FACT SHEET
(Pursuant to Nevada Administrative Code (NAC) 445A.401)

Permittee Name: **Nevada Gold Mines LLC.**

Project Name: **Mill 5/6-Gold Quarry-James Creek Project**

Permit Number: **NEV0090056**
Review Type/Year/Revision: **Renewal 2022, Fact Sheet Revision 00**

A. Location and General Description

Location: The **Mill 5/6-Gold Quarry-James Creek Project** is located within the Maggie Creek Basin of the Tuscarora Mountains, in north-central Eureka County, between 6 and 21 miles north of the town of Carlin. The facilities are located in portions of Sections 1-4, 10-15, Township 33 North (T33N), Range 51 East (R51E); Sections 6, 7, 18, T33N, R52E; Sections 4, 5, 8, 9, 16, 21-23, 25-28, 33-36 T34N, R51E; Sections 29, 31, and 32, T34N, R52E, Sections 19, 29, 30, and 32, T35N, R51E, Sections 2-3, 10-15, 23 and 24, T35N R50E, Mount Diablo Baseline & Meridian (MDB&M). The Project may be accessed by traveling 23 miles west from Elko (the nearest controlled airport facility) on Interstate Highway 80 to the Carlin exit, then north 6 miles on Nevada State Route 766.

General Description: The Project consists of active and inactive open pit (Gold Quarry, Pete, Castle Reef, Crow, Mac, Tusc) and underground (Carlin East, Chukar, Leeville, and Pete-Bajo) gold mining operations, from which oxide and sulfide ores are extracted; four tailings storage facilities (TSFs), including the inactive James Creek TSF, the Mill 5/6 TSF (later renamed the Mill 5/6 Central TSF to distinguish it from later TSFs), the Mill 5/6 West TSF, and the Mill 5/6 East TSF; the Mill 5/6 Caro's Acid Plant and Mill 5/6 Tailings Booster Pump House; the Mill 5/6 West Tailings Booster Pump House; the inactive Gold Quarry Heap Leach pad; the Gold Quarry Solution Pond and Pumpback System, Gold Quarry Refractory Ore Stockpile Pad, and Gold Quarry Refractory Ore Stockpile Collection Pond; the North and South Waste Rock Disposal Facilities (WRDF); the engineered Leeville Section 3 WRDF and Leeville Mine Refractory Ore Stockpile; the Pete engineered WRDF, constructed as Phase IA, Phase IB, and Phase II, and the Pete Refractory Ore Stockpile with solution collection pond; the 3-phase Mac WRDF Stage 1; the Leeville Paste-Fill Project with stockpiles, plant, and pond; the Mill 5/6 beneficiation complex comprised of a conventional carbon-in-leach (CIL) gold recovery mill with a separate sulfide froth flotation circuit (Mill 5), and the adjacent Mill 6 Refractory Ore Treatment Plant (ROTP), which utilizes roaster technology and conventional CIL gold recovery to facilitate gold extraction from refractory (carbon- and/or sulfide-rich) ores and a magnetic separator process circuit to recover encapsulated gold in the tails stream; a quench-water cooling facility; a carbon handling and stripping facility; a gold refinery; water quality monitoring wells; and associated pipelines, ditches, process and stormwater ponds, pumps, and containment for conveyance and control of process solutions within the facility.

B. <u>Synopsis</u>

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General: Water Pollution Control (WPC) Permit NEV0050031, first effective 28 January 1986, was issued for operation of the Gold Quarry Heap Leach and James Creek Tailings Storage facilities. WPC Permit NEV0090056, first effective 07 March 1991, was issued for operation of the original New Mill 2/5 TSF, comprised of the existing mills #2 and # 5 and the newly constructed 2/5 tailings storage facility. The latter complex was renamed the Mill 5/6 TSF (and later renamed the Mill 5/6 Central TSF to distinguish it from the Mill 5/6 West TSF and Mill 5/6 East TSF) when, as part of a minor modification of the Permit, dated 02 June 1994, Mill #2 was decommissioned and some of its major components were transferred to the new Mill #6 constructed to treat refractory (sulfidic and carbonaceous-sulfidic) ores.

On 19 June 1997, the Division approved a request from Newmont Mining Corporation (the Permittee at the time) to consolidate WPC Permit NEV0050031 with WPC Permit NEV0090056. The rationale was to incorporate all related process components of the two existing permits into a single comprehensive WPC Permit NEV0090056. The consolidation was accomplished with the 2002 renewal of WPC Permit NEV0090056. WPC Permit NEV0050031 was simultaneously cancelled.

In July of 2019, Newmont Mining Corporation formed a joint venture with Barrick Gold Corporation and transferred WPC Permit NEV0090056 to Nevada Gold Mines LLC, the current owner and operator of the Project.

Oxide gold ore to feed the processing facilities has been produced since 1985 from the Gold Quarry open pit, which was originally named the Maggie Creek Pit and started in 1980. The Mac and the Tusc pits (backfilled in 2019 and 2020, respectively) were developed in 1994, to access satellite, oxidized orebodies. Although not currently active, some reserves remain in these two areas. A minor modification to WPC Permit NEV0090056 was approved, by the Division, on 12 June 1998, to allow mining and processing of refractory gold ore from the underground Goldbug mine, since transferred to Barrick Corporation, and the underground Deep Post mine, as well as the deepened Gold Quarry Pit. The Deep Post Mine entered permanent closure in 2010. A further major expansion of the Gold Quarry Pit was proposed in a Draft EIS issued by the United States (U.S.) Department of the Interior, Bureau of Land Management (BLM) in September 2000. Preliminary planning work for the proposed Greater Gold Quarry Project, such as waste rock characterization and basic component design evaluation, was initiated in 2011. The proposed expansion will require a major modification to the WPC Permit.

An application and fee were received in June 2002, for a major modification to the Permit, effective 11 April 2003, authorizing construction of the Leeville Mine comprised of an underground mine, an engineered waste rock disposal facility, designed to receive potentially acid generating (PAG) material, an engineered refractory ore stockpile, and associated facilities. Production shaft sinking for the mine commenced in early 2003 and was completed in 2005. The Project created approximately 473 acres of new disturbance.

An application and fee were received in February 2003, for a major modification to the Permit to authorize construction of the Pete Mine comprised of three open pits, identified as Pete, Castle Reef, and Crow, and associated facilities including an engineered WRDF designed to receive PAG material and an engineered refractory ore stockpile. Construction of the mine and associated facilities began in mid-2003. The Project created approximately 863 acres of new disturbance including 506 acres of public land and 357 acres of private land.

An application and fee were received in October 2006, for a major modification of the Permit to construct the Mill 5/6 West TSF. The construction, initiated in mid-2007, will accommodate approximately 51.1 million tons of dewatered tailings material when completed in three phases in accordance with the approved design. The east embankment of the Mill 5/6 West TSF abuts the west embankment of the original Mill 5/6 Central TSF, but the facilities are not hydraulically linked. The Mill 5/6 West TSF is a fully synthetic-lined facility with a footprint that covers approximately 378 acres (156 acres public and 222 acres private).

An application and fee for a major modification were received in September 2009, for construction of the Mill 5/6 East TSF Expansion. However, review of the application was delayed until early 2012, at the request of the Permittee, to give priority to review of the separate application for the Emigrant Mine Project. The major modification was subsequently combined with the 2012 WPC Permit renewal and construction commenced in 2013. The Mill 5/6 East TSF is being constructed in three phases and will accommodate approximately 112 million tons of dewatered tailings material in total. The west embankment of the Mill 5/6 East TSF abuts a portion of the original Mill 5/6 Central TSF east embankment but the facilities are not hydraulically linked. The Mill 5/6 East TSF is designed as a fully synthetic-lined facility with a footprint that covers approximately 829 acres (480 acres public and 349 acres private).

PAG Waste Rock Dumps and Refractory Ore Stockpiles: To address issues associated with PAG waste rock and refractory ore, an updated Newmont Mining Corporation *Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan* (January 2003) supersedes an earlier 1995 guidance document and was developed as part of the 2003 major modification of the Permit. The 2003 plan and construction guidelines are applied to existing pre-2002 PAG waste rock and refractory ore stockpile facilities that are expanded beyond existing (2002) fluid containment structure locations and to the construction of all new (post-2002) PAG waste rock and refractory ore stockpile facilities. The 2003 plan incorporates more stringent facility management requirements and requires new facilities be designed to engineering specifications verified by field-testing and quality assurance/quality control (QA/QC) documentation.

Improved engineering aspects of the 2003 plan include construction of the sub-base of PAG waste rock dumps to a maximum permeability equal to or less than (≤) 1 foot of 1 x 10^{-5} centimeters per second (cm/sec) material and the base of refractory ore stockpiles to a maximum permeability ≤1 foot of 1 x 10^{-6} cm/sec material. Collection ditches must be constructed with a maximum permeability ≤1 foot of 1 x 10^{-6} cm/sec material and collection sumps or ponds must be constructed with a maximum permeability ≤1 foot of 1 x 10^{-7} cm/sec material. Any fluids collected from single-lined ponds or sumps (e.g., Leeville Mine facilities) must be sampled and, if found to exceed the Division's Profile I water quality reference values, removed to approved containment.

PAG material placed on a waste rock dump or within a tailings storage facility embankment, in accordance with the 2003 plan and as may be otherwise approved, must be encapsulated within a minimum 10-foot thickness of material with an acid neutralizing to acid generating potential ratio (ANP:AGP) of at least 3:1. At closure, a modeled, non-potentially acid generating (non-PAG), low permeability cap will be placed on the final lift of any exposed waste rock.

There are two basic waste rock dump designs; hillside and basin. The hillside design is preferred but a basin design may be constructed with prior engineering design approval from the Division.

Gold Quarry Pit: Historic production of ore and waste from the Gold Quarry Pit has ranged up to 83 million tons per year (tpy). Current projections indicate an average ore production rate of approximately 14.5 million tpy will continue for the foreseeable future.

The Gold Quarry Pit reached groundwater in 1992, at a depth of approximately 600 feet below the pit rim (approximately 4,930 feet above mean sea level (amsl)). Dewatering is permitted (NPDES Permit NV0022268), to a maximum rate of 40,000 gallons per minute (gpm) or 90 million gallons per day (gpd), with treated discharge to Maggie Creek. The discharge is treated for naturally occurring arsenic if concentrations reach limits established in the NPDES permit.

The Gold Quarry Pit is currently projected to reach a depth of 3,725 feet amsl, approximately 1,805 feet below the pre-mining surface (*FINAL Environmental Impact Statement, Newmont Mining Corporation's South Operations Area Project Amendment, April 2002,* (SOAPA) pages 2-22 and 4-8). Pit lake prediction studies and modeling completed in 1993 (PTI Environmental Services, *Chemogenesis of the Gold Quarry Pit Lake*) and 1997 (Geomega, *South Area Operation Project: Gold Quarry Pit Lake* Prediction) indicate "…there will be no impact on groundwater surrounding the SOAPA-GQ [SOAPA-Gold Quarry] pit after infilling…" and the resulting "…pit lake chemogenetic pathway will result in consistently benign water quality indicating that there will be no degradation of downgradient groundwater…". The *Gold Quarry Pit Lake Chemistry Update* (Geomega, July 16 2001) supplements the earlier pit lake study database with no changes in the predictions. A 2017 update to the Gold Quarry Water-Quality Prediction was performed and also came to similar conclusions as the previous study.

