHLF was completed during 2022.

### Barnes Creek Heap Leach Facility

The Barnes Creek Heap Leach Facility (BCHLF) received permit approval for construction in 2017. Earthwork construction was started in 2018 and continued through 2019. Construction activities in 2019 also included deploying the entire secondary liner (~50 acres) for the in-heap pond.



The primary liner in the heap leach pond (Stage 1) was completed in 2020, in addition to the Stage 1 activities, earthwork and a portion of Stage 2 liner was also completed. The pipe corridor connecting the heap leach to the mill was completed and commissioned. Stage 1 construction included placement of approximately 2.2 million square feet (sf) of primary liner and 1.98 million square-feet (sf) of overliner. The Stage 1 overliner was progressed to an average elevation of 1,545-ft before ore was stacked to 1,518-ft. Stage 2 construction included approximately 341,677-sf of surface area preparation, 312,005-sf of sub-base placement, and 161,877-sf of overliner in area 4N. The BCHLF was brought into production

in late 2020. On November 20, 2020, ADNR issued a Certificate of Approval to operate the heap leach dam. On November 25, 2020, FGMI began leaching the ore and filling the in-heap storage pond.

In 2021, the remainder of the Stage 2 earthwork and liner was completed (see Figure 6). In addition, a portion of the earthwork for the Stage 3 liner was completed and part of the Stage 3 liner was placed (see Figure 7). Stage 2 construction included approximately 1.8 million-sf of surface preparation, sub-base placement, and liner installation. Stage 3 construction included approximately 730,000-sf of surface preparation, 690,000-sf of sub-base placement, and 640,000-sf of overliner in Areas 7N, 8N, and 9N.

In 2022 the remainder of Stage 3 (see figure 8) surface prep of total 600,660-sf was completed, and 678,738-cy of sub base placed. The remaining 64,352-cy of over liner placed for Stage 3. Work in Stage 4 for 2022 consisted of 1,118,277-sf of surface prep, 237,264-cy of sub base, and 137,839-cy of over liner placed (see figure 9).

Construction for 2023 included the completion of Stage 4 liner, complete earthwork for Stage 5 and the beginning of Stage 5 earthwork and 1.55M sq ft of liner installation.

In 2023, approximately 30.87 million tons of ore were placed on the BCHLF. Projected BCHLF ore placement for 2024 is 30.23 million tons.

