



Fort Knox

**ANNUAL ACTIVITY REPORT
for
REPORTING YEAR 2019**



February 2020

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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 2014DB0002 Modification #2 for the Fort Knox Mine.

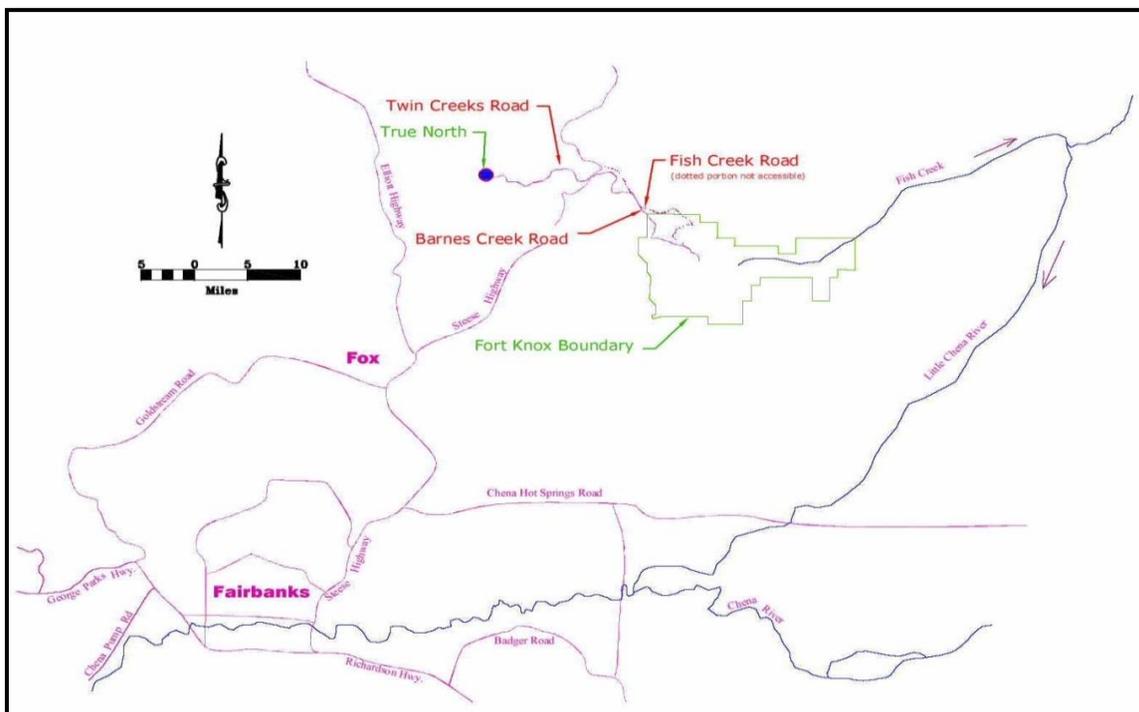
The Kinross Fort Knox mine includes the open pit mine, mill, tailings storage facility, water storage reservoir and the Walter Creek Heap Leach facility. Major reclamation activities at the True North Mine were completed in 2012. Post-closure monitoring and maintenance activities continue at True North. These facilities are located within the Fairbanks North Star Borough, approximately 25 highway miles northeast of Fairbanks, Alaska (Figure 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 2019, FGMI employed 655 people. Fort Knox produced 200,263 gold equivalent ounces in 2019.

This report describes the permitting, mining, milling, heap leach and reclamation activities during calendar year 2019 and planned activities for 2020.

Figure 1. Facility Locations



2. SUMMARY OF ACTIVITIES

In 2019, Fort Knox had a range of activities underway in the areas of production, construction, and permitting. In summary, these activities included:

- Construction continued on Phase 1 Barnes Creek Heap Leach Facility;
- Completed construction of the TSF dam north and south engineered zones to elevation 1559.5’;
- Onsite land farming continued at the Yellow Pup Waste Rock Dump for the 2013 Fuel Island decommissioning material from 2015;
- Mining of Phase 8 ore continued;
- Began mining activities of Phase 9 pit expansion including layback and ore;
- Submitted Reclamation and Closure Plan renewal application;
- Submitted Plan of Operations renewal application;
- Submitted Waste Management Permit renewal application;
- Submitted APDES discharge permit modification application;
- Received approval for construction of third reverse osmosis wastewater treatment system and completed its construction;
- Received approval for relocation of the 2015 fuel island and completed its construction;
- Completed construction of the TSF Phase 1 Causeway and received approval to place tails behind the causeway;
- Began placing tails behind the TSF Phase 1 Causeway;
- Poured Fort Knox’s 8-millionth ounce;
- 709-acre parcel G mine lease was approved and sign by FGMI and ADNR;
- and;
- True North reclamation completed in August 2012 and is under post-closure monitoring.



In 2020, the major activities planned include:

- Continue mining of Phase 8 including the East Wall portion of Phase 8;
- Continue mining activities of the Phase 9 pit expansion;
- Continue construction of the Barnes Creek Heap Leach Facility;
- Complete construction of Stage 1 Barnes Creek Heap Leach Facility;
- Conduct TSF Emergency Action Plan orientation and table top exercise March 26, 2020;
- Obtain approval for the Reclamation and Closure Plan renewal application;
- Obtain approval for the Plan of Operations renewal application;
- Obtain approval for the Waste Management Permit renewal application;
- Obtain approval for the APDES discharge permit modification application;
- Obtain approval for loading ore on Stage 1 Barnes Creek Heap Leach Facility;
- Begin loading ore on Stage 1 Barnes Creek Heap Leach Facility, and;
- Obtain approval for the Victoria Creek Waste Rock Dump.