A 2021 revision to Gold Quarry Water-Quality Prediction Update was included with the 2022 renewal and Major Modification of the Permit. This update included the proposed expansion of the pit (referred to as the 6a/6b expansion) to the southeast that will deepen the pit to an elevation of 3,640 feet AMSL, or approximately 1,890 feet below the pre-mining surface. This expansion will result in the production of approximately 34 and 16.6 million tons of sulfide mill and heap leach feed, respectively, and will produce approximately 567 million tons of waste material. Information regarding the results of this expansion on final pit lake water quality is provided in the **Receiving Water Characteristics** section of the Fact Sheet.

A new study and ecological risk assessment may be required if changes to the current mine plan or operation could affect the predicted outcome and will be required as part of the Greater Gold Quarry Project major modification application when submitted.

On 22 May 2019, the Division gave approval of a 28,000,000 expansion of the Gold Quarry Pit (Phase 8) and the construction of a 1,800,000 ton oxide buttress to remediate a slide that occurred at the Gold Quarry Pit in October of 2018. The material will primarily consisting of Carlin formation (non-PAG) and the Robert Mountain Thrust Rodeo Creek unit with varying amounts PAG and non-PAG classification. Due to the already in place infrastructure to handle both PAG and non-PAG materials and the emergent nature to stabilize the pit, no modification to the waste rock management plan was required and drilling of the materials was not required. However, once mining of this expansion was complete, representative samples of all exposed lithologies were collected and analyzed to determine if the nature of the material is similar to previously analyzed samples and if additional characterization is required for further inclusion into the next Gold Quarry Pit Lake Study. This analytical was received by the Division in April of 2021.

In August of 2020, the Division gave approval of a minor modification for the QW layback, which proposed to mine material from the southern rim of the Gold Quarry Pit to de-weight an area that has been determined to be potentially unstable. Approximately 27.2 million tons of material were mined with approximately 97% of the materials being non-PAG. Waste materials were either utilized in pit backfilling efforts (Gold Quarry, Mac, or Tusc Pits) or were routed to appropriate waste management facilities.

In January of 2021, the Division approved of the 7G expansion that proposed to mine material from the western rim of the Gold Quarry Pit. This expansion would produce approximately 31.7 million tons of material that is predicted to be approximately 91% non-PAG. Subsequently, the expansion would be backfilled with approximately 17 million tons of non-PAG material from the previously approved 7C-2 and 7C-4 expansions that were approved with the 2002 South Area Operations Plan Amendment and would produce approximately 139 million tons of waste. Backfilling of the pit utilizing standard haul truck and dozer methods and would be placed to the approximate elevations of the existing topography. The maximum depth of the expansion would remain approximately 300 feet above the predicted pit lake equilibrium elevation of approximately 5,500 ft AMSL. Collected quarterly data will be incorporated into the next update of the Gold Quarry Pit Lake Study.

In July of 2021, the Division gave approval of an EDC for the construction of another in-pit non-PAG buttress to further increase high-wall stability. The buttress was constructed of approximately 1.3 million tons of non-PAG material.

Chukar Mine: The Chukar Mine is an underground mining operation that was originally accessed from a portal in the northwest wall of the Gold Quarry Pit. Surface access to this portal was obstructed by a pit slope failure, necessitating construction of a new portal and associated surface facilities northeast of the original portal in 2011/2012. Surface facilities associated with the Chukar Mine include a truckshop, fuel depot, and truckwash outside the original portal (now accessible only from the underground workings via the new portal), and a new truckshop, truckwash, and fueling outside the new portal. Water collected in sumps in underground workings that has been in contact with mechanized equipment and associated facilities, underground travel ways, or drilling operations is considered contact water that must be managed to prevent further contamination of waters of the State. Contact water from the Chukar Mine is pumped to a steel tank on the surface. This water may be used for underground drilling. Other uses of the contact water, which would likely require characterization and processing through an oil-water separator, must be approved in advance by the Division.

In July of 2018 and August of 2020, the Division gave approval of Final Closure Reports for the South and North Portal surface facilities, respectively. Closure consisted of the removal of all surface facilities, confirmation sampling of soils underneath of the facilities, and securing of the portal entrances with metal gates. Any petroleum contaminated soil that was encountered was removed and disposed of at the South Area PCS Pad.

Leeville Underground Mine: The Leeville Mine is an underground operation that mines gold ore from three deposits named the West Leeville, Four Corners, and Turf deposits located at depths of approximately 1,500 to 2,000 below ground surface (bgs). The Leeville Production Shaft was completed in 2006. Approximately 18.1 million tons of ore and waste will be produced over an estimated 18-year mine life. Ore is transported by trucks for processing at the Mill 6 facility located approximately 12 miles to the south of the mine. Mine production ramped up from mine development work, generating primarily waste rock, to the first ore being extracted in 2010. Ore represents 75% or more of the rock tonnage removed from 2010 onward. Based on current reserve estimates, the maximum annual combined waste plus ore production rate of 1.8 millions tons was reached in approximately 2015, and has been gradually declining over the remaining mine life.

In addition to the Leeville Production Shaft, four ventilation shafts designated the Turf Ventilation Shaft, Four Corners Ventilation Shaft, West Leeville Ventilation Shaft, and SE Ventilation Shaft, respectively, will provide access to and ventilation for the Leeville Mine workings. The Leeville Mine is also connected underground to the Carlin East Mine, and the Carlin East portal, located in the east end of the Carlin Pit, may be used as a secondary escape-way for the Leeville Mine. Sinking of the West Leeville Ventilation Shaft was completed following commissioning of the production shaft. For the completed shafts, shaft sinking utilized conventional drill and blast methods. The shafts are circular, cement-lined construction, ranging in diameter from 13-feet for the ventilation shaft to 26-feet for the production shaft, and may extend as deep as 2,500 feet bgs. Pressure grouting was used to seal rock fractures when large volumes of water were encountered during shaft sinking.

An engineering design change (EDC) was approved in February 2012 to utilize a temporary freeze collar technology to assist in sinking the Turf Ventilation Shaft at a location approximately ½-mile north of the Leeville Production Shaft. The ground freezing technology, which has been used elsewhere for more than 100 years, allows for safer and faster construction within a wall of frozen ground, called a freeze ring, and prevents groundwater inflow during sinking operations.

Prior to initiating conventional shaft sinking and to generate a freeze curtain, a series of vertical boreholes were installed at 4.5-foot centers along the perimeter of a 58-foot diameter ring outside the proposed 26-foot diameter shaft perimeter. Each borehole was constructed with a 4.5-inch diameter steel refrigeration pipe (the freeze pipe) into which a 2-inch diameter high-density polyethylene (HDPE) pipe was installed. During freeze operations, calcium chloride brine (25% to 30% $CaCl_2$ solution) is pumped from a surface refrigeration unit through an insulated supply manifold to the bottom of the HDPE pipe and circulated back to the refrigeration unit through the annulus between the freeze and HDPE pipes and an insulated return manifold. Over time, circulation of the brine freezes the ground adjacent to and between the freeze pipes and a freeze curtain is developed. A freeze front also closes inward toward the center of the freeze ring. The uppermost 200 feet of the shaft, referred to as the "pre-sink," was sunk in unfrozen ground using a crane and a backhoe. By February 2014, freezing had progressed sufficiently, and shaft sinking entered the freeze zone at approximately 200 feet bgs, while the freeze operation continued to maintain the freeze curtain.

The collars of the freeze pipes and the brine supply and return manifolds are located in a freeze cellar. The freeze cellar is a reinforced concrete ring structure constructed concentric to the shaft collar and below ground level to allow the shaft sinking headframe and ancillary equipment to be located over the shaft collar while freeze operations continue to maintain the freeze curtain. The freeze cellar was constructed with 4-foot thick reinforced concrete walls with internal dimensions of approximately 10 feet high by 14 feet wide. The cellar ring measures approximately 58 feet in diameter from centerline to centerline.

The freeze system uses approximately 60,000 to 100,000 gallons of brine in circulation. The premixed brine is transported to the site in tanker trucks and stored in a steel brine tank located within an 80-mil HDPE-lined bermed area equipped with an evacuation sump. The bermed brine tank containment has a capacity in excess of 200% of the brine volume stored and in circulation. Brine operating volumes and pressures are constantly monitored and the entire system will shut down automatically in the event of a brine volume or pressure decrease. A non-fee proposal was approved in December 2013 for use of antiscalants CWT-254® and CWT-280® at low dosage rates in the heat exchanger area of the freeze system.

Once shaft sinking was completed, the brine was removed from the freeze plant and freeze pipes and disposed of at an approved facility. The freeze pipes and inner HDPE pipes will be flushed with water, backfilled with cement grout, and cut off flush with the freeze cellar floor. The freeze cellar was be backfilled with material removed during site excavation and recontoured. All surface infrastructure was removed and will be reclaimed.

An EDC approved, by the Division, in February of 2014 authorized the use of a 30% calcium chloride solution as a drilling fluid for shaft sinking within the freeze zone. A new 5,200 gallon brine tank sits on the surface next to the shaft within an 80-mil HDPE-lined secondary containment with a capacity of 110% of the tank. The brine solution is conveyed down the shaft in a 4-inch diameter HDPE pipe that necks down to 2-inch diameter before connecting to the drills.

The brine drilling fluid is mucked out with the waste rock, which is placed on a concrete temporary storage pad adjacent to the shaft, known as the Muck Dump, with steel rail embedments installed for durability and concrete stemwalls for containment. Drainage from the Muck Dump pad reports to a concrete drainage trench connected to a concrete and steel sump, from which the drainage solution is pumped out and properly disposed off-site. After temporary storage on the Muck Dump, waste rock from the shaft sinking is transported to the Section 3 Waste Rock Disposal Facility (described below).

The freeze zone will prevent the brine drilling fluid from migrating away from the shaft, especially in the thoroughly frozen upper plate zone of groundwater saturation at 400-1,860 feet bgs. When the freeze zone thaws, approximately a year after shaft sinking, any brine solution adjacent to the shaft will flow toward the shaft, where it will evaporate and be carried upward by the 30-miles-per-hour ventilation airstream within the shaft. When the brine drilling fluid is used in the vadose zone (200-400 feet bgs), in any unfrozen areas within the freeze zone, or in the dewatered lower plate below 1,860 feet bgs, the shaft wall will be routinely sampled and analyzed for chloride. If significant chloride contamination is detected in those areas, the Division may require monitoring well installation to investigate groundwater quality near the shaft.

In accordance with the Tentative Permanent Closure Plan, all shafts will be backfilled with limestone rock backfill material at the end of operations. The limestone backfill material is acid neutralizing and, in combination with the reinforced concrete shaft liner, will effectively seal the shafts and result in local groundwater of pre-mining background quality. Based on composite sample characterization, no degradation of groundwater is anticipated.

Mining of the ore bodies utilizes both underhand drift and fill stoping and longhole bench and fill stoping. All stopes will be backfilled during or after mining operations. Approximately 75 to 80 percent of the stopes will be backfilled with a mixture of cement and characterized ‘Barrick Intrusive’ backfill material similar to that currently used at other Permittee underground operations. The Barrick Intrusive material is used for backfill purposes because the waste rock removed from the Leeville workings is not of sufficient strength or quality to be used in cemented backfill for active operations. The remaining 20- to 25- percent of the stopes will be backfilled with uncemented waste rock from underground development. Based on meteoric water mobility procedure (MWMP) testing and whole rock analysis of representative composites of the backfill materials, no degradation of groundwater is anticipated.

The Leeville Mine required dewatering at a maximum rate of 25,000 gpm during the first two to three years of operation and at an average rate of 8,000 gpm thereafter. Dewatering water is conveyed by pipeline to the Leeville Water Treatment Plant, WPC Permit NEV2002105, for removal of arsenic and antimony. After treatment to meet the Division’s Profile I reference values, the water is conveyed by pipeline to the Barrick Goldstrike Mines Boulder Valley Recirculation Project facilities (NEV0095114) for discharge to rapid infiltration basins and return to the local hydrographic basin.