Figure 6: Barnes Creek Heap Leach Stage 2 Progress in 2021

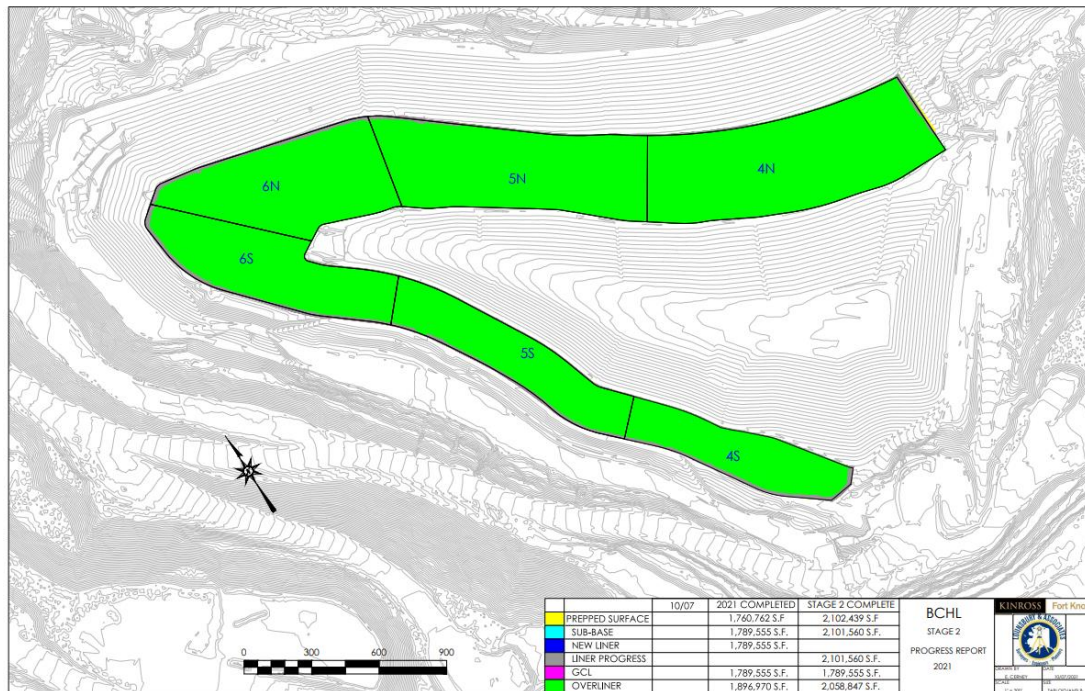


Figure 7: Barnes Creek Heap Leach Stage 3 Progress in 2021

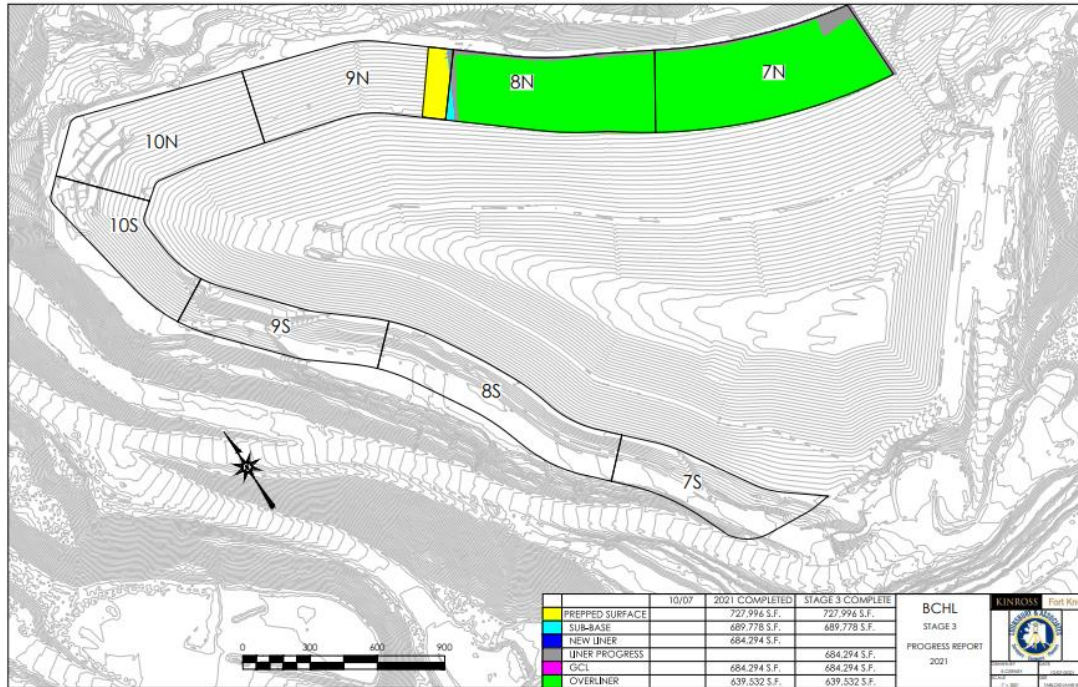


Figure 8: Barnes Creek Heap Leach Stage 3 Progress in 2022

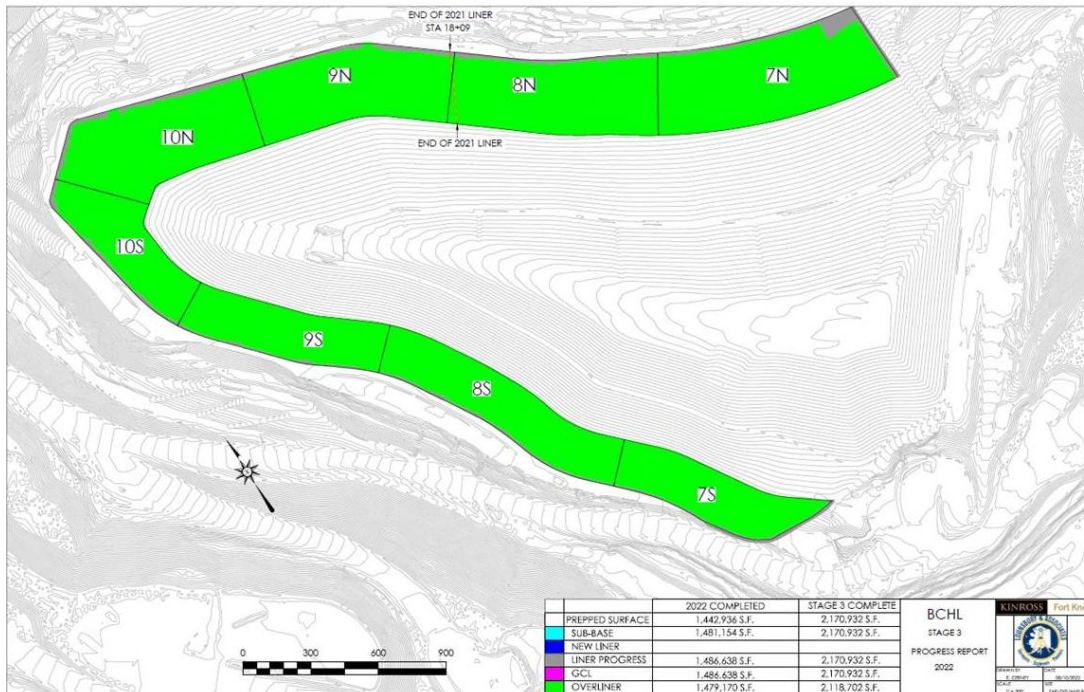


Figure 9: Barnes Creek Heap Leach Stage 4 Progress in 2022

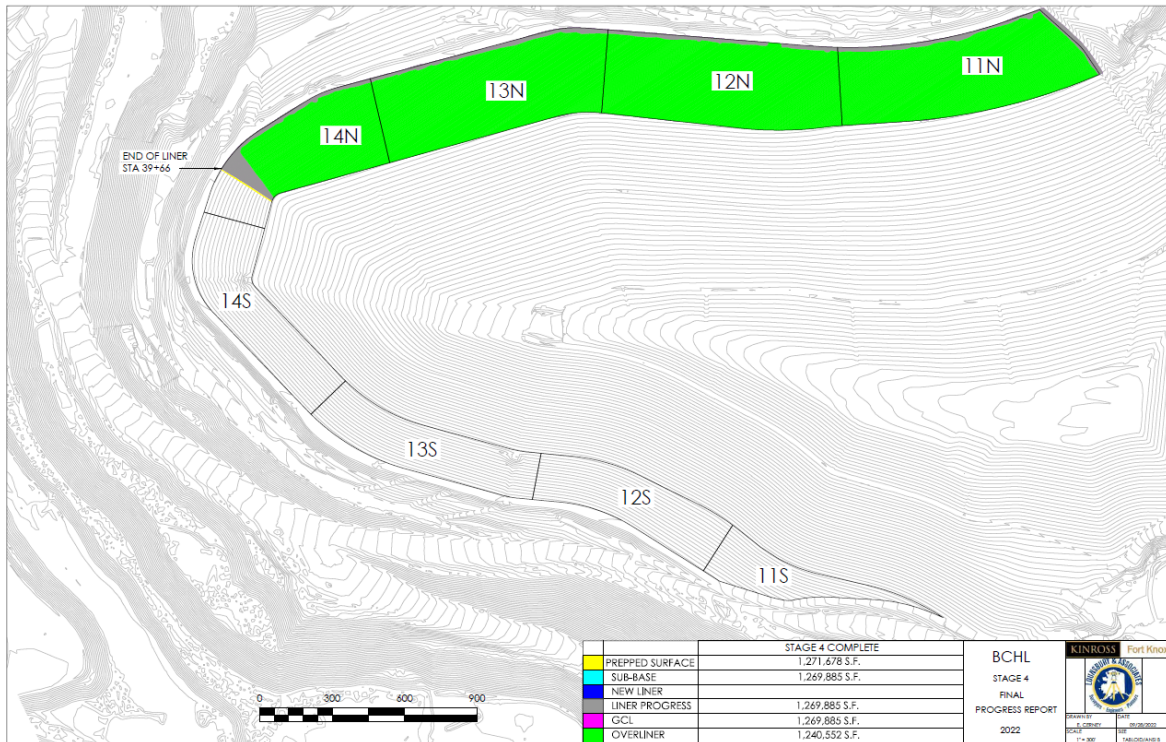


Figure 10: Barnes Creek Heap Leach Stage 4 Progress in 2023

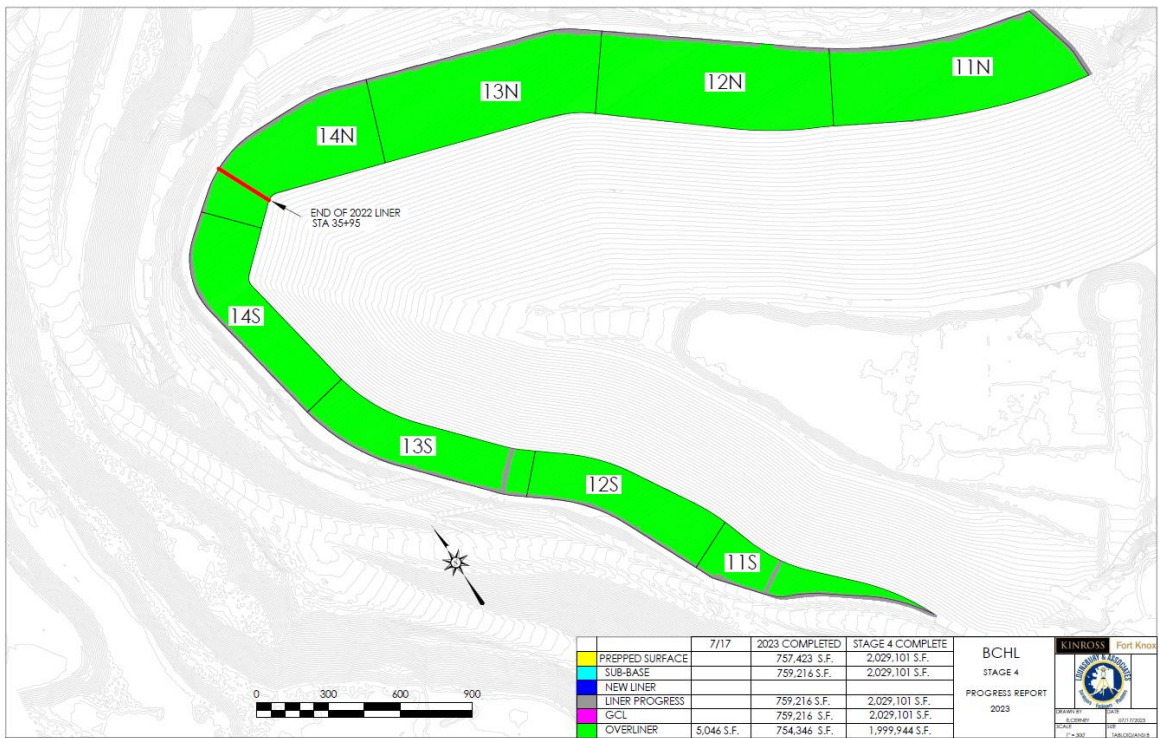
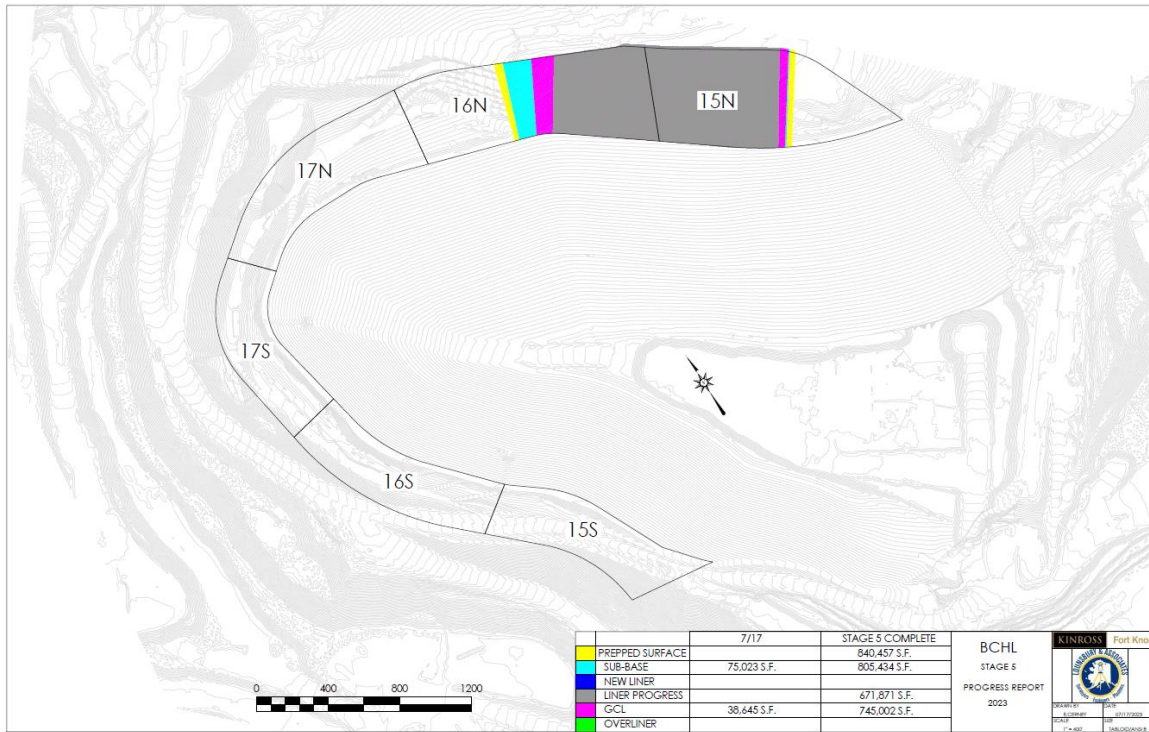