3. PERMITTING ACTIVITIES

The following is a list of the approved plans and permits issued to FGMI in 2019:

- In January, US Army Corps of Engineers issued POA-1992-00574 Nationwide Permit No. 18 for 0.06 filling of wetlands activities associated with the Phase 1 Causeway;
- In January, ADNR Dam Safety issued Certificate of Approval to Operate Fort Knox Tailings Dam AK00212;
- In January, ADNR Dam Safety issued Certificate of Approval to Operate Rev 1 Walter Creek Heap Leach Pad Dam AK00310
- In March, ADNR Mining Section issued Extension of the Plan of Operations and Reclamation Plan approval for submittal of renewal application documents to September 1, 2019;
- In April, Alaska Department of Revenue issued FGMI Mining License 100051 ;
- In April, Alaska Department of Revue issued Melba Creek Mining License 99110;
- In April, ADNR Mining Section issued Plan of Operations Amendment 14 for clearing & grubbing associated with the Barnes Creek Heap Leach Facility;
- In April, ADNR Dam Safety issued Certificate of Approval to Operate Fort Knox Water Dam #AK00211;
- In April, ADNR Dam Safety issued Certificate of Approval to Operate Walter Creek Heap Leach Pad Dam AK00310;
- In April, ADNR Mining Section issued approval to Reclamation & Closure Plan F20149852RPA.4 for new fuel island;
- In May, ADNR issued Burning Permit F96134;
- In July, Alaska Division of Fire and Life Safety issued Certificate of Approval for the fuel island relocation;
- In July, ADNR Dam Safety issued Certificate of Approval to Modify Fort Knox Tailings Dam AK00212 for Phase 1 Causeway & Fish Creek East Waste Rock Dump;
- In July, ADNR Dam Safety issued Certificate of Approval to Modify Fort Knox Tailings Dam AK00212 for the seal zone raise to 1560’;
- In September, ADNR Dam Safety issued Extension to Expiration Date for Certificate of Approval to Operate Fort Knox Water Dam AK00211;
- In September, ADNR Dam Safety issued Certificate of Approval to Operate Fort Knox Tailings Dam AK00212, and;
- In November, ADNR issued Final Extension to the True North Mine Reclamation Plan approval.

The following is a list of the planned permitting activities for FGMI in 2020:

- Obtain approval for the Waste Management Permit renewal application;
- Obtain approval for the Plan of Operations renewal application;
- Obtain approval for the Waste Management Permit renewal application;
- Obtain approval for the Victoria Creek Waste Rock Dump;
- Obtain approval for construction of the TSF dam spillway;
- Obtain approval for construction of the Phase 1 Causeway and Fish Creek Waste Rock Dump Buttress;
- Obtain approval for expansion of the Yellow Pup Waste Rock Dum, and;
- Obtain approval for loading ore on Stage 1 of the Barnes Creek Heap Leach Facility.

4. LAND STATUS

The Fort Knox Mine and facilities encompass approximately 8,711 acres, of which there are no federal lands. The project area includes the Amended and Restated Millsite Lease (ADL 414960, 414961), The 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), and private lands. The Amended and Restated Millsite Lease contains approximately 6,525 acres of State of Alaska land.

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, all major health and safety procedures have been developed, are in practice and have matured to the world class safety culture we have today.

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

In 2019, Kinross Fort Knox was recognized for its safety performance and was awarded the most prestigious mine safety award in the United States. In October, the National Mining Association presented the Sentinels of Safety Award at a banquet in Washington D.C. This reinforced our strong commitment to safety after receiving the National Mining Associations CORESafety certification early in 2018.



All employees within the Fort Knox Team; whether Exempt or Non-Exempt, are a part of the safety culture. Behavioral based safety programs such as SOS (See It, Own It, Solve It) and employee direct engagements using the DuPont STOP

audit process allows us to be aware of our own safe behavior along with our coworkers. Fort Knox's own internal Living Our Values Awards (Gold Pan Awards) during the Holiday Season helps us remember our core values while also recognizing outstanding employees. A few other safety programs used mine wide include Field Level Risk Assessment (FLRA), Job Hazard Analysis (JHA) and Permit to Work (PTW). PTW programs include confined space entry, hot work, working at heights, trenching and excavation, and ground penetration. Additionally, as a corporation, the Kinross mines have implemented RISKMaps Critical Risk Management Program in support of the high potential incident reporting, and learn & live initiatives.



INTERNATIONAL CYANIDE MANAGEMENT CODE

Kinross Fort Knox is a signatory company of the International Cyanide Management Code for the Manufacture, Transport, and Use of Cyanide in the Production of Gold (Code). The Code's development occurred in the early 2000s and implemented in 2005 for safe and responsible management of cyanide by an international multi-stakeholder committee under the auspices of the United Nations Environment Program (UNEP) and is administered by the International Cyanide Management Institute (ICMI). As a signatory company, Fort Knox is required to meet the Code's Principles and Standards of Practice criteria, which is verified by strict independent third-party auditing. Fort Knox achieved Code certification in February 2008, received recertification in September 2011, February 2015, and most recently August 2018. Fort Knox certification summary audit reports may be found at <http://www.cyanidecode.org>.