Approximately 3.98 million tons of waste rock will be removed from the Leeville Mine. Extensive characterization testing (830 waste rock samples and 143 ore samples) indicates approximately 12% of the waste rock tonnage to be mined (and approximately 40% of the ore tonnage to be mined) can be classified as PAG. Waste rock is routinely sampled, tested, and classified in accordance with the most recent update of the Division’s guidance document *Waste Rock, Overburden, and Ore Evaluation*.

Leeville Mine Waste Rock Management**:** All Leeville Mine waste rock and stockpiled ore is placed within engineered containment facilities designed to receive PAG waste material. The refractory ore stockpile is located adjacent to the Leeville Mine facilities. Both facilities were constructed and are managed and monitored in accordance with the updated Newmont Mining Corporation

Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan (January 2003).

A temporary Leeville Mine waste rock storage facility was approved as an EDC on 10 March 2004, to address interim Leeville Mine waste rock storage prior to construction of the LS3-Waste Rock Disposal Facility (WRDF). The temporary facility was constructed in accordance with the Newmont Mining Corporation *Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan* (January 2003), to an engineered design later confirmed with QA/QC documentation. All waste material was removed from the temporary facility and placed in the LS3-WRDF before 1 October 2004, and closure of the temporary facility was completed in accordance with the approved Final Plan for Permanent Closure.

In accordance with an EDC authorization dated 26 April 2004, the Leeville Section 3 Waste Rock Disposal Facility (LS3-WRDF) construction was completed on 26 July 2004, in a single phase and a QA/QC report was received on 12 August 2004. The completed facility lies to the west of the Leeville Mine, in the Section 3 Area, within a bermed, roughly square, prepared area of approximately 19.4 acres. In accordance with the *Leeville Project Final Environmental Impact Statement, July 2002, Response 18-4*, all Leeville PAG waste is placed in 25-foot lifts with final side slopes constructed to an overall slope of 2.5 horizontal to 1 vertical (2.5H:1V). An EDC approved in February 2010, allows waste rock to be loaded to an ultimate height of 105 feet.

The base of the LS3-WRDF was constructed over scarified and moisture conditioned native and imported subgrade material compacted to a minimum 92% maximum dry density (Modified Proctor, American Society for Testing and Materials (ASTM) Method D1557). The compacted seal zone of native and imported soils was placed in two maximum 6-inch-thick lifts, each compacted to a minimum 95% maximum dry density (Modified Proctor, ASTM Method D1557) with a measured coefficient of permeability ≤ 1 foot of 1 x 10^{-5} cm/sec. The seal zone is overlain with a minimum 10-foot thickness of coarse oxide waste rock designed to 1) protect the seal zone, 2) minimize hydraulic head on the seal zone and promote lateral drainage, and 3) aid in potential acid neutralization. The seal zone is constructed with a minimum 4.9% slope and runoff from the facility is conveyed to two 24-inch diameter HDPE collection pipelines that report to the Runoff Containment Pond.

The Runoff Containment Pond measures 140 feet by 200 feet in plan dimension. The pond is 8 feet deep, has a maximum capacity of approximately 165,000 cubic feet (approximately 1.2 million gallons), and can accommodate all fluid reporting to the facility in response to the 25-year, 24-hour storm event. The pond is constructed with an 80-mil HDPE primary liner and a 60-mil HDPE secondary liner, which sandwich a geonet layer that will serve to reduce hydraulic head on the secondary liner and convey any escaping fluid to a leakage collection sump. The leakage collection sump has a capacity of approximately 550 gallons and is filled with ¾-inch diameter clean drainage aggregate enveloped in 8-ounce per square yard (oz/yd^2) non-woven geotextile. Fluid reporting to the leakage collection sump can be evacuated through an 8-inch diameter HDPE riser pipe with a portable pump.

In response to the LS3-WRDF approaching its permitted capacity, a non-fee proposal was approved in May 2014 authorizing the Permittee to place approximately 2 million tons of PAG waste rock from the Leeville underground mine operations in previously approved PAG cells within the Beast and Genesis In-Pit Backfill WRDFs (WPC Permit NEV0087065). The waste rock transferred is monitored in both Permits.

Leeville Mine Underground Sump Oil/Water Separator System**:** An EDC modification was approved in December 2007 to upgrade the existing oil/water separator system for improved treatment of Leeville Mine sump water prior to discharge to the Mill 4/2 TSF, permitted as part of the North Area Leach Project WPC Permit NEV0087065. The original system was by-passed with installation of the new system. The new system, which is designed to manage average inflow rates of 800 gpm during an average 5-minute cycle, twice per hour, is comprised of a pair of sedimentation basins with secondary containment and a pre-fabricated oil/water separator tank with leak detection. With an EDC approved April 2009, the system was transferred to and is permitted and monitored in accordance with the North Area Leach Project Water Pollution Control Permit NEV0087065.

Leeville Paste-Fill Project**:** A major modification was approved in August 2014 for use of a tailings paste mixture with a specified recipe to backfill mined-out stopes in the Leeville Mine, and for the associated plant containment area and pond. A separate EDC was approved in May 2015 for the actual Paste-Fill Plant and associated stockpiles to be constructed on the previously approved containment area.

The paste-fill supplements the ongoing use of cemented rock fill (CRF) for backfilling stopes. The approved paste recipe calls for historic tailings material from the Mill 4/2 TSF (WPC Permit NEV0087065) to be mixed with aggregate, cement, fly ash, and water in proportions specified in the Permit. Advantages of using paste-fill instead of CRF include lower permeability, better wall-rock sealing, improved safety and stability underground, a reduced volume of tailings in surface TSFs, and a significant time reduction for the final chemical stabilization of tailings material. The mining and final permanent closure of the Mill 4/2 TSF associated with the paste-fill project are addressed separately in the North Area Leach Permit (NEV0087065).

Because the paste-fill includes process tailings and fly ash, extensive testing was performed to demonstrate that the paste will not degrade groundwater, either during emplacement and continued operation of the mine, or after mining ceases and the underground workings are flooded. Static tests and humidity cell tests of cured paste-fill samples indicate that the paste-fill is strongly alkaline with no potential for acid generation, owing to the addition of carbonate-rich aggregate, cement, and fly ash. Diffusion tests (ASTM Method C1308) performed on intact cured paste-fill cylinders exhibited no potential to degrade groundwater. Arsenic was released from one cylinder at concentrations up to 0.15 milligrams per liter (mg/L), but the groundwater in the vicinity of the Leeville Mine has naturally elevated background arsenic with a median concentration of 0.14 mg/L and a 75th- percentile concentration of 0.2 mg/L, so no arsenic degradation is predicted. Similarly, the antimony concentration in equilibrium with the same cylinder was 0.014 mg/L, but naturally elevated background antimony in the Leeville Mine vicinity has a median concentration of 0.014 mg/L and a 75th percentile concentration of 0.02 mg/L. The relatively benign chemical nature of intact cured paste-fill is believed to be due to the formation of a calcite skin on the outer surface of the paste-fill. However, leach tests (EPA Method SR003.1) and MWMP tests performed on cured paste-fill that was crushed prior to analysis indicate that crushing or significant cracking of the cured paste-fill could lead to low-level exceedances of groundwater reference values for aluminum, sulfate, and thallium, and exceedance of naturally elevated background concentrations for arsenic and antimony, but only until a calcite skin forms on the new cracks. Therefore, to minimize the potential for significant cracking and consequent temporary degradation of groundwater, the Permit requires a maximum slump of 10 inches, and a minimum 56-day crush strength of 24 pounds per square inch (psi). The Permit also requires that the paste-fill contain at least 5% binder, and at least 25% carbonate-rich aggregate, as measured using a dry weight basis before water addition. The binder itself shall consist of at least 50% Ordinary Portland Cement (includes ASTM Method C150 Type I/II and Type V Portland Cement) by weight with the rest being fly ash.

With the 2023 Major Modification and Renewal of the Permit, The Division approved of a non-fee request proposing to substitute Type 1L Cement for Ordinary Portland Cement (OPC) in the binder mix utilized for paste backfill at the Leeville Underground Mine. With the Divisions approval, the binder shall consist of at least 50% Ordinary Portland Cement or Type 1L Cement by weight with the rest being fly ash or natural pozzolan.

An engineering design change was approved by the Division on 27 September 2018 for a binder reduction from 5% to 4%. Diffusion testing (ASTM Method C1308) was performed on three intact cemented cylinders utilizing 4% binder and 56, 120, and 180 day curing times. Analytical results indicated that arsenic was the primary constituent that exceeded the Divisions Profile I reference value of 0.010 mg/L, the only exceptions being a singular exceedance of lead (0.03 mg/L) and three exceedances of pH (maximum 9.2). Arsenic concentrations after leaching the 56, 120, and 180-day cured cylinders had maximum concentrations of 0.026, 0.021 and 0.031 mg/L, respectively. Since the observed release rates are lower than background dewatering well concentrations (approximately 0.14 mg/L) for all samples tested and the cured cylinders meeting the Permit Limitation for a minimum crush strength of 24 pounds per square inch, the Division approved of the reduction in binder addition to 4%.

In March of 2021, the Division approved of an EDC that permitted the use of the same aggregate source that is utilized at underground operations associated with North Block Project (WPCP NEV0091029). This use of this new source provides for a consistent quality product from a sole source.

As part of the permitting efforts, additional characterization was performed. It was determined that ASTM Method C-1308 would be utilized to leach the constructed paste cylinders and that there would be a pH dependent component to the testing similar to that outlined in ISO Method 21268-4. The coupling of these methods was an attempt to determine how the cylinders would react when exposed to evaporative mineral precipitates that form in some locations of the Leeville Underground Mine.

The results displayed that the paste backfill has a strong neutralizing capacity and that similar constituents and concentrations would be leached as described above. Further characterization and modeling efforts will continue to better characterize the underground and its possible impacts on waters of the State.

The paste-fill process begins with delivery of tailings and aggregate to the paste-fill site by haul truck. The haul trucks offload directly onto separate tailings and aggregate stockpiles. The tailings stockpile is constructed on compacted fill that is underlain by the Paste-Fill Site Containment Area liner system, described below. A loader transfers tailings from the stockpile to the tailings stockpile surge bin. The heated bin holds 120 cubic yards, which is enough tailings to supply the plant for 1 hour of normal operation. From the bottom of the bin, the tailings are transported via conveyors to the tailings plant surge hopper (capacity 24 cubic yards) inside the Paste-Fill Plant building. From there, the quantity of tailings specified in the batch recipe is transferred to the paste-fill batch mixer via a weigh conveyor. Minus 1/2-inch, carbonate-rich aggregate from the existing North Area crushing facility is delivered to the Paste-Fill Plant building via a similar series of steps including an aggregate stockpile, a heated aggregate surge bin (capacity 107 cubic yards), conveyors, and an aggregate plant surge hopper (capacity 14 cubic yards). A feeder conveyor transfers the aggregate from the aggregate plant surge hopper to the aggregate weigh hopper, which delivers the specified amount of aggregate to the paste-fill batch mixer.

Cement and fly ash are delivered to the site by bulk truck and conveyed into four separate binder storage silos (two for cement and two for fly ash) with a capacity of 165 cubic yards each. The fly ash is obtained from the TS Power Plant in Boulder Valley. The two binder materials are transferred via a system of screw feeders and bucket elevators to the binder weigh hopper inside the Paste-Fill Plant building, which delivers the correct amount and proportion of cement and fly ash to the paste-fill batch mixer. Within Permit limitations, the binder mix and quantity can be adjusted during operations to meet specific strength requirements for the particular underground stopes to be backfilled.