Figure 11: Barnes Creek Heap Leach Stage 5 Progress in 2023



## 9. TAILINGS STORAGE FACILITY (TSF)

The TSF consists of deposited tailings, decant pond, dam, causeways, seepage interception system, and the seepage monitoring system. The tailings depositional area is within the Fish Creek drainage and includes portions of the Walter Creek, Pearl Creek, and Yellow Pup drainages.

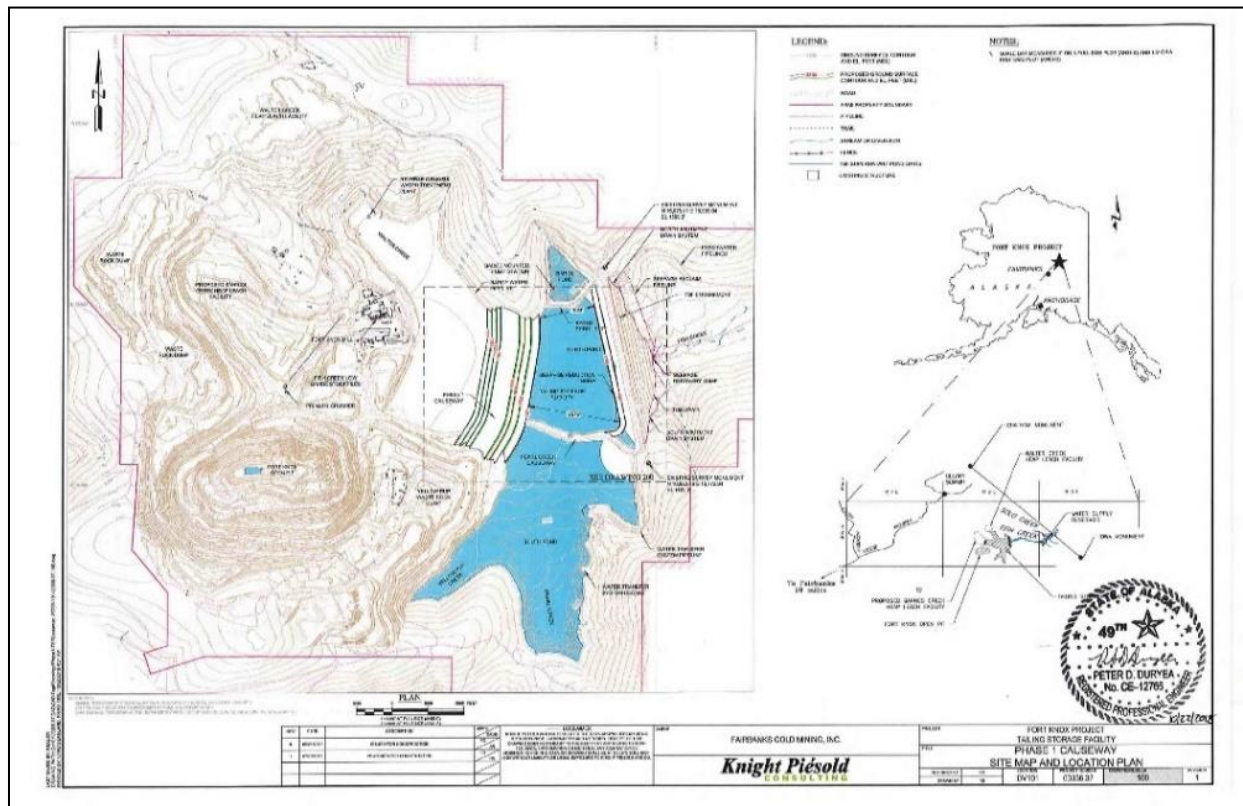
The TSF has three distinct ponds: the barge pond, north pond, and south pond where the decant water pools. The north pond is further divided by the Phase 1 Causeway. These ponds are located within the tailings deposition area upstream of the TSF dam. The barge pond is approximately 18 acres. The north pond fluctuates in size but covers an area that generally ranges from 300 to 400 acres. The south pond will fluctuate slightly but should remain close to 245 acres. A bathymetric survey conducted in June 2023 showed the barge pond, north pond, and south pond contain approximately 2168 acre-feet of water. This is a decrease in the volume of the ponds from September 2022 despite above average precipitation during this period and is attributed to water management activities at Fort Knox including increasing water treatment capabilities. Water management has been a priority for the site in 2023 and will continue to be important in 2024.

The TSF dam is approximately 4,865 ft long and has a crest height of 385.5 ft. It impounds all of the tailings generated by the mill. The TSF and the mill form a closed system for process water. Water used in the mill is pumped from the barge pond, and this process water is returned to the decant pond in the tailings slurry after the slurry has been processed to comply with cyanide threshold levels in accordance with the mine’s Waste Management Permit.

Construction of the Seepage Reduction Berm located upstream of the TSF dam was approved and completed in 2018. Placement of tailings between the dam and berm was completed in 2019. The berm was constructed to keep the supernatant pool away from the engineered fills of the TSF dam.

Construction of the Phase I Causeway was approved to elevation 1,580 fmsl(feet above mean sea level). Construction began in 2018 and was completed in 2019 with placement of tailings starting in the fall of 2019 (Figure 12). Tailings deposition behind the Phase 1 Causeway has concluded, and a waste rock closure cap has been installed over a significant portion of the tailings surface. The closure cap was completed during 2022.