MINE ACCESS

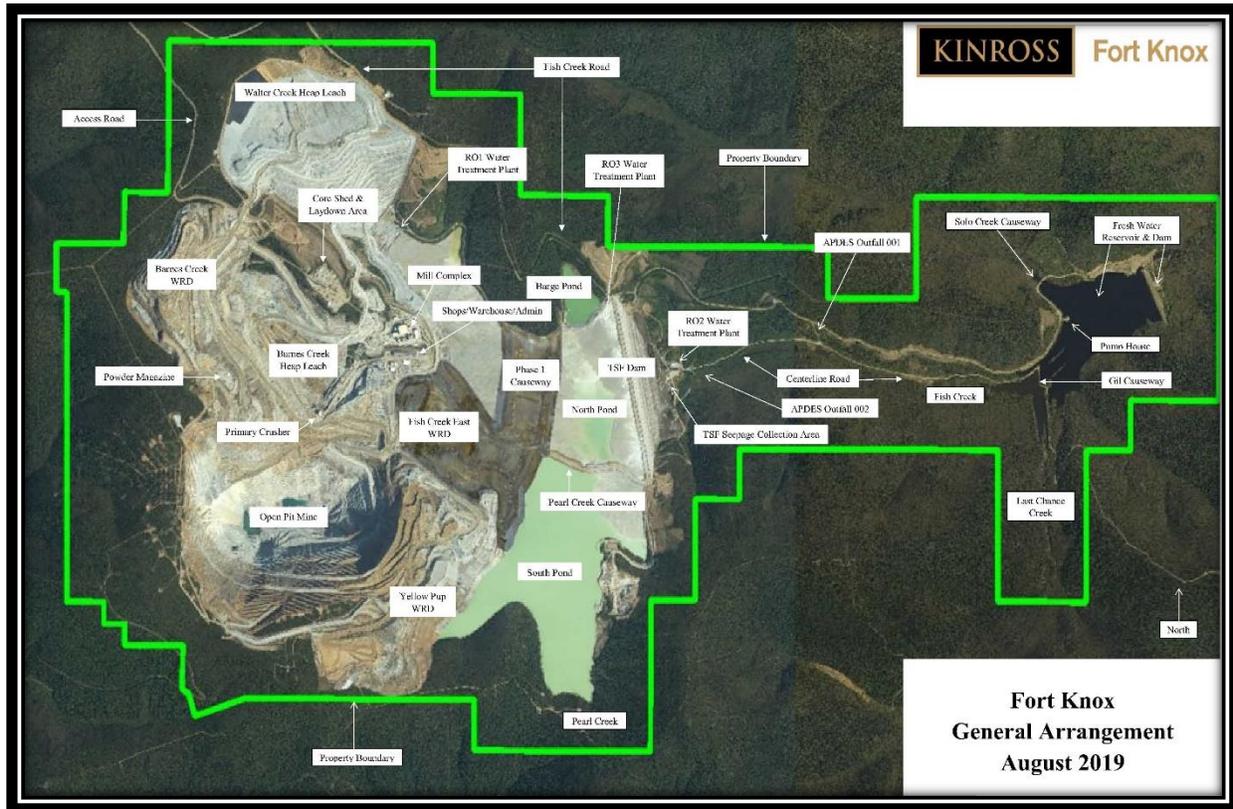


FGMI continues to maintain the mine access roads from the Steese Highway to Fort Knox and True North (Figure 1). The road surface is graded to insure a smooth running surface and proper drainage. During the winter months, the Fort Knox road is kept free of snow and is sanded as necessary to maintain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

FGMI Security continues to patrol the mine site and access roads to ensure the safety of our 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 2019, FGMI mined 77.9 million tons of ore and waste from the Fort Knox pit with an average production rate of 213.3 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
Total	250.93	94.17	144.98	625.26	1115.36

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.

In 2015, mining within the Fort Knox open pit occurred in Phase 7 and Phase 8. Phase 7 stripping commenced in the 4th quarter of 2008. Stripping for phase 7 continued into 2012 before sustained ore was achieved. 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 will continue until 2021.

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 is anticipated to commence in mid-2021 and will continue until mining activities end in 2027.

Figure 4: Fort Knox Pit Phases



DEWATERING

As of the end of 2019, the dewatering system is comprised of 34 pit dewatering wells and 6 Fish Creek wells (located north and out of the pit in the Barnes Creek/Fish Creek drainage). Through the course of 2019, seven new wells were added; two on the east wall DW19-482 and DW19-486, three in Gilmore on the west wall DW18-487, 493, 497, and one in the Barnes Creek DW19-499, and one in the Fish Creek, DW19-488.

The average pumping rate from the dewatering system in 2019 was 3,477 gpm, which was 35% higher than 2018. Approximately 50% of dewatering flow was pumped to the tailings impoundment. Approximately 9% was pumped directly from the Fish Creek wells to the Mill. Approximately 41% was discharged to the freshwater reservoir. Total Fish Creek production for the year was 1,249,250,000 gallons. Pit production was 578,016,000 gallons. Fish Creek flow to the Mill was 164,322,000 gallons.

Select piezometers 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 Alaska Department of Environmental Conservation (ADEC), Division of Water in early 2012. ADEC granted FGMI an APDES permit in August 2012 and effective October 2012 to discharge non-process and non-contact groundwater extracted from pit dewatering wells into the Old Fish Creek Channel (Outfall 001) from which it flows to the

freshwater reservoir. Since receiving the APDES permit and until March 3, 2015, there was no discharge of dewatering well water. Discharge of dewatering well groundwater that did not require treatment began on March 4, 2015. The APDES permit was reissued by the ADEC on April 30, 2018, became effective June 1, 2018, and expires on May 31, 2023. The reissued permit authorizes discharge to two outfalls (Outfall 001 and Outfall 002).

On June 24, 2016, the first reverse osmosis water treatment system (RO #1) became operational. RO #1 discharged treated effluent to Outfall 001 from January-April 2019. Discharge monitoring at Outfall 001 demonstrated compliance with all permit effluent limits throughout 2019. On April 25, 2019 the discharge from RO #1 was redirected to Outfall 002.

The second reverse osmosis water treatment system (RO #2) for the TSF seepage and intercept water was constructed in and underwent commissioning activities in 2018. RO #2 began discharging treated effluent to Outfall 002 on January 15, 2019.



The third reverse osmosis water treatment system (RO #3) for TSF pond water was constructed in and underwent commissioning activities in 2019. RO #3 began discharging treated effluent to Outfall 002 on June 22, 2019.

Two weekly discharge monitoring samples at Outfall 002 exceeded permit effluent limits in 2019. On September 25, 2019 a sample from Outfall 002 measured 22.5 ug/L weak-acid dissociable (WAD) cyanide. This exceeded the Maximum Daily Limit (MDL) of 10 ug/L. Upon receiving this result, FGMI halted discharge from Reverse Osmosis (RO) Treatment Plant #3, the most probable source of the exceedance, on October 9. RO #3 was taken out of service until operational sampling demonstrated compliance with permit limits.