Fresh water for the paste-fill and for flushing the paste pipeline is obtained from an existing 8-inch diameter buried dewatering-water pipeline aligned just west of the Paste-Fill Plant site (which is supplied by an existing 130,000-gallon fresh water tank located on a hill near the Paste-Fill Plant), and is stored in a 32,230-gallon fresh water tank located outside the Paste-Fill Plant building. The fresh water tank operates as a surge tank designed to reserve a sufficient quantity of water to perform a complete flush of the paste-fill pipelines and wash down all paste-fill components, in case the fresh water supply is compromised. In normal operation, the fresh water tank overflows to a separate 7,840-gallon reclaim water tank, which also receives input from the Paste-Fill Stormwater Pond reclaim pipeline and from the Paste-Fill Plant floor sump. Water for mixing the paste-fill is pumped from the reclaim water tank to the water weigh hopper and into the paste-fill batch mixer.

A water reducing and set-retarding admixture, such as Meyco® Minefill 701, or equivalent, is also used in the paste at a dosage rate of approximately 6 to 20 fluid ounces per ton to increase compressive strength, control setting time, and improve slump and flow characteristics. Any other additives to the paste-fill must be separately approved by the Division prior to use. After mixing in the paste-fill batch mixer, the paste is discharged to the paste-fill surge hopper, which can contain approximately 20 cubic yards of paste and provides a continuous flow of paste-fill to the underground. A hydraulic piston-type paste pump draws paste from the surge hopper and pumps it underground via 8-inch diameter carbon steel paste pipelines installed through surface-drilled boreholes. Additional boreholes underground provide pipeline access between mining levels.

The paste-fill is discharged into a mined-out stope via a paste pipeline positioned near the back (ceiling) of the upper accessway connected to the stope. The lower accessway to the stope, and the upper accessway up to the paste pipe, are dammed off with cemented rock fill, or equivalent, to confine the paste-fill to the stope. After the stope is backfilled as much as possible with paste-fill, the paste pipeline is flushed with an estimated 5,000 to 16,500 gallons of fresh water, depending on the pipeline length. Paste pipeline flushing is expected to occur approximately once every 2 days. Most of the flush water will be absorbed by the paste, evaporated, or reported to underground mine sumps and be pumped to the surface Leeville Desedimentation facility (WPC Permit NEV2002105); however, some flush water may infiltrate into the deeper groundwater system, which is collected by dewatering wells and treated at the Leeville Treatment Plant (WPC Permit NEV2002105). Testing results demonstrate that when discharged into the stope, the flush water is likely to contain concentrations of aluminum, total dissolved solids (TDS), and pH above Profile I reference values. However, the aluminum is likely to attenuate in the surrounding wall rock or in the paste-fill itself, and contact with air in the stope will drop the TDS concentration below the 1,000 mg/L Profile I reference value, and drop the pH to the neutral range, within hours after flushing. Test results also show that arsenic and antimony concentrations in the flush water will be lower than the respective natural background 75th-percentile concentrations in the Leeville Mine vicinity. No other constituents in the flush water are expected to exceed Profile I reference values.

The Paste-Fill Plant is located on the surface on BLM land north of the Leeville Mine shafts and surface facilities and south of the Turf Ventilation Shaft. The site is excavated into the hillside, laying back the cut slope to 2H:1V. The site includes two levels separated by retaining walls and earthen slopes: an upper tier for the tailings and aggregate stockpiles, and a lower tier for the Paste-Fill Plant itself and associated stockpile surge bins and conveyors. A buried 80-mil textured HDPE Paste-Fill Site Containment Area liner underlies the majority of the site, including all areas where tailings, chemicals, and paste will be present, such as the tailings stockpile, the concrete plant foundation, the silos for cement and fly ash storage, and the area around the collars of the boreholes used to deliver the paste from the surface to the underground workings. The aggregate stockpile, the aggregate stockpile surge bin and conveyors are on containment. The buried liner is continuous between the upper and lower tiers of the Paste-Fill Site Containment Area, traversing a 2H:1V slope. The lined slope is overlain by fill (see below) with a combination of earthen fill slopes and retaining walls separating the tiers at the finished grade. Permanent stakes demarcate the limits of the buried liner. The edges of the buried liner are sloped upward but are not anchored in key trenches because the entire liner is buried under at least several feet of fill.

From the floor of the containment area up, the lined Paste-Fill Site Containment Area consists of: an 8-inch thick prepared subgrade; random fill or structural fill where necessary to achieve grade; a 6-inch thick layer of liner bedding material; the 80-mil textured HDPE liner; a minimum 1-foot thick liner protective layer; a minimum 1-foot thick drainage layer with embedded perforated corrugated polyethylene drainage pipes (CPEPs); and a top layer of variable thickness (approximately 3- to 25-feet thick) comprised of either select/structural fill or random fill to the finished grade. Select/structural fill is used under concrete foundations, such as at the Paste-Fill Plant and the stockpile surge bins, and behind the retaining wall that separates the upper tier from the lower tier near the stockpile surge bins. In roadway areas, a 6-inch thick road wearing course is constructed on top of the upper random fill layer. All subgrade, random fill, and liner bedding layers are moisture conditioned and compacted to 90% maximum dry density (ASTM Method D1557). The select/structural fill and road wearing course are moisture conditioned and compacted to 95% maximum dry density (ASTM Method D1557). Random fill is placed in maximum 12-inch loose lifts unless greater lift thicknesses are approved by the engineer based on fill tests. Select/structural fill is placed in maximum 12-inch compacted lifts unless thinner lifts are required by the engineer. The drainage layer is constructed with minus 2-inch clean aggregate having no more than 5% (by weight) passing the No. 200 sieve. Within the drainage layer, 4-inch diameter CPEP drainage pipes laid out in a herringbone pattern on 30-foot centers report to several 8-inch diameter CPEP headers. The 8-inch diameter

CPEP headers all report to one main 8-inch CPEP header that reports to the Paste-Fill Stormwater Pond. On both tiers of the lined Site Containment Area, the upper surface is graded, and in some locations bermed above the liner edges, to prevent any flow off of the lined area and to direct any runoff to the Paste-Fill Stormwater Pond. Also, wherever the surrounding land surface slopes downward toward the lined Paste-Fill Site Containment Area, berms or stormwater diversion channels are maintained along the liner edge to prevent stormwater from flowing onto the lined area.

The four cement and fly ash silos are placed on a reinforced concrete slab foundation, without stemwalls, located a short distance east of the Paste-Fill Plant. The concrete slab is designed for seismic loading, and each silo includes a dust collector to minimize the escape of cement and fly ash particles from the silos. The reclaim water and fresh water tanks are located on a concrete secondary containment structure constructed outside of the south wall of the Paste-Fill Plant. The concrete containment is sized to contain 110% of the 7,840-gallon capacity of the reclaim water tank, but not 110% of the 32,240-gallon capacity of the fresh water tank, which is the largest vessel at the Paste-Fill Plant. The tank secondary containment includes a 6-inch diameter steel overflow pipe that penetrates the concrete Paste-Fill Plant stemwall and reports to the plant floor sump. In the event of a major spill, the plant floor overflows, via a buried overflow pipe, to the double-lined Paste-Fill Stormwater Pond, which provides more than 110% of the capacity of the fresh water tank. The fresh water tank sits on a solid concrete pedestal that has grooves cut into its top surface for visual detection of any leakage from the tank bottom. The reclaim water tank sits on four small concrete block pedestals.

The enclosed metal-sided Paste-Fill Plant building includes a concrete floor and stemwalls to contain spills. The plant building includes a dust collector to capture airborne dust and convey it into the paste-fill batch mixer tank. As described above, the Paste-Fill Plant concrete containment is fully underlain by the Paste-Fill Site Containment Area liner system. Flexible polyvinyl chloride (PVC) waterstops are included in all control joints, including all floor-to-stemwall joints. The plant floor surface is constructed 1 foot below outside grade. Plant door openings are 1 foot above the floor (flush with outside grade); elsewhere, the concrete stemwalls extend 4 feet above the floor. Spillage inside the plant building is conveyed to a 7,000-gallon capacity, 38-foot long, 10-foot wide, and 5-foot deep, drive-in plant floor sump, from which collected process fluid is pumped to the reclaim water tank. Solids collected in the plant floor sump are removed using a skid-steer loader and transported back to the Mill 4/2 TSF (WPC Permit NEV0087065). An approximately 16-inch wide and 18- to 29-inch deep concrete foundation trench launder, recessed into the plant floor, intersects the north/south-trending plant floor sump at right angles. The 16-inch diameter, steel, plant floor overflow pipeline penetrates the plant floor near the western (shallow) end of the foundation trench launder to convey excess process solution to the Paste-Fill Stormwater Pond in upset conditions when the plant floor sump overflows into the launder. A waterstop ring plate, attached to the outside of the overflow pipe where it is embedded in the plant floor concrete, prevents leakage around the pipe. The buried plant floor overflow pipeline is also encased in concrete where it traverses underneath the west wall of the plant. Just outside of the west wall of the plant, the buried 16-inch diameter plant floor overflow pipeline transitions from steel to HDPE construction. For its entire run to the Paste-Fill Stormwater Pond, the plant floor overflow pipeline is buried within compacted pipe bedding and pipe backfill material installed above the drainage layer of the Paste-Fill Site Containment Area liner system.

The Paste-Fill Stormwater Pond is located on the west side of the lined Site Containment Area, and is connected to it via an 80-mil textured HDPE-lined transfer channel. The overliner layers in the Paste-Fill Site Containment Area extend into the transfer channel, but terminate in a sloped apron within the lined transfer channel. A 2-foot thick riprap layer with a median rock diameter of 6 inches protects the apron face against erosion caused by runoff from the surface of the Site Containment Area. The 8-inch diameter main CPEP header from the drainage layer of the Paste-Fill Site Containment Area daylights through the riprap apron and discharges into the transfer channel. The 3-inch diameter HDPE Paste-Fill Stormwater Pond reclaim pipeline and the 16-inch diameter plant floor overflow pipeline also penetrate the riprap apron (above the drainage layer) within the transfer channel.

The Paste-Fill Stormwater Pond containment system consists of the following layers from bottom up: prepared subgrade; a 6-inch thick liner bedding layer, compacted to 90% maximum dry density (ASTM Method D1557); an 80-mil smooth HDPE secondary liner; a geonet leakage collection and recovery system (LCRS) layer; and an 80-mil textured HDPE primary liner. The pond bottom is graded toward its south end, where a select-gravel-filled LCRS sump is constructed between the primary and secondary liners under the low point of the pond. A 12-inch diameter HDPE pipe with a perforated lower end is used to evacuate the LCRS sump. The LCRS evacuation pipe runs up the south pond wall between the primary and secondary liners to the pond crest, where it is booted through the primary liner. A recessed pump sump in the pond bottom is constructed on the primary liner above the LCRS sump. Pond solution is pumped back to the Paste-Fill Plant via a submersible pump connected to the 3-inch diameter, standard dimension ratio (SDR) 11, HDPE reclaim pipeline. In the southwest corner of the pond, the reclaim pipeline is mounted inside a 12-inch diameter carbon steel secondary pipe with a perforated lower end, which is mounted in turn on twin 6-inch diameter carbon steel pipe segments lying on a conveyor-belt and geotextile (10-oz/yd^2 non-woven) wear sheet.

The Paste-Fill Stormwater Pond has a capacity of 286,619 gallons at the invert elevation of the transfer channel inlet from the pipeline corridor, which is sufficient to contain the required 110% of the largest tank in the Paste-Fill Plant (32,229 gallons x 110% = 35,452 gallons) plus the calculated site runoff from the 100-year, 24-hour storm event (85,000 gallons). The Permit prohibits higher pond solution elevations than the transfer channel inlet (which is lower than the 2-foot pond freeboard elevation), because the channel is single-lined. The maximum pond capacity to the pond crest is over 500,000 gallons.