Figure 12: TSF Phase 1 Causeway



## TAILINGS DEPOSITION

During the 2011 through 2017 construction seasons, tailings were deposited along the dam face by spigoting. The main tailings line ran along the upstream dam face at the 1,557 fmsl elevation of the engineered random fill. The tailings flowed into 8-inch spigot pipes evenly spaced along the dam face. The spigot lines were extended towards the tailings surface at an elevation of 1,547 fmsl. The purpose of the spigoting is to develop a beach 300 to 500 feet in width against the upstream face of the dam. The beach will improve the dam's Factor of Safety and enhance its long term stability.

During 2023 tailings were deposited in the South Pond of the tailings facility.

## TSF DAM RAISE

Construction of a 52-foot raise of the TSF dam began in 2011 by raising the dam 27 feet. The raising of the dam 52 feet was necessary for increases in planned production with the addition of Phase 7 and would have exceeded the capacity of the TSF without the 52-foot raise. The dam raise is a modified centerline construction as depicted in Figure 11.

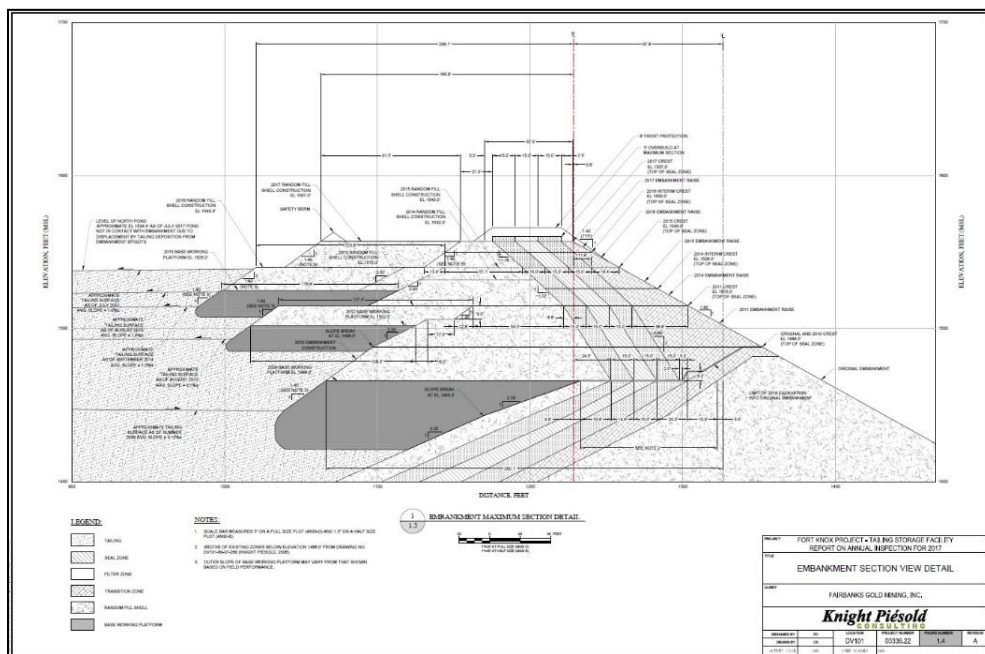
Construction of the 52-foot dam raise required three years. A 27-foot raise was completed during 2011, an 11-foot raise was completed in 2014, and the remaining 14 feet was completed in 2015. The base working platform for the 25-foot raise was constructed during 2013. The dam was constructed to its design height of elevation 1,540 fmsl in 2015. A 17-foot raise to elevation 1,557 fmsl was approved by ADNR in 2016 for a two-year construction process. The first 10-foot raise was completed in 2016 and the second and 7-foot raise was completed in 2017.

During 2019 a water storage only lift was constructed for additional freeboard allowance and expanded water storage capacity in the TSF. The north and south engineered zones were raised to meet the overbuild elevation in the central section of the 52-foot raise bringing the dam elevation to 1559.5 fmsl.

During 2020 the site survey datum was adjusted. The elevation translation showed that the TSF embankment crest is lower than it was in the original coordinate system. The low point for the seal zone elevation was 1558.6 fmsl at the north abutment of the dam.

During 2021 a water storage only lift was constructed to bring the seal zone to a uniform elevation of 1560 fmsl (in the updated coordinate system). No additional dam raises are planned at this time. FGMI received the certificate to operate on March 1, 2022. The dam raise was completed November of 2021. During 2023 no additional dam raises were completed.

Figure 13: TSF Modified Centerline Design



## TSF INTERCEPTOR SYSTEM

The TSF dam is designed as a flow through dam. The primary flow path is within the upstream random fill shell and filter zone into the fractured bedrock foundation and beneath the seal zone to the downstream toe. The secondary flow path is within the tails from hydraulic head pressures and tailing consolidation into the fractured bedrock.

The seepage is captured by the pump back system and the interceptor system. The pump-back system includes a pump-back sump together with a pumping and piping system designed to return the seepage to the TSF and the RO #2 reverse osmosis treatment system. The interceptor system is a series of interceptor wells developed downstream of the dam (Figure ).

Most of the seepage passing beneath the dam feeds into a large, lined sump. A system of interceptor wells collects the remaining seepage. Water from the sump, which consists of seepage from the dam and interceptor wells, is pumped to the RO #2 reverse osmosis treatment system for treatment and discharge to APDES permit Outfall 002. Sump water is also pumped back to the TSF during periods of high inflow or during the winter (to keep pipes from freezing). During 2023, sump water was pumped to RO # 2 and to the TSF at average rates of 526 gpm (gallons per minute) and 1040 gpm, respectively.

The interceptor well system continues to function as designed, maintaining a continuous cone of depression across the Fish Creek valley. The interceptor wells operate continuously with individual average pumping rates ranging from approximately 8 gpm to 107 gpm (Table 3). These wells form a hydraulic barrier preventing any seepage from migrating further downstream and assuring the TSF operates as a zero discharge facility.

In 2016 Fort Knox contracted with a third party to:

- Perform an aquifer test at the interception system;
- Optimize the existing interception system;
- Determine effective pumping rates for each well;
- Assess seepage capture performance, and;
- Evaluate redundancy in seepage collection and suggest wells to be shut off.

Results from Optimization Tests performed by the third party company concluded IW-5; MW-1 and MW-3 could be shut off. This occurred in the last quarter of 2016.

In 2017 seven monitoring wells with sampling pumps were installed between the interceptor wells and the compliance monitoring wells. The purpose of these wells is to monitor the water quality. These wells were constructed with the option to be converted to interceptor wells (**Error! Reference source not found.**14).





In 2020, the original interception optimization study was updated using current data. This updated study recommended additional measures to optimize the performance of the interception system. Fort Knox is in the process of implementing these recommendations.

A line of groundwater compliance monitoring wells MW-5, MW-6, and MW-7 located immediately downstream of the interception system and pre-compliance wells are monitored to insure that no process water is escaping the system and moving downstream (Figure 14 and 15).