On December 18, 2019 a sample from Outfall 002 measured 243 ug/L WAD cyanide. This exceeded the MDL of 10 ug/L, and this single sample result caused an exceedance of the Average

Monthly Limit for December. FGMI halted discharge from RO #3, the source of the exceedance, on December 19. RO #3 is currently out of service and will remain out of service until compliance can be assured.

The total dewatering well groundwater (treated and non-treated) discharged was 2,305 acre feet in 2019.

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 Walter Creek Heap Leach Facility and Barnes Creek Heap Leach Facility. Mill tailings are discharged into the TSF below the mill. Table 2 displays a summary of the tonnage milled from November 1996 through December 31, 2019.

The mill continues to focus on operational improvements to increase throughput, recovery, efficiency and reliability.

Table 2. Fort Knox Annual Milling Rates

Year	Mill Production (Million Tons)
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
Total	326.48

The projected mill throughput for 2020 is approximately 8.81 million tons.

8. HEAP LEACH

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 2018, approximately 17.98 million tons of ore were placed on the heap leach. Since the loading of heap leach ore began in 2009, a total of approximately 253 million tons have been placed on the heap leach, and 1,163,904 ounces of gold have been produced.

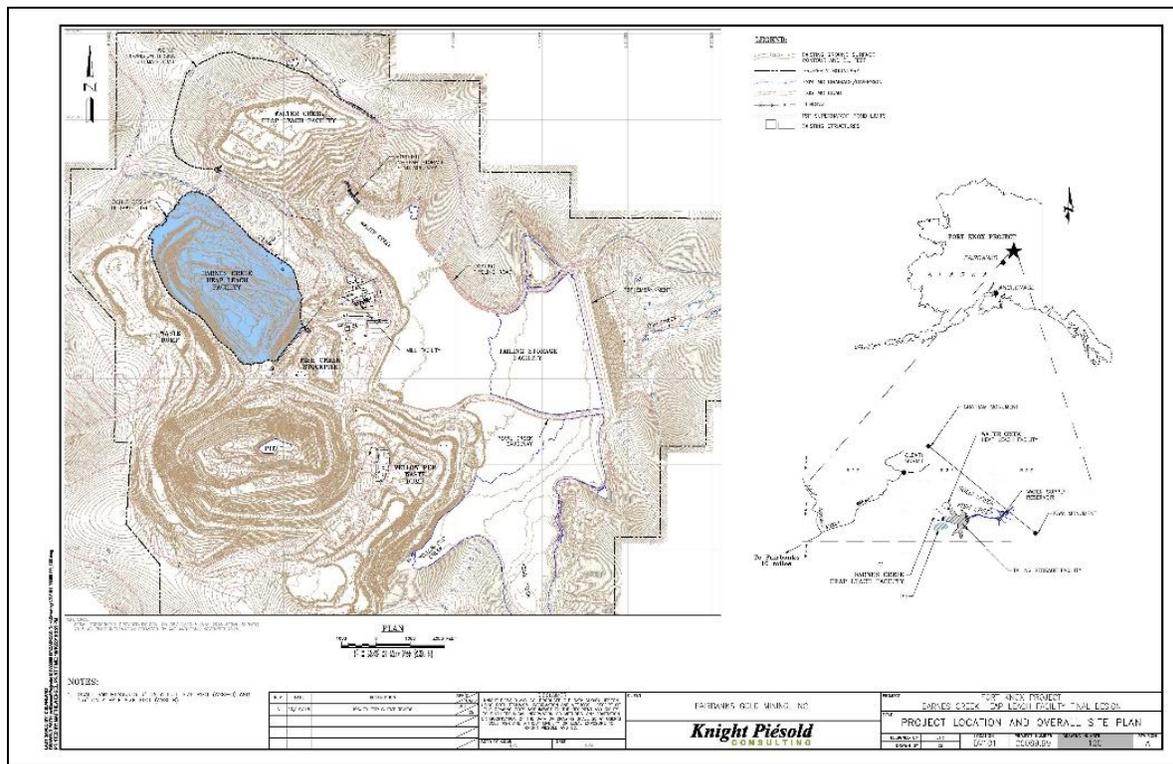
In 2011, construction of Stage 3 of the heap leach pad began and its construction completed in 2013. The Stage 4 construction of the heap leach pad began in 2012 and was completed in 2014. The Stage 5 construction began in 2012 with clearing

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 heap leach ore placement for 2020 is 25.88 million tons.

The Barnes Creek Heap Leach Facility (BCHLF) received permit approval for construction in 2017 (Figure 5). 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 which will proceed from construction to production in late 2020.