The surface boreholes by which the paste pipelines enter the underground mine are located in two areas, a north area with one borehole (LSL5 Borehole) located approximately 750 feet south of the Paste-Fill Plant, which accesses the northern (Turf) underground workings, and a south area with one borehole located approximately 1,000 feet south of the Paste-Fill Plant, which accesses the West Leeville underground workings (West Leeville LSL4 Borehole). Secondary containment for the pipelines is provided by the buried liner in the Site Containment Area, and where the pipeline to the south borehole area leaves the Site Containment Area, it is aligned within a pipeline corridor lined with a single layer of 80-mil textured HDPE geomembrane. In the bottom of the lined pipeline corridor, the liner is covered with a minimum 6-inch thick layer of liner protective material. Concrete pipe supports are constructed at intervals along the pipeline corridor. The top surface of each concrete pipe support is flush with the liner in the pipeline corridor, and the liner is welded to HDPE strips embedded in the concrete. At the low point of the pipeline corridor, a single-lined transfer channel drains the pipeline corridor into the south end of the double-lined Paste-Fill Stormwater Pond. Where the pipeline corridor traverses under the haul ramp to the Paste-Fill Plant stockpiles, the primary 8-inch diameter steel pipe is sleeved within a 20-inch diameter carbon steel secondary pipe. At either end of the road crossing, the 20-inch diameter secondary pipe is attached, via HDPE boots and stainless steel pipe clamps, to the HDPE pipeline-corridor liner. Within the ramp, the 20-inch diameter secondary pipe is enclosed within pipe bedding and pipe backfill material, which is moisture conditioned and compacted to 90% maximum dry density (ASTM Method D1557). The secondary pipe is buried at least 2 feet below the road wearing course.

Each of the borehole collars is surrounded by an outer surface casing comprised of a 12-foot diameter, 5-foot long, corrugated metal pipe (CMP) culvert, installed vertically. A 1-foot thick horizontal concrete surface cap slightly larger than 12-feet in diameter seals around the inner borehole casing and covers the top of the outer CMP casing. Below the concrete cap, the rest of the CMP is backfilled with lean grout around the inner borehole casing. In both the northern and southern borehole locations the buried 80-mil HDPE liner, from either the Paste-Fill Site Containment Area or the paste pipeline corridor, respectively, is attached to the outer wall of the CMP outer casing via batten strips.

In order to route paste backfill from the surface to the Four Corners mining area of the Leeville Underground Mine, the Permittee proposed the construction of the LSL6 paste pipeline (approved by the Division in December 2021). A paste diverter valve will be installed on the existing pipeline and will route paste through an approximately 1,260 foot long new 8-inch diameter carbon steel pipeline to the LSL6 borehole, which is located south southwest from the paste plant. Secondary containment for the new pipeline will consist of a combination of 80-mil high-density polyethylene (HDPE) lined open channels, 20-inch diameter carbon steel pipeline, a precast concrete manhole, a concrete channel constructed of precast concrete sections, watertops, and HDPE embedment strips which will provide a waterproof containment. These containments are design to drain towards the existing Paste-Fill Stormwater Pond, or the newly proposed LSL6 Stormwater Pond. The

The LSL6 Stormwater Pond has a capacity of approximately 74,800 gallons at the inlet elevation of 5,933 feet above mean sea level (AMSL). This will provide sufficient storage to contain 110% of the paste pipeline and hopper volume, the resultant stormwater volume from the 100-year, 24-hour storm event, and approximately 14,000 gallons of dead storage of while maintaining a 2-foot freeboard (5,931 feet AMSL). The pond, from the bottom-up, will be constructed of a suitable liner bedding material (either in place or imported) an 80-mil HDPE secondary liner, a layer of geonet, and an 80-mil HDPE primary liner. The pond will be sloped so that any solutions leaking through the primary liner will report to the leak collection and recovery sump where solutions can be removed if needed (monitoring location LSL6-SPLD).

<u>Evaporative Mineral Precipitate Investigation</u>**:** Evaporative mineral precipitates (EMPs) are mineral salts that have been observed forming on surfaces of underground mine workings in several Nevada mines, including the Leeville Mine. EMPs have been given many other names, including “efflorescent mineral salts” and “rock sap.” EMPs consist of a variety of soluble minerals, including, but not limited to, copiapite $(Fe^{2+}Fe^{3+}{}_4SO_4)_6(OH)_2 \cdot 20H_2O)$, many of which produce an acidic metalliferous solution when re-dissolved. EMPs may be highly corrosive to rock bolts and other mine infrastructure, and may have a potential to degrade groundwater during mine closure if not properly mitigated. In response to Division concerns, the Permittee initiated an EMP investigation in 2013, including mapping the relative abundance of EMPs, groundwater, and wallrock sulfur content in Leeville Mine workings. A February 2014 summary report made the following conclusions: 1) generally, older drifts have more extensive EMP formations and newer drifts have little or no EMPs; 2) EMPs are not developed in all areas with groundwater seepage; 3) not all areas with EMPs currently have groundwater seepage; and 4) there does not appear to be a strong correlation between wallrock sulfur content and EMP formation.

The Permittee agreed to perform annual mapping inventories of EMPs to show the percentage of the workings surfaces that are covered with EMPs throughout the mine. This requirement was added to the Permit as part of the August 2014 major modification. The annual inventories also include representative MWMP-Profile I analyses of EMPs collected from all areas of the mine and from each different EMP mineral assemblage that is readily distinguishable. These data will be used to update the tentative plan for permanent closure in each Permit renewal application with proposed methods for managing EMPs in closure to minimize degradation of waters of the State.

A separate study of the potential impact of EMPs on paste backfilled stopes was undertaken as part of the August 2014 major modification. The study found that acidic solution, formed from dissolution of EMPs, is neutralized if it comes into contact with paste-fill. Concurrent with the neutralization reaction, certain Profile I constituents are liberated from the cured paste and go into solution (e.g., calcium, magnesium, total nitrogen) while other constituents are removed from the EMP solution by the paste-fill (e.g., arsenic, antimony, aluminum). However, EMPs are not expected to weaken the paste-fill significantly, because the interaction, if any, will occur primarily on the outer surfaces of the paste-fill. Also, because EMPs typically form more in older workings rather than in stopes that are filled with paste, the interaction between EMPs and paste-fill is not expected to be a significant factor affecting the groundwater chemistry at the Leeville Mine.

With the 2022 renewal, the Division incorporated an SOC Item requiring that a work plan be developed outlining the characterization and preparation of a study that models groundwater recovery, predicts water quality after inundation, and quantifies the ability of exposed underground working surfaces and backfill materials to degrade waters of the State.

Pete Mine: The Pete Mine is an open pit mining operation that will recover gold ore from three individual open pits identified as Pete, Castle Reef, and Crow. During an estimated 8-year open pit mine life, about 87.2 million tons of material, comprised of approximately 3.85 million tons of ore, 12.85 million tons of PAG waste, and 70.5 million tons of oxide waste, were generated. Approximately 1.85 million tons of oxide-leach ore was hauled about 5 miles north by truck along the North-South Haul Road to be processed at the North Area Heap Leach Operation (WPC Permit NEV0087065). Approximately 2 million tons of refractory ore was hauled about 8 miles south by truck along the same haul road for processing at the Mill 6 facility. As of the 2022 renewal, open pit mining of the Pete Mine has ceased.

The Pete-Bajo Mine is an underground mining operation accessed from two portals in the bottom of the Pete Pit. Infrastructure for the Pete-Bajo Mine located on the surface in the Pete Pit includes offices, a truck shop and fuel depot, a truck-wash facility, and a cemented backfill plant. Contact water from the Pete-Bajo Mine is skimmed and used at the truck-wash facility. Excess contact water is used for dust suppression on roads within the Pete Pit or conveyed via water truck to the Leeville De-Sedimentation Project Truck Station (WPC Permit NEV2002105).

No dewatering in the area of the three proposed open pits will be required during mining and none of the pits will reach a depth below the regional pre-dewatering groundwater elevation. Hydrologic studies performed between 1996 and 1998 confirm that water intercepted in exploration drill holes within and adjacent to the proposed pit boundaries is associated with perched zones with no measurable recharge capacity. The deepest pit bottom is planned for an elevation of 5,530 feet amsl. The fully recovered groundwater elevation is calculated to be approximately 250 feet lower (5,280 feet amsl) in elevation. Therefore, no pit lake issues are anticipated.

A engineered stormwater diversion ditch intercepts stormwater near the rim of the Pete Pit and diverts it to the southeast away from the pit and away from the Pete WRDF. Acid Rock Drainage (ARD) was observed seeping from the south wall of the Pete Pit and forming a small pit lake in the spring of 2011 after a small pit wall failure. A makeshift HDPE-lined sump was constructed to collect the ARD and transport it via water truck to the Leeville De-Sedimentation Project (WPC Permit NEV2002105). In the summer/fall of 2012 an additional splay of the Pete Pit stormwater diversion ditch was constructed to collect and divert stormwater from an area below the existing stormwater diversion ditch but above the rim of the Pete Pit. It is hoped that this additional diversion will dry up the ARD seep in the Pete Pit.

Pete Mine Waste Rock Management**:** Extensive waste rock characterization was completed on 3,418 representative samples collected from exploration holes drilled within the boundaries of the three proposed open pits. The results indicate that approximately 15% of the total waste rock tonnage mined through the mine life will be PAG waste. However, over the life of the mine, the run-of-mine waste rock will be net neutralizing with a calculated net neutralization ratio (ANP/AGP) of 23:1. Waste rock will be routinely characterized during the mine life and managed in accordance with the WPC Permit and the *Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan, January 2003*.

The Pete WRDF is located adjacent to the east side of the Pete and Castle Reef pits. The Pete Refractory Ore Stockpile (ROS) is located a short distance further east and adjacent to the North-South Haul Road. To address PAG waste rock and ore issues, the Pete WRDF and ROS are engineered components, constructed and managed in accordance with the Newmont Mining Corporation *Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan, January 2003*.

The Pete WRDF was constructed in three phases designated Phase IA, Phase IB, and Phase II. Phase IA construction commenced on 11 August 2003, and was completed on 10 November 2003. The final phases, IB and II, were completed on 20 December 2005. As constructed, the Pete WRDF covers approximately 436 acres and, except as may be nominally necessary to accommodate closure requirements, is permitted for a maximum height of 300 feet measured vertically from the top of the compacted low-permeability soil layer (LPSL) base.

As approved, the base of the Pete WRDF was constructed with either an “in place” or a combined “in place” and imported LPSL material with a maximum permeability equivalent to ≤ 12 inches of 1×10^{-5} cm/sec material. In areas with a minimum 14 inches of uncompacted material meeting the requirements for LPSL, the subgrade was scarified to a depth of 14 inches, moisture conditioned as necessary, and compacted to a minimum 92% of maximum dry density, as determined by Modified Proctor (ASTM Method D1557), and re-compacted to a minimum 12-inch thick, 1 x 10^{-5} cm/sec permeability equivalent. In areas where conditions did not allow construction of a minimum 12-inch thick "in place" LPSL, the subgrade was scarified to the depth of existing material meeting specification, moisture conditioned and compacted to a minimum 92% of maximum dry density (ASTM Method D1557), and supplemented with imported material to complete a minimum 12-inch thick LPSL meeting the 1 x 10^{-5} cm/sec permeability requirement. The phased design approval required each new phase of the LPSL base to be "tied" to the earlier portion of the base by scarifying into the earlier base and re-compacting the old material into the new material to create a relatively seamless LPSL between the phases and minimize the potential for development of a preferential flow path through the LPSL. The WRDF base is sloped and covered with a 10-foot thick oxide waste protective and neutralizing crushed rock layer to promote free drainage of any collected fluids to a downgradient 80-mil HDPE single-lined solution collection channel.