Figure 14: Operating Interceptor Well System

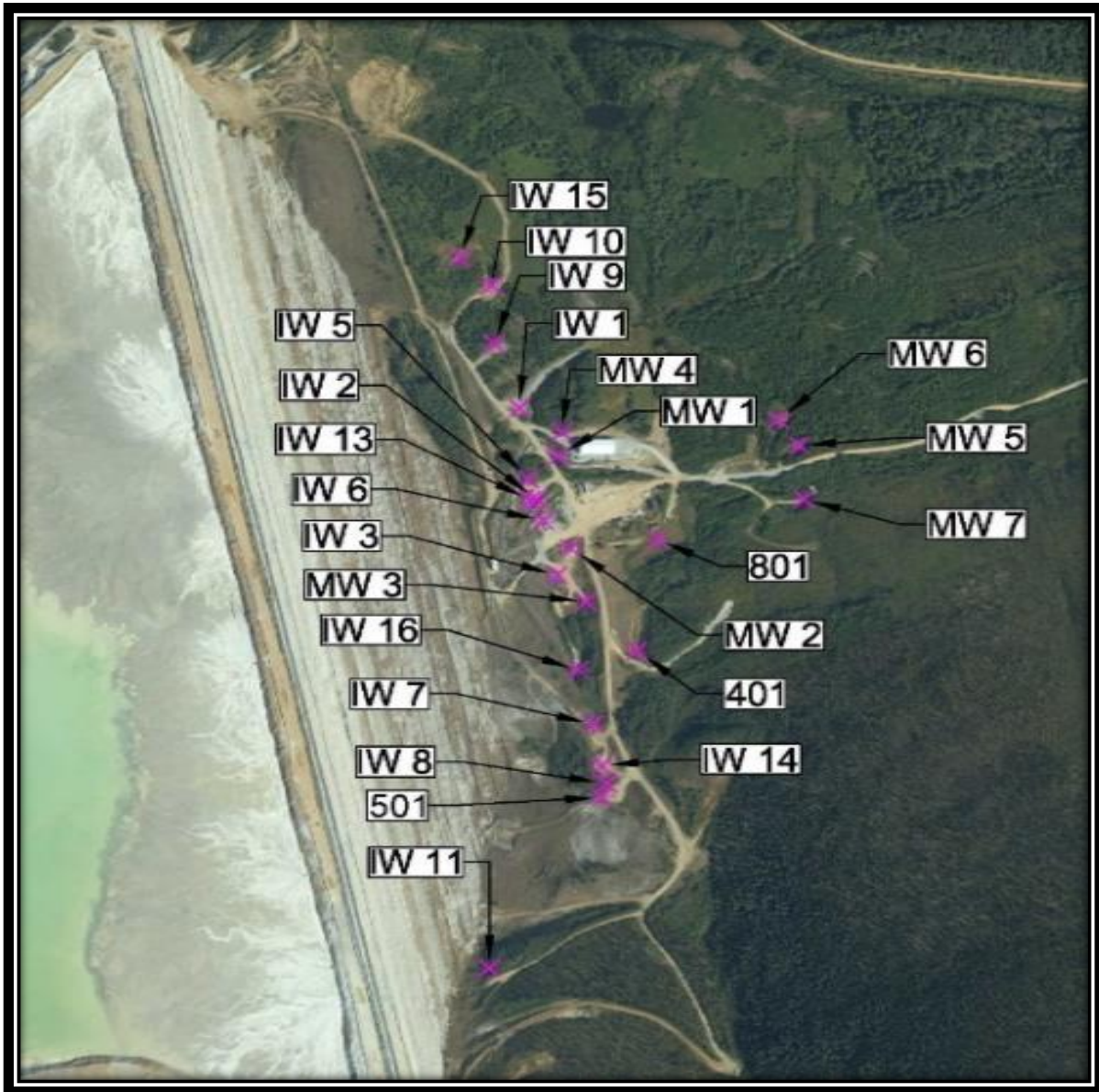


Figure 15: PMW Wells



Table 3: TSF Interceptor System Pumping Rates

Well ID	Approximate Average Pumping Rate (gpm)	Well Depth (ft)
IW-1	72.1	320
IW-2	0	329
IW-3	21.0	310
IW-6	31.1	380
IW-7	8.3	197
IW-8	106.9	184
IW-11	16.6	296
IW-13	40.9	480
IW-14	56.3	405
IW-16	20.4	342
Toe Drain (501)	48.8	n/a
<b>Total</b>	<b>422</b>	

**TSF DECANT AND SEEPAGE METALS CONCENTRATIONS**

Antimony, arsenic, lead, and selenium concentrations continue to be analyzed in the TSF decant and seepage reclaim (Figure 16, Figure 17, Figure 18, and Figure 19). These metal concentrations increased significantly as a result of introducing True North ore into the mill tailings beginning in 2001 and ending in 2004. Since 2004, the metal concentrations have trended down and remained low with the exception of lead. Lead nitrate was used in the milling process in 2008 and 2009 causing the lead concentrations in the decant water to elevate during this period.