Figure 5. Barnes Creek Heap Leach Facility



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

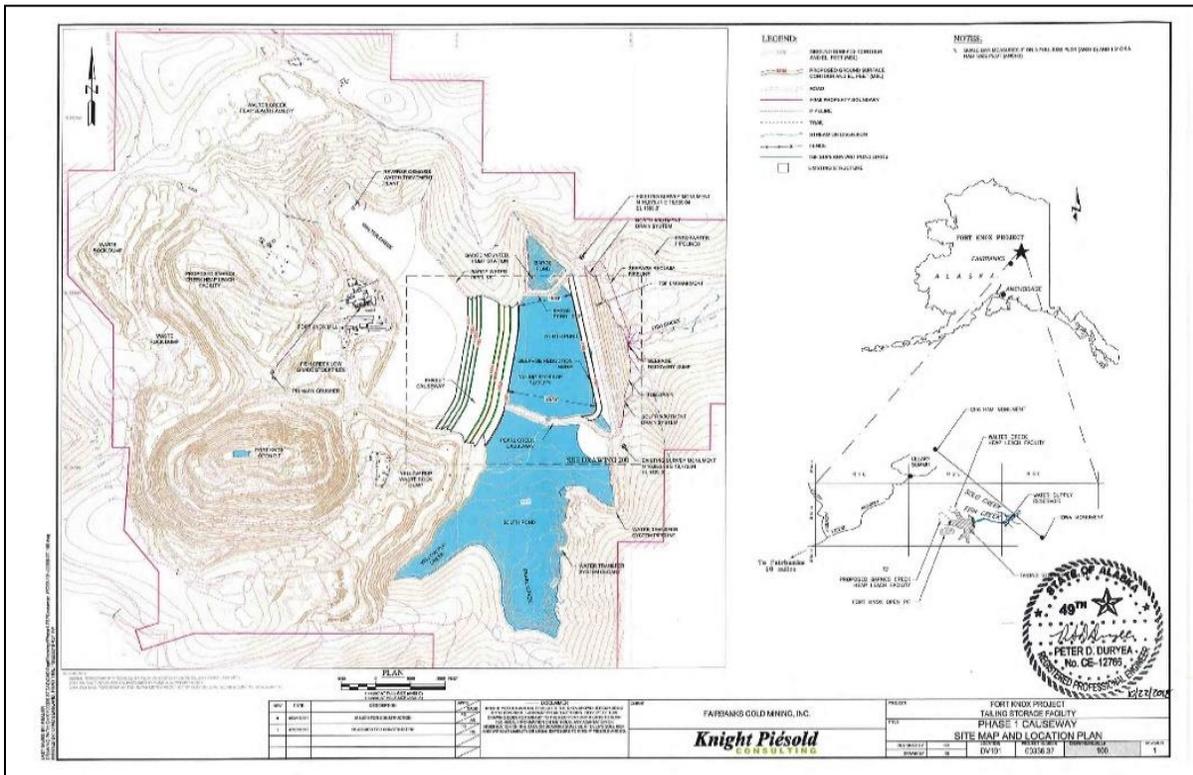
acres. The north pond fluctuates in size but covers an area that generally ranges from 300 to 400 acres. The south pond will fluctuate slightly, but should remain close to 245 acres. A bathymetric survey conducted in September 2019 showed the barge pond, north pond, and south pond contain approximately 14,110 acre-feet of water. This is a slight decrease in the volume of the ponds from September 2018 despite above average precipitation during this period. Water management has been a priority for the site in 2019 and will continue to be important in 2020.

The TSF dam is approximately 4,865 feet long and has a crest height of 385.5 feet. 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 TSF berm located upstream of the TSF dam was approved and completed in 2018. Placement of tailings between the dam and berm was completed the summer of 2019. The berm was constructed to provide additional long-term dam stability.

Construction of the Phase I Causeway was approved to elevation 1,580 fmsl. Construction began in 2018 and was completed in 2019 with placement of tailings starting in the fall of 2019 (Figure 6).

Figure 6. TSF Phase 1 Causeway



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 (Figure 2). The interceptor system is a series of interceptor wells developed downstream of the dam (Figure 8).

Most of the seepage passing beneath the dam feeds into a large lined sump. The interceptor system collects the remaining water and is pumped to the sump. All the water from the sump is pumped at average rate of 2,185 gpm to the RO #2 reverse osmosis treatment system before the treated effluent is discharged to the APDES permit Outfall 002.

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 pumping rates ranging from approximately 8 gpm to 125 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 (Figure 9).

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 (Figures 8 and 9).

Figure 8. Operating Interceptor System

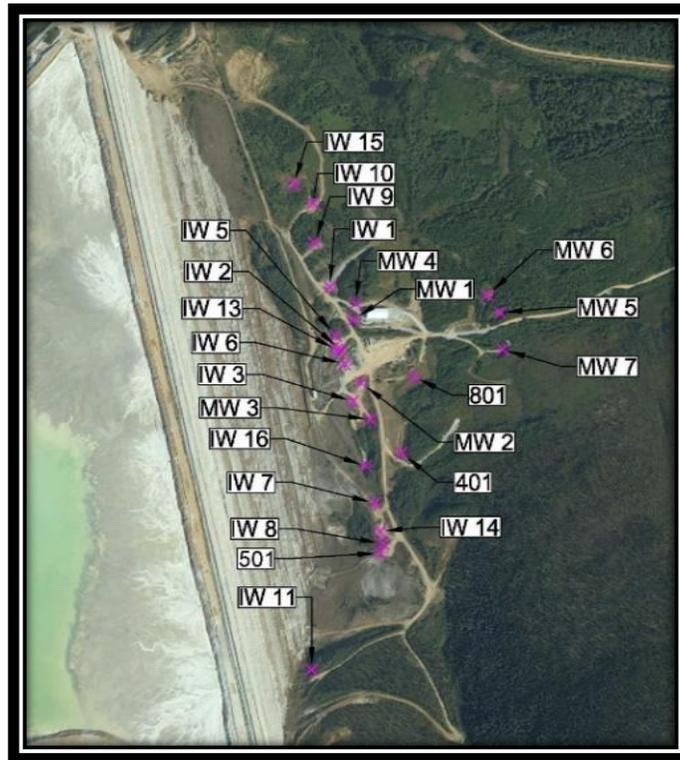


Figure 9. PMW Wells



Table 3. TSF Interceptor System Pumping Rates

Well ID	Approximate Average Pumping Rate (gpm)	Well Depth (ft)
IW-1	81	320
IW-2	8	329
IW-3	26	310
IW-6	14	380
IW-7	9	197
IW-8	125	184
IW-11	18	296
IW-13	89	480
IW-14	58	405
IW-16	24	342
Well 401	0	36
Toe Drain (501)	60	n/a
Total	512	

TSF DECANT AND SEEPAGE METALS CONCENTRATIONS

Antimony, arsenic, lead, and selenium concentrations continue to be analyzed in the TSF decant and seepage reclaim (Figures 10, 11, 12, and 13). 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 metals 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 10. Average Quarterly Antimony Concentrations in Seepage Reclaim & Decant