The approved design anticipated the Pete WRDF would cover two "potential springs", designated by the BLM as Spring 74 and Spring 75. BLM now believes these "springs" were erroneously identified during an early 1990's survey and are actually only accumulations of surface water. Support for this conclusion is based on historic records that do not indicate flow and the lack of riparian-type vegetation in the area (Janice Stadelman, BLM Elko District, personal communication, April 2003). Also, at the time of construction, it was discovered that no "springs" could be identified in excavations at the Spring 74 or Spring 75 locations. Consequently, no drains were constructed in this area and the two "springs" were removed from the Permit Monitoring Requirements in September 2005.

However, during the same construction period, a previously unidentified spring was encountered in the course of LPSL preparation to the north of the abandoned areas. The spring area was over-excavated and a french drain was constructed to convey any potential seepage from the spring area beyond the edge of the Pete WRDF. The french drain was constructed beneath the 12-inch-thick LPSL base of the pad and consists of 6-inch diameter perforated corrugated polypropylene tubing (CPT) placed in a vee-ditch. The CPT was covered with 12-inch diameter neutralizing drain rock, which was characterized by MWMP, ANP/AGP, and Profile I analytical methods to establish its baseline characteristics. The drain rock and CPT were encapsulated with 12-oz/yd^2 non-woven geotextile within the vee-ditch. The final 40-foot downgradient length of the drain consists of a solid HDPE pipe that daylights into the Pete WRDF solution collection channel. Flow from the drain is not anticipated but routine monitoring requirements are included in the WPC Permit. The spring is identified in the Permit as PT-WRDFS for monitoring purposes.

Prior to construction of Phase IB, the Pete WRDF solution collection channel reported to the Temporary Multiple Use Pond (TMUP). The pond volume was approximately 39,200 cubic feet, equivalent to approximately 125% of the cumulative fluid volume generated by the 25-year, 24-hour storm event.

Construction of the permanent Pete WRDF Solution Collection Pond was started as part of the Pete WRDF Phase IB construction. With completion of the Phase IB construction, the TMUP was decommissioned and closed (according to the Tentative Permanent Closure Plan in late 2005) and the Pete solution collection channel was permanently diverted to the 2.07 million gallon Pete WRDF solution collection pond. The Pete WRDF Solution Collection Pond is designed for the ultimate Phase II Pete WRDF footprint and will contain the 25-year, 24-hour design storm event flow (approximately 1.12 million gallons) with a 1.5-foot freeboard. The collection pond footprint measures approximately 180 feet by 210 feet and ranges from 12- to 14-feet deep. The pond is constructed with primary and secondary 80-mil HDPE liners. A geonet layer between the HDPE liners serves as an LCRS to collect any solution escaping primary containment and transfer it to a leak collection and detection sump. The 1,653-gallon LCRS sump is filled with clean gravel and can be evacuated via an 8-inch diameter HDPE riser pipe.

An EDC was approved in July 2006, to construct the Pete WRDF overflow pond adjacent to and south of the Pete WRDF collection pond to provide additional solution collection capacity during excessive precipitation events. Construction was completed on 10 October 2006. The Pete WRDF overflow pond is hydraulically linked to the Pete WRDF solution pond by a 6-foot wide by 1-foot deep spillway double-lined with 80-mil smooth HDPE. The pond can also receive flow directly from the Pete WRDF utilizing a pair of HDPE diversion flaps in the Pete WRDF collection channel.

The Pete WRDF overflow pond measures approximately 390 feet by 300 feet within the pond crests and ranges from 17 to 19 feet deep. The pond has a capacity of approximately 10 million gallons with a 1.5-foot freeboard and is constructed with an 80-mil smooth HDPE secondary liner, placed on a base compacted to a minimum 90% maximum dry density (ASTM Method D1557), and an 80-mil textured HDPE primary liner. A layer of geonet sandwiched between the liners serves as a LCRS for the double-lined pond. Fugitive solution reports to a subgrade leakage collection sump filled with pea gravel that has an effective sump capacity of approximately 2,900 gallons. The sump is encased in 12-oz/yd^2 geotextile and can be evacuated through a 10-inch diameter HDPE inclined riser pipe. The pond is also equipped with an outlet overflow spillway, measuring 6 feet wide by 3 feet deep and armored with geotextile and riprap, that reports to the natural drainage.

As part of the EDC modification, the original collection channel and the collection channel diversion, which measure 6-feet wide by 3-feet deep, are constructed with a liner system identical to that of the pond and an individual leak detection pipe for each portion of the channel. The latter was designed to segregate leakage within the channel from reporting to the pond leakage collection system.

Pete Mine Refractory Ore Stockpile (ROS) Pad**:** The Pete ROS pad, completed December 2004, is trapezoidal-shaped with a footprint covering approximately 650,000 square feet, which includes a 10-foot buffer zone between the toe of the pad and the edge of the perimeter berm. The pad is designed to contain approximately 1-million tons of refractory material when stacked to the permitted 100-foot height as measured vertically from the top of the LPSL base. The pad consists of, from top to bottom, a 36-inch-thick layer of free-draining protective cover material, a minimum 12-inch-thick clay layer compacted to a maximum $1x10^{-6}$ cm/sec permeability, and a minimum 6-inch-thick scarified, moisture conditioned and compacted (ASTM D1557) native soil sub-base.

The base of the Pete ROS pad is designed with a +3% slope to drain to a collection pond located at the northeast corner of the pad. The rectangular-shaped ROS Collection Pond measures approximately 130 feet by 150 feet at the crest and is a maximum 13 feet deep. The pond volume of approximately 865,000 gallons, excluding a 1.5-foot freeboard, will accommodate the design operating volume plus the design 25-year, 24-hour storm event flow reporting from the pad. The operating volume in the pond must be maintained below a maximum elevation of 4.5 feet below the spillway to accommodate the 100-year, 24-hour storm event.

The ROS Collection Pond is constructed with 80-mil HDPE primary and secondary liners. A geonet layer between the HDPE liners serves as an LCRS to collect any solution escaping primary containment and transfer it to an LCRS sump. The LCRS sump is filled with clean pea gravel and has a capacity of 1,616 gallons. The sump can be evacuated via an 8-inch diameter HDPE riser pipe.

Crow Pit and Pete Pit In-Pit Waste Rock Backfill**:** An existing Mule Deer migration route will be maintained by a permanent migration corridor through the Pete Mine area. Construction of the corridor required partial backfilling of the east end of the Crow Pit with select, non-PAG waste material from the Pete Pit and the maintenance of Pete WRDF slopes of 2.5H:3V as individual lifts were completed during mining operations. No pit lake or other water quality issues are anticipated as a result of constructing this wildlife corridor.

An EDC was approved in June 2010, for construction of four in-pit backfill waste rock disposal facilities within the final footprint of the Pete Phase 5 Pit. The first facility, the Pete In-Pit WRDF (PT-IP-WRDF), can receive up to 2 million tons of non-PAG waste rock generated from the final mining in the Pete Pit and will save capacity on the existing surface Pete WRDF for PAG waste. The remaining three facilities, to be constructed on benches within the Pete Phase 5 Pit following completion of mining, will receive characterized waste rock generated by development drifting for the new Pete Bajo Underground Mine, which will be collared from the bottom of the pit. These three new WRDFs are identified as Pete

Bajo In-Pit WRDF 1 (PB-WRDF-1), Pete Bajo In-Pit WRDF 2 (PB-WRDF-2), and Pete Bajo In-Pit WRDF 3 (PB-WRDF-3).

Approximately 12,000 tons of the waste rock to be generated from the Pete Bajo Underground Mine has been characterized to have an ANP:AGP of approximately 2.8:1 and a net neutralizing potential (NNP) of 116.1. Although this material is classified as non-PAG based on the Division waste rock characterization guidelines, the material is classified as 'uncertain' material based on BLM guidance, which uses a higher ANP:AGP of 3:1. Therefore, this material will be placed only in PB-WRDF-2, with a design capacity of 50,000 tons, and encapsulated as PAG waste rock in accordance with *Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan, January 2003*. As stated previously, no pit lake will form. Waste rock management includes full encapsulation of PAG waste and all waste rock facilities must be reclaimed with surface contours to minimize potential for meteoric water ponding or infiltration and capped with a vegetated cover.

Carlin Pit Declines: In October of 2022, the Division approved an EDC that permitted the construction of two new declines within the Carlin Pit to access the Leeville and Pete Bajo underground mines. Development of the declines will take approximately 18-months, produce 2.6 million tons of waste rock, and provide for improved ventilation and haulage. While the majority of waste that will be extracted from the underground is classified as non-PAG based on NGM's LECO database, there will be uncertain/PAG (ANP/AGP ratio of <3) material produced during decline development. Uncertain/PAG waste will be stored in PAG cells that will be capped with a 20-foot think non-PAG encapsulation layer. The tops of the lifts will be sloped at a 0.5% gradient to shed water towards a stormwater catchment. The designed facility has a total waste capacity of approximately 6.2 million tons with a total PAG storage capacity of approximately 1.16 million tons.

The proposed management strategy coupled with the primarily non-PAG nature of the waste materials (average ANP/AGP ratios in excess of 2.9) and the 400-foot depth to groundwater (pre-anthropogenic groundwater elevation), minimize any chances of groundwater degradation from the proposed facility.

Current dewatering activities have depressed the water table sufficiently for the declines to be constructed, but in the event that contact water is created due to isolated perched zones of water, a contact water management system was designed. This system will pump contact water to four 5,000-gallon plastic tanks that are located at the entrance of the declines and placed within synthetically lined secondary containment that can contain 110% of the largest vessel and the resultant precipitation from a 100-year, 24-hour storm event. The containment consists of a depressed 80-mil HDPE lined containment area that has rectangular surface dimensions of approximately 66.5 by 88 feet, an approximate depth of 5 feet, and pond side slopes ratios of 1.5 horizontal to 1 vertical. The liner will be covered with a 6-inch thick liner bedding material and then be backfilled with overliner material to create a vehicle load out area where water can be pumped into trucks for transport the Leeville Water Treatment Plant or for re-use in underground operations. An 18-inch perforated pipe wrapped in 10-oz per square foot non-woven geotextile will be installed within the backfill to evacuate any meteoric or contact water that may accumulate in the backfilled material.

North and South Waste Rock Disposal Facilities: Gold Quarry waste rock is placed in two separate facilities, the North Waste Rock Disposal Facility (WRDF) and the South WRDF. The North WRDF is located to the north of the Gold Quarry Heap Leach Pad and east of the James Creek TSF downstream embankment. This facility will eventually overdump the Gold Quarry Heap Leach Pad and may reach the James Creek TSF embankment. The South WRDF forms the north and northwest side buttress and embankment of the Mill 5/6 Central TSF.

Prior to 2003, in order to prevent acid generation from long-term storage of refractory ores and waste rock, the waste rock facilities were constructed and operated in accordance with Newmont's *Refractory Ore Stockpile and Waste Dump Design, Construction & Monitoring Guidelines*, which was first approved by the Division in 1995. Those guidelines include preparing a compacted, low permeability base for waste rock; construction of downgradient solution collection areas and collection areas beneath basin dump designs with measured permeability less than 1 x 10^{-5} cm/sec where groundwater is greater than 100 feet below ground (1 x 10^{-6} cm/sec if shallower); encapsulation and compaction, in individual lifts, of the PAG material within neutralizing waste material; control of surface water flows to prevent infiltration; placement of a low permeability cap over the final encapsulation cell; and final reclamation including re-vegetation to minimize water infiltration. With approval of a major modification effective April 2003, any expansion or modification of these waste rock disposal facilities beyond the existing (2002) fluid containment structure locations must meet the requirements of the updated Newmont Mining Corporation *Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan* (January 2003).