Figure 16: Average Quarterly Antimony Concentrations in Seepage Reclaim & Decant

From: 1 January 2001 to 31 December 2023

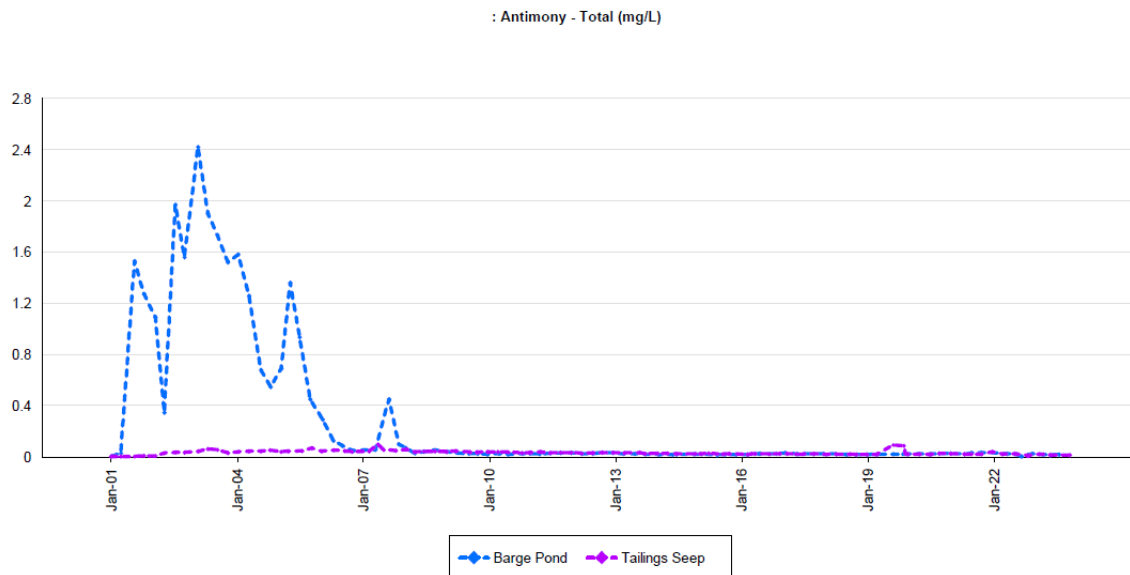


Figure 17: Average Quarterly Arsenic Concentrations in Seepage Reclaim & Decant

From: 1 January 2001 to 31 December 2023

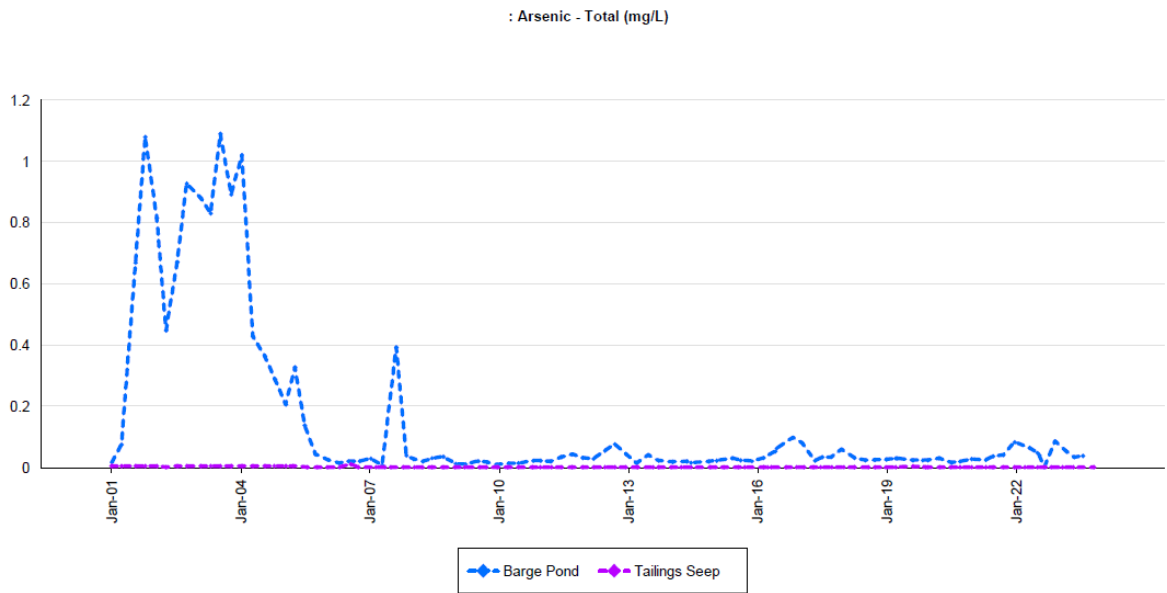


Figure 18: Average Quarterly Lead Concentrations in Seepage Reclaim & Decant

From: 1 January 2001 to 31 December 2023

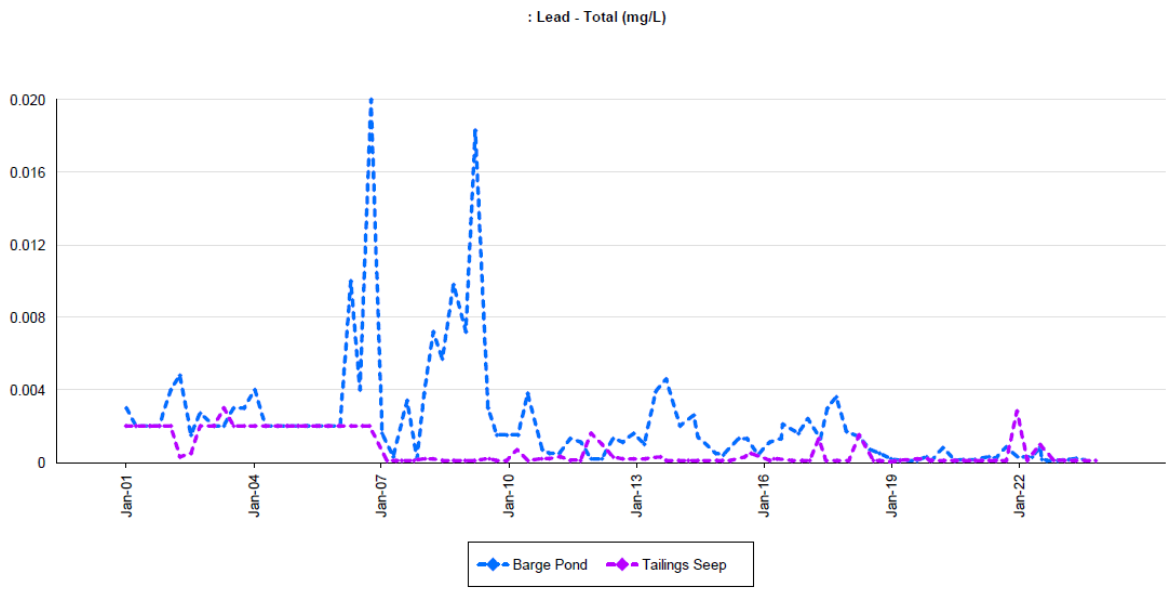
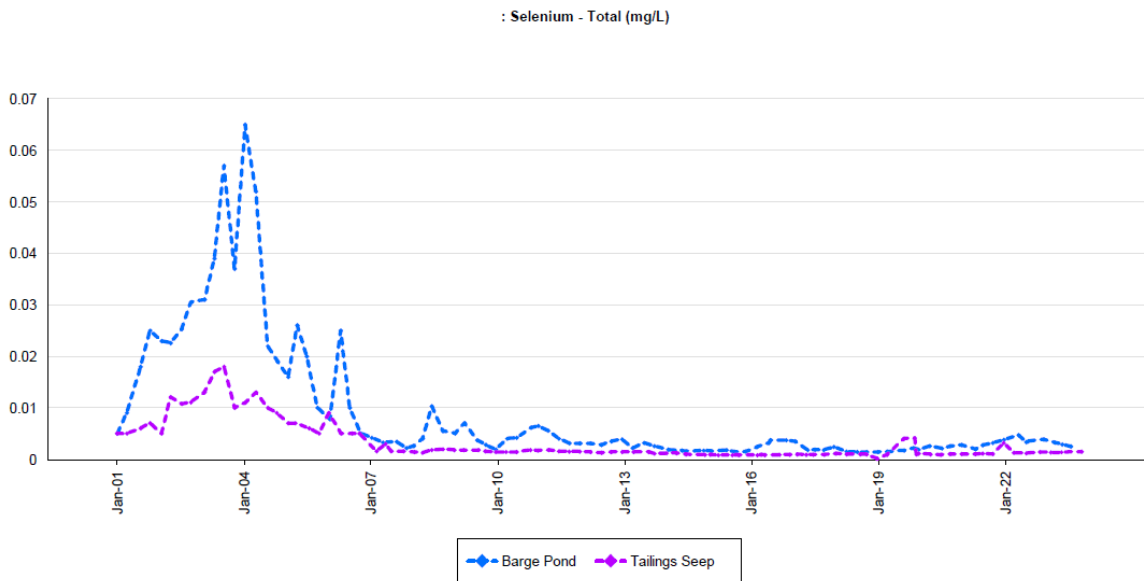


Figure 19: Average Quarterly Selenium Concentrations in Seepage Reclaim & Decant

From: 1 January 2001 to 31 December 2023



## 10. FRESH WATER SUPPLY RESERVOIR and WETLANDS

The Alaska Department of Fish and Game (ADF&G) continues with their work on the water supply reservoir (WSR) and associated wetlands. In the ADF&G technical report summarizing their 2023 work on the WSR and wetlands, certain conclusions were stated:

- Populations of Arctic Grayling (*Thymallus arcticus*) and Burbot (*Lota lota*) have been established and remain in the WSR.
- The post-mining population goal for the Arctic grayling in the WSR was set at between 800 and 1,600 fish greater than 200 mm in length. The spring 2022 population estimate for Arctic grayling was 4,594 fish greater than 200 mm in length. The population has declined since 2017 but increased in 2022 and remains above the post mining goal of between 800 and 1600 fish greater than 200mm. The population is anticipated to increase in the future with the substantial number of age one juvenile Arctic Grayling captured during the spring 2023 sampling event.
- A post-mining population goal was not established for the Burbot within the WSR; however, a small population of spawning fish larger than 400 mm remains present. In 2022, that population was estimated at 295 fish based on fall 2023 estimates. The 2022 WSR estimate for Burbot between the size 300 and 400 mm could not be calculated due to only one recapture in fall 2023.
- Active management of beaver populations within the developed wetlands appears to remain a critical component to ensure Arctic Grayling have access to spawning areas within the developed wetlands. The WSR appears to remain a critical component to the productive capacity of the wetland complex by providing overwintering and rearing habitat for both Arctic Grayling and Burbot.

The 2023 ADF&G technical report is currently under development.

During the summer of 2021 the water supply reservoir was partially drained so repair and maintenance activities could be conducted. These activities included concrete repairs to the ogee of the spillway inlet, concrete repairs to the anchors that support the bridge over the spillway, cleaning and vegetation removal from the spillway and spillway weep holes, and removal and reinstallation of the polysulfide grout installed between concrete joints. The repairs were completed, and the water supply reservoir has refilled.