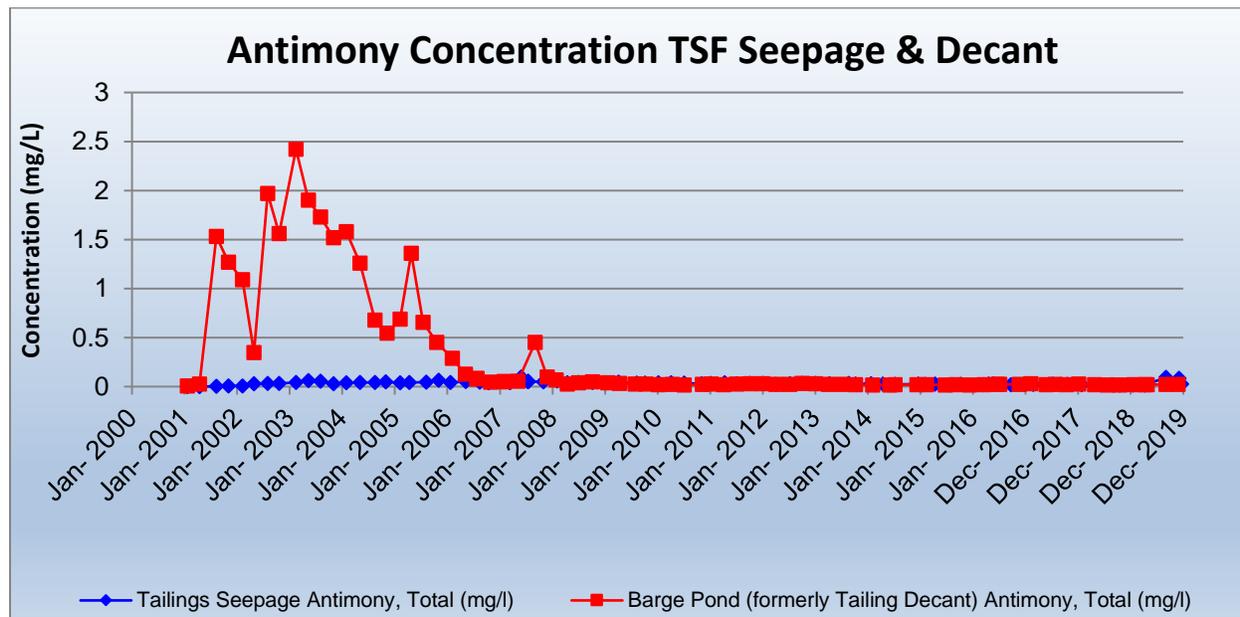


Figure 11. Average Quarterly Arsenic Concentrations in Seepage Reclaim & Decant

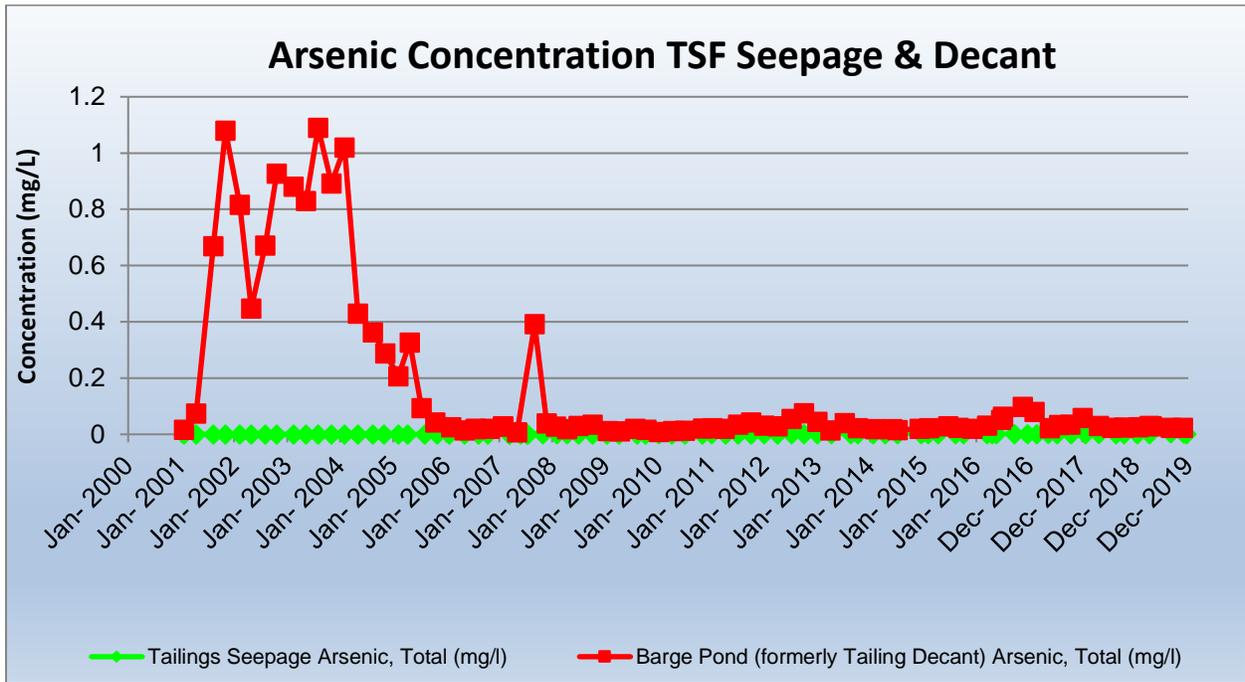


Figure 12. Average Quarterly Lead Concentrations in Seepage Reclaim & Decant

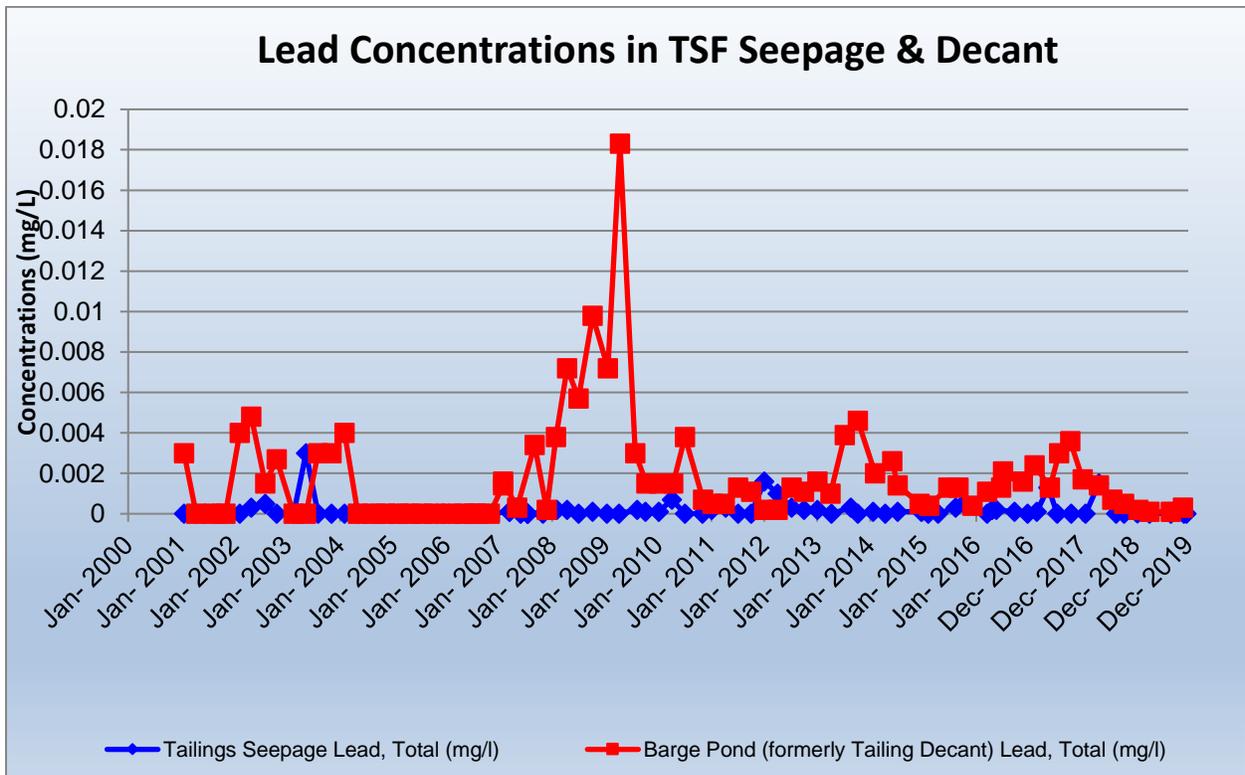
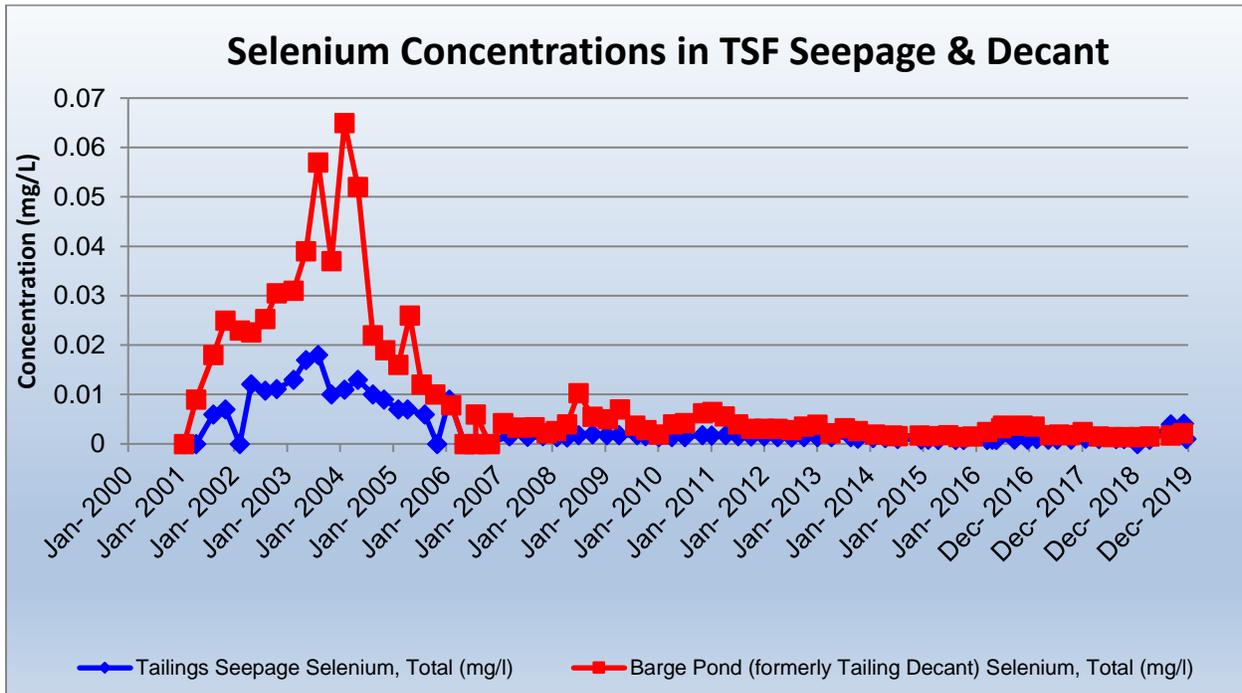


Figure 13. Average Quarterly Selenium Concentrations in Seepage Reclaim & Decant



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 2019 work on the WSR and wetlands, certain conclusions were stated:



- Populations of Arctic grayling and burbot have been established and remain in the WSR.
- The post-mining population goal for the Arctic grayling in the WSR was set at 800 to 1,600 fish greater than 200 mm in length. The spring 2018 population estimate for Arctic grayling was 6,045 fish greater than 200 mm in length, which is a decrease from the estimated 2016 population, but well above the post-mining population goal.
- 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 2018, that population was estimated to be 402 fish.
- 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.