An expansion of the North WRDF was proposed and approved as part of a minor modification to the Permit in June 2004. The expansion was constructed in accordance with the January 2003 guidelines and includes a low permeability base, a lined solution collection channel and conveyance pipeline. The footprint of the expansion extends over the reclaimed locations of the original Gold Quarry Pregnant Solution Pond, which was replaced with the new Gold Quarry Solution Pond construction located to the northeast, and the Gold Quarry stormwater pond. Any solution collected in the North WRDF collection channel reports by pipeline to the new Gold Quarry Solution Pond (GQSP).

On 05 February 2005, a portion of the (Gold Quarry) North Waste Rock Disposal Facility collapsed. Approximately 10 million tons of waste rock and encapsulation material were displaced approximately 600 feet with some material crossing Nevada State Route 766 and stopping short of Maggie Creek. A geotechnical investigation of the event, referred to as the "Gold Quarry Slide", was completed by Call & Nicholas, Inc., on behalf of Newmont Mining Corporation.

The investigation report, titled *Gold Quarry Slide, Geotechnical Investigation, Failure Mechanisms Report, January 2006*, came to the conclusion that the shear strength of the Carlin Formation lower tuffaceous members, used to encapsulate the waste rock material, was inadequate for the overall slope height and slope angle of the constructed facility and was the primary contributor to the failure. As part of the clean-up and mitigation process, oxide material from the leading edge of the slide was characterized and moved to a final location on the east side of Nevada State Route 766 adjacent to Maggie Creek. Final contouring and seeding operations were completed in late September 2005. Based on characterization data, slumped refractory and PAG waste material was relocated onto containment with a compacted sub-base and, along with the face of the slump, recontoured to achieve overall slope angles of approximately 5.1H:1V. Stability monitoring of the recontoured facility was initiated and downgradient groundwater monitoring continues. Additional recommendations have been implemented and are detailed in the report in the Division files

In 2006 and 2007, two French Drains were installed within the east side of the North WRDF to collect perched low pH solution within the WRDF. The French Drains convey solution to a buried 4-inch HDPE pipeline that gravity drains to the stainless steel tank located in the GQSP.

The Phase II expansion of the South WRDF (SWRDF), designed in accordance with the January 2003 guidelines to receive PAG or refractory waste rock, was approved as a minor modification in October 2008. The expansion was approved for construction in three sub-phases (Phase II-A, II-B, and II-C) over the existing 12.2 million square foot (approximately 280 acres) Phase I non-PAG footprint and the design included a double-lined and leak-detected Stormwater Collection Pond.

The Phase II-A and Stormwater Collection Pond construction were completed in late 2010, and phases II-B and II-C were completed in November 2011. Phases II-A, -B, and –C will accommodate approximately 42.6 million tons, 12.3 million tons, and 26.9 million tons, respectively, when loaded in 50-foot lifts to a maximum design height of 300 feet. The Phase II Expansion will provide an approximately 82 million tons total additional capacity to the original 250 million ton facility for a grand total of approximately 332 million tons.

An EDC, approved in November 2011, authorizes an additional 200-foot vertical expansion, within the footprint of the SWRDF, to a maximum height of 500 feet above the LPSL base. The vertical expansion will accommodate an additional 126 million tons of waste rock using a calculated density of 110 pounds per cubic foot, bringing the total facility capacity to approximately 458 million tons.

A minor modification application was submitted in conjunction with the 2012 renewal application for construction of the SWRDF West Expansion construction. As designed, the SWRDF West Expansion will add approximately 4.5 million square feet to the facility footprint. The added footprint will accommodate approximately 52 million tons of waste rock to bring the facility total capacity to approximately 510 million tons. The SWRDF West Expansion construction will require upgradient relocation of a portion of the existing Mill 5/6 West TSF Stormwater Diversion Channel. The new diversion channel section will be constructed to the original design and drain to natural drainages located to the north and the remaining original channel section will continue to drain to the south. The abandoned portion of the diversion channel located within the Mill 5/6 West TSF footprint will be backfilled and fitted with a pair of 12-inch diameter CPEPs. The new CPEPs will be tied to the existing 12-inch diameter CPEP foundation drains (see below) to maintain internal conveyance of collected solution to the Stormwater Collection Pond. The existing foundation drains will be extended to the north and west limits of the expanded footprint and an additional pair of 12-inch diameter CPEP foundation drains will be constructed to collect and convey solution from the southwest corner of the SWRDF footprint.

The basic SWRDF design consists of a 12-inch thick, LPSL (permeability of less than 1 x 10^{-5} cm/sec) base constructed on the top lift of the Phase I pad (non-PAG waste rock) that serves as a prepared subgrade. The LPSL base is designed to drain to a centrally located shallow, flat-bottom trench that contains a pair of 12-inch diameter perforated CPEP foundation drains. At the far west extent of the SWRDF, the trench and CPEPs wye to collect and convey solution from the north and south limits of the footprint. The foundation drain pipelines, located about 3 feet apart in the trench, are encapsulated in an envelope of drain rock enclosed with 10-oz/yd^2 geotextile. The foundation drains are designed to convey direct precipitation run-off and infiltration solution to the SWRDF Stormwater Collection Pond (SWRDFCP) via the SWRDF Phase II Stormwater Collection Channel located at the downstream toe of the SWRDF.

The foundation drain pipelines are extended slightly beyond a temporary divider berm constructed at the upgradient limit of each newly constructed phase footprint. The upgradient ends of the foundation drain pipelines are capped until the next phase is constructed and the pipelines are again extended if necessary. The temporary berm prevents migration of surface flow from upgradient sources onto the constructed portion of the facility and is removed at the time of a new phase construction.

The SWRDF Phase II Stormwater Collection Channel is a trapezoidal-shaped channel that measures approximately 12 feet wide, 3 feet deep, and 330 feet long. With 2.5H:1V side slopes, the channel can convey the 100-year, 24-hour storm event flow at a depth of 1 foot. The channel discharges to the southwest corner of the SWRDF Collection Pond.

The SWRDFCP has a square footprint measuring approximately 313 feet on a side and is approximately 25 feet deep with 3H:1V side slopes. The pond is designed with 80-mil HDPE primary and secondary liners constructed over a 12-inch thick LPSL. The liner system LCRS is comprised of a layer of geonet placed between the geomembrane liners and drains to a 4-inch diameter perforated CPEP placed along the low end of the pond base. Solution collected in the LCRS is conveyed to a gravel-filled, geotextile-encapsulated collection sump with a solution capacity of approximately 2,250 gallons. The LCRS sump can be evacuated with a dedicated pump through a 12-inch diameter HDPE inclined riser. The pond has a maximum capacity of 10 million gallons, with an additional 2-foot freeboard, which is well in excess of the 100-year, 24-hour storm event flow of 8.2 million gallons.

The SWRDFCP can be evacuated through a 12-inch diameter stainless steel riser pipeline equipped with a dedicated 300 gpm submersible pump. The evacuated solution is conveyed via a 6-inch diameter HDPE pipeline encased in an 8-inch diameter HDPE secondary carrier pipeline into two existing 21.5-inch diameter SDR11 HDPE tailings delivery pipelines for discharge to the Mill 5/6 Central TSF. At the connection to the tailings pipelines, the 6-inch diameter conveyance pipeline is equipped with pinch valves, gate valves, and backflow preventers.

The SWRDFCP is equipped with an emergency overflow spillway lined with a single layer of 80-mil HDPE placed on liner bedding material. The spillway is a trapezoidal-shaped channel with 2.5H:1V side slopes and measures approximately 12 feet wide at the base, 3 feet deep, and 525 feet long. Solution originating from an overflow condition in the pond will discharge to the existing, synthetic-lined tailings pipeline trench and report to the Mill 5/6 Tailings Booster Pump House and associated secondary containment.

Petroleum-Contaminated Soil (PCS) Management Plan: An EDC was approved in June 2014 to incorporate a PCS management plan into the Permit. The EDC allows on-site disposal of non-hazardous PCS that meets risk-based screening levels for volatile and semi-volatile organic compounds (VOCs and SVOCs, respectively). Approved disposal areas include the SWRDF, the Long-Term Management Area (LTMA) at the former South Area bioremediation pad on the southwest side of the Gold Quarry pit, and a 350-acre area on the western portion of the James Creek TSF. Only the former two disposal areas will be active; the James Creek TSF was used as a one-time disposal area for 450,000 tons of historic PCS excavated during clean-up of the old Gold Quarry fuel dock in 2004-2005. Approved PCS temporary holding pads, which are used to hold PCS while it dries or until screening analyses are performed, include the Interim Holding Pad (IHP) next to the LTMA at the former South Area bioremediation pad, and the Property Leach Pad (which is included in WPC Permit NEV0088011). The LTMA and IHP feature a buried earthen liner constructed in the 1990s with permeability reconfirmed in 2009 to be less than 1 x 10^{-7} cm/sec. The PCS Management Plan also allows combustion of PCS in the Mill 6 roasters, but this treatment method must await Division approval of a modification to the applicable air quality permit.

An EDC was approved in February 2015 to construct a concrete de-sedimentation pad adjacent to, and connected to drain into, an existing concrete truck washbay sump at the South Area Super Shop (also known as Truck Shop 5). The de-sedimentation pad will be used as an additional PCS temporary holding pad, for drying PCS sludge that is periodically removed from the washbay sump. All concrete joints in the de-sedimentation pad are outfitted with flexible waterstops.

On 18 July 2017, the Permittee submitted an EDC proposing to expand the existing de-sedimentation pad containment that would allow for the placement of geotubes that will remove additional PCS and enhance the handling of PCS sediments. The proposed de-sedimentation pad expansion, constructed of 4,000 pound per square inch reinforced concrete, measures approximately 61 feet by 30 feet with a nominal 1-foot thickness. A 10-foot long approximately 6 inch high tapper wall, located at the northwest corner of the de-sedimentation pad, will collect filtrate and convey the fluid onto the existing de-sedimentation pad. Retrofit waterstops will be utilized in areas where new concrete and existing concrete meet and control joints will utilize 6-inch continuous polyvinyl chloride waterstops. The concrete pad has a general slope to the northwest of between 2- to -3% and will utilize dirt berms, approximately 2-feet high, to assist in containment of filtrate. Dirt berms are utilized so that access can be gained by equipment to remove the geotubes, once the material has dried, and dispose of them at an approved disposal area.

In April of 2021, the Division approved an EDC for a new final disposal location on the SWRDF which is similar to the previously approved PCS disposal facility. The disposal pad location will be moved from the 5750-foot elevation to the 5800-foot elevation northeast of the existing PCS disposal facility. The new facility will consist of four disposal cells (oil and grasses, diesel, antifreeze plus mixed, and sump wash bay solids) and will remain a minimum of 365 feet interior to the edge of the SWRDF. The new PCS disposal location is underlain by over 100 feet of waste rock and a clay liner that drains to the SWRDF Collection Pond. In addition, the depth to groundwater is over 100 feet. Only sediments that meet the soil screening levels established by the PCS Management Plan will be disposed of at the new location.