## 11. RECLAMATION

### FORT KNOX & GILL

During 2023, FGMI have reclaimed total 6 acres of land including all drill pads for exploration. The reclaimed acres were part of APMA 2883 for Fort Knox and APMA 9156 for Gil. From the Gil, haul road berms were hydroseeded along the access road as part of the reclamation plan.

To prepare the WCHLF and the Barnes Creek Waste Rock Dump (BCWRD) for reclamation activities in accordance with the reclamation schedule, FGMI began re-grading both locations to their final reclamation slope of three to one. This work began in Q2 2022 for the WCHLF and in Q3 2022 for the BCWRD, and both re-grading projects are expected to be completed by mine closure.

During 2021 Fort Knox worked with O’Kane Consultants to design and install performance monitoring systems for two reclamation cover field trials (see

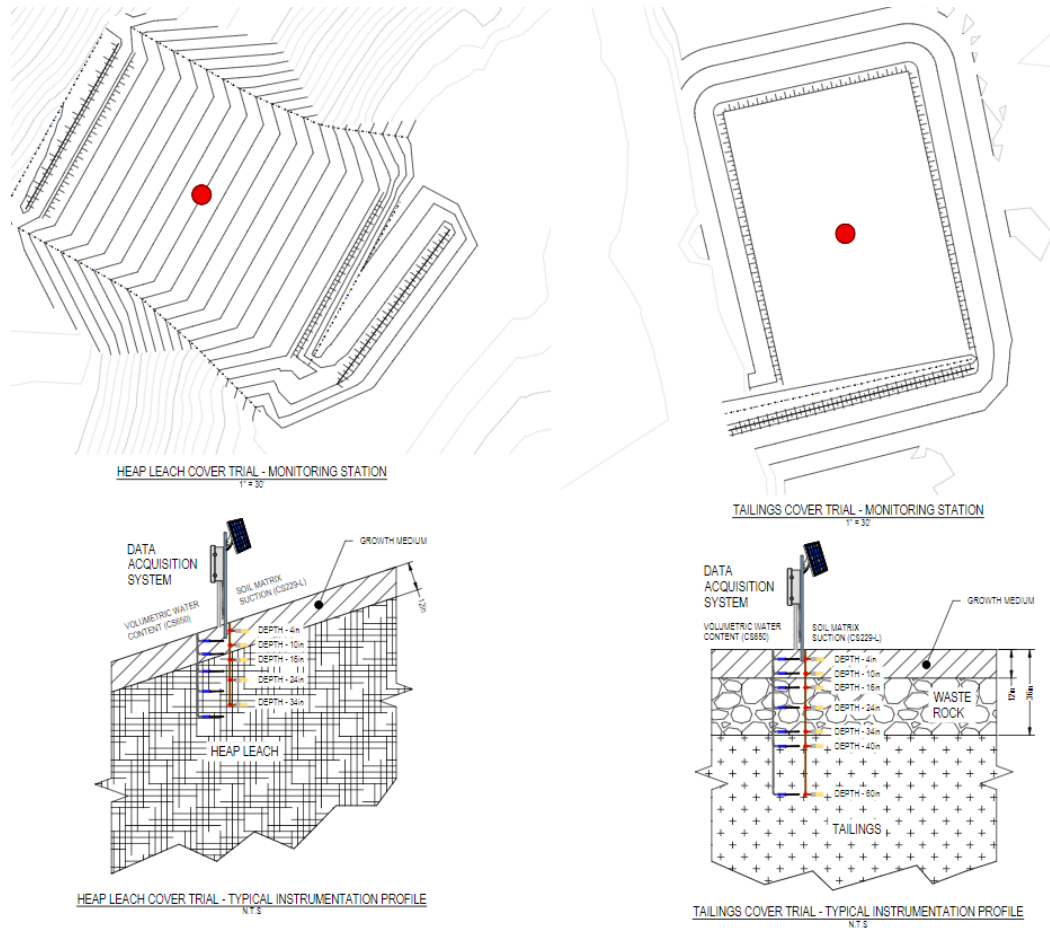
In 2023, Fort Knox collected the baseline data for the relative humidity, net radiation, precipitation, snow depth, volumetric water content, soil, and air temperature from both the meteorological station.

Figure 20). Two stations were installed at site in September 2021, and this work was completed in 2022. *In situ* instrumentation was installed in the cover profile and underlying waste material on the slope of the WCHLF and the TSF. The cover performance monitoring systems were designed to achieve the following objectives:

- Obtain a water balance for the cover trials;
- Characterize performance of the upper layer of the underlying waste material;
- Identify and characterize key mechanisms and processes that control performance;
- Track the evolution of the cover system performance in response to site-specific physical, chemical, and biological processes.

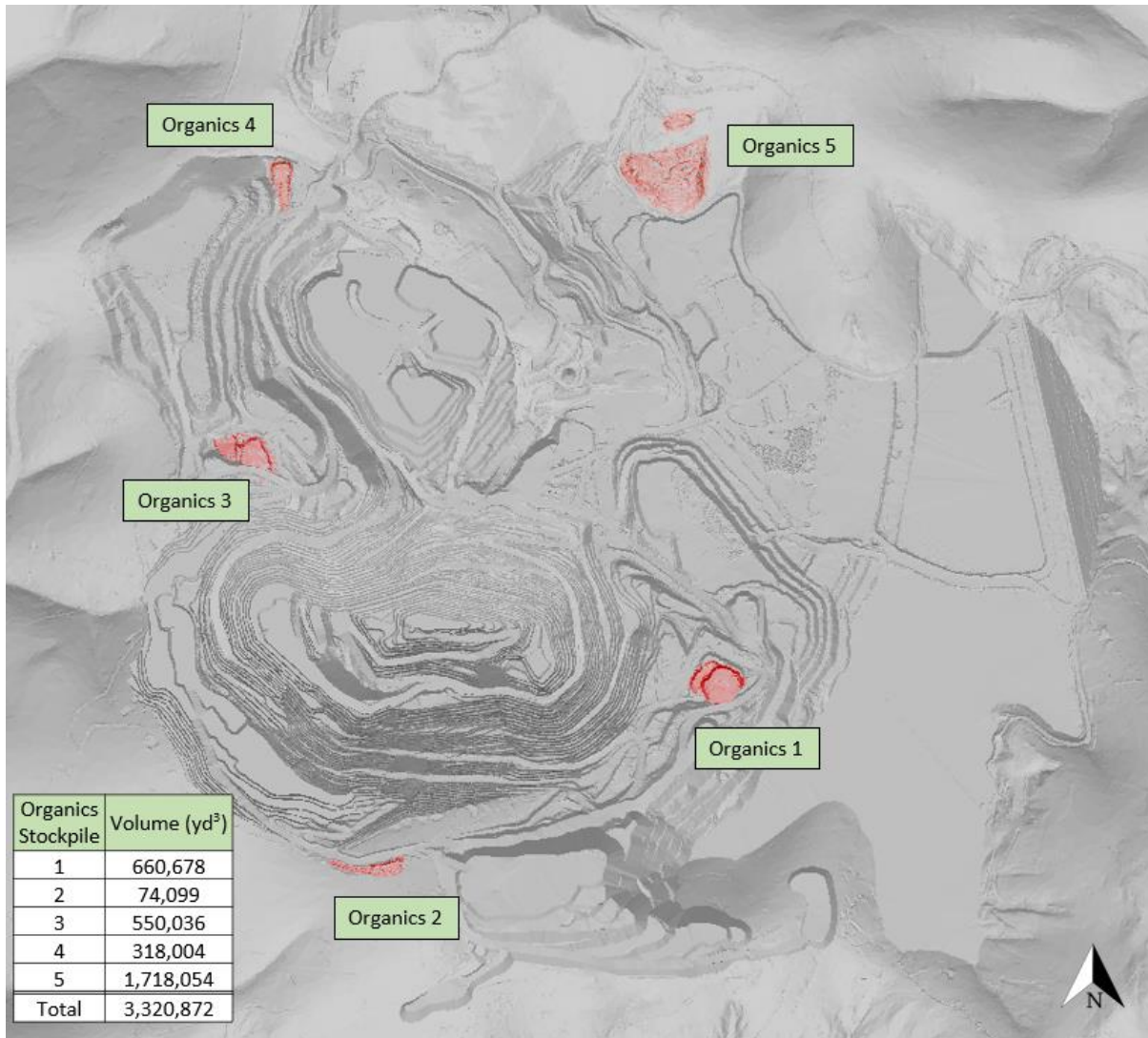
In 2023, Fort Knox collected the baseline data for the relative humidity, net radiation, precipitation, snow depth, volumetric water content, soil, and air temperature from both the meteorological station.