11. RECLAMATION

FORT KNOX

Reclamation activities in 2018 included the continuation of the 2017 wetland vegetation plot trial. The goal for 2017 was to test the growth of herbaceous plant species on the tailings without growth media amendment. The test bed was 746 sq. ft. and was constructed containing mine tailings taken directly from the TSF. The location of the test bed is near the head of the TSF, thus, weather conditions should mimic those of the TSF. The test bed was constructed over a liner to retain water during precipitation events and mimic wetland conditions adjacent to proposed ponds. The 2019 goal was to monitor the 2017 test plot with no addition of seed or fertilizer. The wetland seed mix continued to grow and thrive in 2018 and 2019 without additional seeding or fertilizer. Dead vegetation is matting over the soils under 2019's new growth, which leads to a reduction of soil erosion due to runoff or precipitation



Growth media is stockpiled for use in final reclamation and closure. It is estimated that approximately 3.6 million cubic yards (cy) are required for final reclamation. Table 4 summarizes the volumes of growth media stockpiled that exist and are planned. 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 available borrow sources have been used because of its suitability for use as engineered seal and filter material for the TSF dam and engineered sub-base for the heap leach. Potential borrow sources are being identified for continuing construction activities.

Table 4. Fort Knox Growth Media Stockpile and Borrow Quantities

Site (Stockpile or Borrow Area)	Volume Available (CY)
WC Heap Leach GM 1 (stockpile)	782,400
Barnes Creek GM 1 (stockpile)	377,600
Barnes Creek GM 2 (stockpile)	240,800
Barnes Creek GM 3 (stockpile)	200,300
Barnes Creek GM 4 (stockpile)	14,170
Yellow Pup GM 1 (stockpile)	844,500
Yellow Pup GM 2 (stockpile)	13,100
Yellow Pup GM 3 (stockpile)	37,900
TSF South GM 1 (stockpile)	291,400
TSF South GM 2 (stockpile)	26,800
TSF North GM (borrow area)	3,186,400
WC Heap Leach GM 2 (borrow area)	1,625,000
Total Stockpile	2,828,970
Total Borrow Available	4,811,400
Total Available	7,640,370

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.

ADNR conducted their annual inspection on July 2, 2019. 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. Any work taken to try and seal this feature would have a negligible benefit. 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.

In 2019, ADNR extended the True North Reclamation and Closure Plan Approval (F20127522) through July 25, 2022 and issued an approval for the partial release of financial assurance.

On May 10, 2019 ADNR (Easement Section) was onsite to view the RS 2477 trails. A decision document is expected in 2020. FGMI will continue to work with ADNR in 2020 to finalize the Record of Survey for the RS 2477 trail system.



To date, in acres, the area regraded is 484; growth media place is 139; scarified is 482; and seeded and fertilize is 487.

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 True North in 2019. The annual adjustment of

financial assurance amount approved by the agencies are \$97,496,878.00 for Fort Knox and \$625,799.00 for True North. The financial assurance letter of credit (Irrevocable Standby Letter of Credit No. S18572/260177, Amendment No. 10) was issued by the Bank of Nova Scotia on January 21, 2019 and provided to ADNR.

The financial assurance estimate for the Fort Knox Reclamation and Closure Plan and the Waste Management Plan were revised during 2019 and are currently in the approval process. An agreement is expected in 2020 and the irrevocable Standby Letter of credit will be amended accordingly.

On December 16, 2019, ADNR issued a partial release of financial assurance for the True North Reclamation Plan Approval F20127522 and Millsite Lease ADL 416509. The irrevocable Standby Letter of credit will be amended in 2020 to reflect the amount of \$20,000. Table 5 reflects the financial assurance for Fort Knox and True North.

Table 5. Financial Assurance Amounts

Plan/Permit/Lease #	Amount (\$)
Fort Knox Reclamation and Closure Plan	\$97,496,878.00
True North Reclamation and Closure Plan	\$ 625,799.00
<i>Total</i>	<i>\$98,122,677.00</i>

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 models predictions increases with each iteration and our mine planning and mine closure design may be continually optimized. Data used in calibration activities includes: 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 2019

Use	Land Record	Summary	Volume (acre-ft/year)
Dewatering Wells	LAS 21760	Pit Dewatering to TSF	2,799
	LAS 28158	Pit Dewatering to Discharge	2,305
		Pit Dewatering to Mill	504
Freshwater Reservoir	LAS 13986	Fresh Water for Milling	0
Interceptor Wells	LAS 13987	Seepage Reclaim	3,525
	LAS 28160		
Tailings Facility	LAS 13988	TSF to Mill/Heap Leach	11,750
	LAS 28161		
	LAS 33002		

14. EXPLORATION

FGMI continues with an exploration program in the pit and in the surrounding area. In 2019, exploration primarily occurred within the Fort Knox Upland Mining Leases and consisted of drilling on the west side of the Fort Knox Pit. Minor exploration drilling and reclamation activities occurred on permitted areas outside of the Upland Mining Leases.

In 2020, anticipated activities include continued exploration drilling in pit and on permitted areas outside of the Upland Mining Leases.

15. COMMUNITY AFFAIRS

FORT KNOX EXTERNAL STAKEHOLDER FEEDBACK PROCEDURE



Stakeholder feedback, be it positive or negative, is instrumental in providing Fort Knox with a platform upon which its operational and social performance can be regularly evaluated and modified to meet commitments to leading practice and continuance improvement. The objective of our procedure 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.

External stakeholder feedback should be directed to the External Affairs Manager, Anna Atchison (907-490-2218) who serves as the primary site point of contact, working closely with the General Manager and appropriate department managers.

2019 COMMUNITY RELATIONS BENEFIT SNAPSHOT

FEEDBACK

133 positive expressions of support; no grievances
-This includes press mentions

NON-PROFITS HELPED

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

STAKEHOLDERS DIRECTLY ENGAGED

9,799 one-on-one engagements on mine related matters
-Tours, events, etc.

DIRECT BENEFICIARIES

60,939 local people impacted by our financial assistance and volunteerism

IN-KIND ASSISTANCE

Cash equivalent of \$183,865
-Includes time and non-cash items donated

“You are the reason we have COMMUNITY as our middle name. You really charged the heart-batteries of those who do the work of this food bank.”

“Its companies like Kinross Fort Knox that care about making Alaska a better place.”