Figure 20: Cover Trial Instrumentation Details



Growth media is stockpiled for use in final reclamation and closure. It is estimated that approximately 3.6 million cy are required for final reclamation. **Error! Reference source not found.** 20 summarizes the volumes of growth media stockpiled that exist. A survey to determine the amount of growth media available will be done after the heap leach construction has been completed. A portion of the growth media stockpiled, and potential borrow sources are being identified for continuing construction activities.

Figure 20: Fort Knox Growth Media Stockpile.



**TRUE NORTH MINE**

Production from the True North Mine was terminated at the end of 2004. In 2009, the decision was made to abandon remaining reserves and to not continue with any additional mining at True North. FGMI submitted updated reclamation plans for True North in May 2012. The reclamation plan approval was issued by ADNR on July 26, 2012.

The True North annual inspection by ADNR performed on October 2, 2012 concluded all major earthwork and reclamation appeared to be complete, and FGMI could continue with post-closure monitoring and maintenance.

The reclamation plan prescribed a seed mix of 50% Arctared Red Fescue, 20% Tundra Glaucous Bluegrass, 20% Gruening Alpine Bluegrass, and 10% Tufted Hairgrass. The seed application rate was approximately 9 lbs/acre. Fertilizer was applied at a rate of 300 lbs/acre with a Nitrogen (N) -Phosphorous (P) - Potassium (K) analysis of 20-20-10. The final application of fertilizer was broadcast on 113 acres in 2014. The vegetation, natural reinvasion and applied is successfully



mitigating erosion a precursor to establishing post-mining land use. To date, in acres, the area regraded is 484; growth media place is 139; scarified is 482; and seeded and fertilize is 487.

ADNR conducted their annual inspection on August 7, 2020. The report concluded reclamation at the True North Mine site indicates that vegetative regrowth continues to occur, and woody species repopulation is occurring. The erosive features at the Davidson Ditch appears to be forming a stable channel and is providing a path for water away from the reclamation. Ground fractures and creep along the North Shepard Dump appear to be related to seasonal freeze thaw cycles (solifluction) and show signs of revegetation within the fractures, tentatively indicating stability. The majority of the earthworks appears to have been successful with recolonization of plant species.

On February 28, 2020, ADNR-DMLW issued a decision under PRJ 421311 to approve the final locations of an administrative realignment of RST 1932, Little Eldorado Creek Road.



On July 7, 2020 ADNR-DMLW issued as-built survey instructions for RST 1932 Little Eldorado Creek Road Relocation Project.

The field survey was completed in October 2020, and a set of draft as-built plans will be submitted to ADNR-DMLW in early 2021.

On December 2, 2020, ADNR recorded the determination to release of interest for millsite lease ADL 416509.

## 12. FINANCIAL ASSURANCE

As required by ADNR, ADEC and ACOE, the financial assurance amounts were revised and updated to reflect current plans for Fort Knox and Gil in 2023. The annual adjustment of financial assurance amount approved by the agencies are \$105,405,000 for Fort Knox and Gil. The financial assurance letter of credit (Irrevocable Letter of Credit No. S18572/260177, Amendment No. 15) was issued by the Bank of Nova Scotia on July 17, 2023 with an effective date of July 21, 2023 and provided to ADNR.

Table 5: Financial Assurance Amounts

Plan/Permit/Lease #	Amount (\$)
Fort Knox and Gil Reclamation and Closure Plan	\$105,405,000.
<b>Total</b>	<b>\$105,405,000.</b>

### 13. MINE WATER USEAGE (WATER BALANCE)

The Fort Knox water balance tracks water movement throughout the mine-site, including natural processes such as precipitation, evaporation, and seepage as well as mine operation water needs. The water balance that Fort Knox uses was built using GoldSim software. GoldSim is a graphical simulation software that facilitates the construction of complex models allowing FGMI to predict future water conditions.

The Fort Knox water balance focuses on mining and milling activities and is calibrated relative to measured bathymetric data on a quarterly basis. In doing so the confidence in the model's predictions increases with each iteration and our mine planning and mine closure design may be continually optimized. Data used in calibration activities included: tailing pond water levels, tailing pond bathymetry, seepage and interception rates, precipitation and evaporation records, dewatering pumping schedules, production data, mill water flows, tailings deposition schedules, and information on mine process changes.

The water balance is continually updated with the most current information, including natural water inflows/outflows and water use throughout the mine-site. The dynamic nature of the water balance enables FGMI to actively manage water on site, with the goal of minimizing water use and maximizing efficiency. Water uses at Fort Knox are summarized in Table 6.

Table 6: Fort Knox Water Use Summary for 2023

Use	Land Record	Summary	Volume (acre-ft/year)
Dewatering Wells	LAS 21760 LAS 28158	Pit Dewatering	1,698
Freshwater Reservoir	LAS 13986	Fresh Water for Milling	0
Interceptor Wells	LAS 13987 LAS 28160	Seepage Reclaim	2527
Tailings Facilitydw	LAS 13988 LAS 28161 LAS 33002	TSF to Mill/Heap Leach	13230

### 14. EXPLORATION

FGMI continues with an exploration program in the pit and in the surrounding area. In 2023, exploration occurred within the Fort Knox Upland Mining Leases and consisted of drilling on the east and west side of the Fort Knox Pit. Exploration drilling and reclamation activities occurred on permitted areas outside of the Upland Mining Leases.

In 2024, anticipated activities include continued exploration drilling in pit and on permitted areas outside of the Upland Mining Leases.

## 15. COMMUNITY AFFAIRS

Stakeholder feedback, be it positive or negative, is instrumental in providing Fort Knox with a platform to regularly evaluate and modify its operational and social performance to meet commitments to leading practice and continual improvement.

The objective is to outline Fort Knox’s commitment to demonstrate a transparent and trustworthy approach to issues management and to ensure that stakeholders can effectively communicate with Fort Knox. This includes a robust formal community grievance process.

Fort Knox external affairs:

- [www.kinross.com](http://www.kinross.com)
- [FortKnoxCommunityRelations@kinross.com](mailto:FortKnoxCommunityRelations@kinross.com).
- [www.facebook.com/KinrossAlaska](https://www.facebook.com/KinrossAlaska)

### 2023 COMMUNITY RELATIONS BENEFIT SNAPSHOT

#### FEEDBACK

78 positive expressions of support; 3 complaints, 27 positive and 38 neutral, and 61 negative press mentions. Letters to the editor: 33 positive and 113 negatives

#### NON-PROFITS HELPED

- 54 non-profits received financial assistance.
- Key areas of health, youth, education, and environment

#### STAKEHOLDERS DIRECTLY ENGAGED

- 6,847 one-on-one engagements on mine related matters.

#### DIRECT BENEFICIARIES

- 78,636 local people impacted by financial assistance and volunteerism.

#### IN-KIND ASSISTANCE

- Cash equivalent of \$91,190
- Includes time and non-cash items donated.

*“Thank you so much Kinross for your HEART OF GOLD campaign! We are so grateful for your very important community support for so many years.” Fairbanks Community Food Bank*

*Four out of five FNSB residents (83%) said mining was very important to their region’s economy including 50% who said it was very important. Just 12% said the industry was not important. (McKinley Research Group)*