Mac Waste Rock Disposal Facility Stage 1 Expansion: Construction of the Mac Waste Rock Disposal Facility Stage 1 Expansion (Mac WRDF-1) was approved as a minor modification in February 2012, as an exclusively non-PAG waste rock facility located on the west side of the North-South Haulage Road to the west of the Gold Quarry Pit. In May 2013, an EDC was approved with a modified design to allow the storage of PAG waste rock on Phases II and III of the Mac WRDF-1 facility. The facility is needed to store waste rock from the Gold Quarry Pit and will accommodate a design total of approximately 223 million tons of blasted pit waste rock and alluvium within a 503-acre footprint (441 acres public and 62 acres private land).

Construction of the Mac WRDF-1 will progress in three phases, from north to south, along the long axis of the facility. Phase I, constructed in 2012, is designed to store 43.4 million tons of non-PAG waste rock only, with a maximum height of 385 feet (6,095 feet amsl). Phase II is designed to store 20.3 million tons of non-PAG waste rock and 66.3 million tons of PAG waste rock, with a maximum height of 475 feet (6,295 feet amsl). Phase III is designed to store 3.9 million tons of non-PAG waste rock and 89.4 million tons of PAG waste rock, with a maximum height of 495 feet (6,345 feet amsl).

The footprint of each phase is cleared and grubbed to an average 12-inch depth and any topsoil removed is stockpiled. The constructed base slopes to the northeast with a grade varying from 200H:1V (0.5%) to 3H:1V (33%). A 25-foot-wide perimeter road, with 1½-foot high safety berms on each side, will be extended with each phase of construction and will encircle the entire facility once construction is complete. An internal access road along the boundary between the non-PAG Phase I and the PAG Phase II facility will be re-established on each successive 50-foot lift and the boundary for PAG placement demarcated with signage. PAG waste rock must be set back at least 50 feet from the toe of the perimeter road berm and the toe of the Phase I/II internal access road berm. Inter-lift benches, 75 feet wide, will allow a final re-contouring of the facility side slopes to an average 3H:1V slope. The historic non-PAG Mac WRDF will be overdumped during construction of the Mac WRDF-1 Phase II. Temporary channels and stormwater controls will be used to divert storm run-off from exposed portions of the footprint prior to waste rock loading and permanent diversions and sediment basins will be constructed to control the 100-year, 24-hour storm event flows.

Stability analysis was performed for cross sections of critical configurations using the Mac WRDF-1 design, both non-PAG and PAG design configurations, the topography as modified during construction, and known subsurface material and waste rock characteristics. The results indicate that the Mac WRDF-1 will meet or exceed all Division static and pseudostatic factors of safety for stability when constructed as designed. However, to maintain the modeled stable factors of safety, highly plastic clayey alluvium, which occurs primarily as lenses in the Carlin Formation and may be encountered in some areas of the pit, must be placed a minimum horizontal distance of 200 feet from the exterior of the facility.

For Phase I, non-PAG waste rock is placed directly on the cleared surface, but for Phases II and III, as a result of the EDC approved May 2013, the non-PAG and PAG waste rock is placed on an engineered pad constructed in conformance with the approved Newmont Mining Corporation *Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan* (January 2003), including a lined drainage collection channel and a double-lined collection pond. The pad will be constructed as follows from bottom up: native subgrade, random fill as needed to meet the slope specifications, compacted in 12-inch lifts to 90% maximum dry density (ASTM Method D1557), a 12-inch thick LPSL compacted to 92% maximum dry density (ASTM Method D1557) to achieve a maximum permeability of 1 x 10^{-5} cm/sec, and a minimum 10-foot thick layer of non-PAG waste rock, above which all remaining PAG and non-PAG waste rock is placed.

A lined drainage collection channel will run along the downgradient margins of Phase II and Phase III. In the drainage collection channel a double-textured 80-mil HDPE geomembrane will lie on top of the LPSL, and be overlain in turn by a 12-inch thick fine-grained protective layer, two 12-inch diameter CPEP drains embedded within a 2-foot thickness of drainage aggregate that is wrapped in 10 oz/yd2 non-woven geotextile, and a 1- to 3-foot thick layer of non-PAG waste rock. An additional 12-inch diameter CPEP will be placed directly on the low permeability soil layer within each natural drainage on the pad to convey drainage water efficiently to the downgradient drainage collection channel. The drainage collection channel will convey drainage water to a short lined transfer ditch that empties into the Mac WRDF-1 Collection Pond, located at the southeast corner of the Mac WRDF-1 pad (adjacent to Mac WRDF-1 Phase III). Four 12-inch diameter CPEPs will discharge into the Collection Pond: two from the collection channel south of the pond and two from the collection channel north of the pond.

The Mac WRDF-1 Collection Pond, as designed, measures 320 feet by 330 feet by 25-feet deep, with a capacity slightly over 10 million gallons when the minimum 3-foot freeboard is maintained. The collection pond is sized to contain all drainage water that would report to it as a result of the 100-year, 24-hour storm event. The collection pond is constructed as follows from bottom up: prepared subgrade, 12-inch thick LPSL compacted to 92% maximum dry density (ASTM D1557), double-textured 80-mil HDPE secondary liner, geonet LCRS layer, and double-textured 80-mil HDPE primary liner. In the east corner of the pond, a select gravel-filled LCRS sump will be between the liners at the low point in the pond bottom. The LCRS sump is evacuated via a stainless-steel pump mounted within a 12-inch diameter HDPE pipe that runs up the pond side-slope between the liners and boots through the primary liner at the pond crest.

Solution in the Mac WRDF-1 Collection Pond may be evacuated and pumped to the previously constructed South Waste Rock Disposal Facility Stormwater Collection Pond (SWRDFCP) via a 3.4-mile long double-contained Mac WRDF-1 Transfer Pipeline. The primary transfer pipeline will consist of an 8-inch diameter HDPE SDR 11 pipeline. The primary pipe will be contained within a 12-inch diameter HDPE SDR 21, secondary pipe, except in the area between the Mill 5/6 Tailings Booster Pump House and the SWRDFCP, where the primary pipe is contained within the lined tailings pipeline trench and does not include a secondary pipe. The transfer pipeline will include five air release valve vaults along its course. Stainless steel air valves attached to the primary pipeline are housed within secondary containment vaults constructed of capped 36-inch diameter HDPE riser pipes with 2-inch diameter air vent pipes. The 12-inch diameter secondary HDPE pipe will be welded to the outside of the vaults to provide continuous secondary containment for the primary pipe. The Permit requires weekly monitoring of the vaults and both free ends of the secondary pipe for primary pipe leakage.

Gold Quarry Heap Leach Pad: The Gold Quarry Heap Leach Pad was constructed in 1985 and loaded with oxide run-of-mine and primary- and secondary-crushed and agglomerated ore from November 1985 through November 1989. The heap leach pad is divided into several cells by 1.5-foot high internal berms located on 800-foot centers across the pad. Ore was loaded to approximately 200 feet above the liner system. The Gold Quarry Heap Leach Pad contains approximately 49 million tons of ore and the footprint covers approximately 200 acres.

Cyanide leaching was completed in February 1994, after which solution was recirculated through the heap and carbon adsorption columns with reclaim water added as makeup water. This rinsing process ended in March 1995. The carbon columns and barren tank were removed in 2001, and shipped to Newmont operations at Yanacocha, Peru.

The Gold Quarry Leach Pad liner system consists of a single 80-mil HDPE liner over a 1-foot thick prepared subgrade, which was compacted to a permeability ≤ 1 x 10^{-5} cm/sec. The HDPE liner is protected by approximately 2 feet of sand-and-gravel overliner material, which also provides hydraulic relief. Within the overliner, 4-inch diameter perforated CPEP was placed on 20-foot centers to collect leach solution that drains to transfer channels located on the perimeter of the pad. Two LCRSs were installed in the north perimeter transfer channel, however, the heap leach pad itself is not leak-detected. Groundwater quality is monitored in monitoring wells GQ-7B and GQ-10B located downgradient of the Gold Quarry Heap Leach Pad.

During operation, pregnant solution in the perimeter transfer channels flowed via 20-inch diameter steel pipelines to the Gold Quarry Solution Pond. Pregnant solution or any other solution entering the pond is pumped back to the Mill 5/6 complex.

Gold Quarry Solution Pond**:** A minor modification to the Permit, approved in June 2004, included closure and reclamation of the original Gold Quarry Pregnant Solution Pond and the associated downgradient stormwater pond. Also approved were an extension of the footprint of the North WRDF over the reclaimed area and construction of a new GQSP northeast of the site as described below.

The GQSP is designed for containment and management of combined draindown and meteoric contributions from the Gold Quarry Heap Leach Pad, which has not received process solution since rinsing was completed in 1995, the James Creek Tailings Storage Facility underdrain and pumpback system, and the solution collection channel for the North WRDF. The GQSP is designed with a capacity of approximately 3.1 million gallons below the 2-foot freeboard. This capacity will accommodate meteoric fluid contributions from all interconnected sources for the 25-year, 24-hour storm event plus the draindown due to a 7-day power loss.

The shape of the GQSP is an irregular 'J' in plan view with maximum horizontal dimensions of approximately 160 feet by 300 feet and a maximum crest-to-pond bottom depth of 15 feet (a 13-foot operating depth with the required 2-foot freeboard). The pond is constructed with a geonet layer as an LCRS placed between the primary and secondary 80-mil HDPE pond liners. The subgrade beneath the secondary liner was scarified and re-compacted to produce a 6-inch thick LCSL with a maximum permeability of 1 x 10^{-5} cm/sec. The LCRS drains to a gravel-filled leak detection and collection sump, located between the primary and secondary synthetic liners and encapsulated within 8-oz/yd^2 non-woven geotextile. The 2,250-gallon LCRS sump is equipped with a dedicated pump and can be evacuated through a 10-inch diameter HDPE riser pipe placed along the pond side-slope.

Solutions are conveyed by gravity from all sources to the GQSP via 4-inch diameter HDPE pipelines that discharge to a stainless steel tank located within the GQSP. Pipeline secondary containment is provided by either 80-mil HDPE-lined channels for surface runs or by 8-inch diameter HDPE pipelines for buried runs. The tank is equipped with a pump and solution is transferred directly to the Mill 5 thickener tank via a 4-inch diameter solution return pipeline. Surface runs of the return pipeline are located on existing pad or ditch liners for secondary containment and buried runs are placed within an 8-inch diameter pipeline for secondary containment. The GQSP currently serves as an emergency overflow pond for the stainless steel tank.

Gold Quarry Solution Pond Pumpback System**:** An EDC modification was approved in December 2006, for construction of the Gold Quarry Solution Pond Pumpback System (GQSPPBS). The GQSPPBS is designed as the primary system for collection of all solution originally reporting to the GQSP from the James Creek Tailings Storage Facility underdrain system, the Gold Quarry Heap Leach Pad reclaim system, and the North (PAG) Waste Rock Disposal Facility solution collection system and conveyance of that solution directly to the Mill 5 Tailings Sump. The modification was necessary following several storm events that nearly overwhelmed the GQSP capacity, damaged the pond liner, and flushed large quantities of sediment into the pond. The GQSP now serves as an emergency overflow pond.

The GQSPPBS is comprised of a conical-bottom, open-top, 500-gallon stainless steel tank with a variable frequency drive pump located on a reinforced concrete foundation slab. The foundation slab is located in a notch constructed within the lined south-side slope of the GQSP. The foundation slab sits on a liner system comprised of 80-mil HDPE primary and secondary liners, with a layer of Geonet sandwiched between for an LCRS. The GQSPPBS synthetic liner system is fused to the existing GQSP liner system and constructed over a 12-inch thick layer of clay compacted to 95% maximum Modified Proctor dry density (ASTM Method D1557).

The GQSPPBS collection tank is equipped with a 4-inch diameter drain line, equipped with a valve, that reports to the GQSP and a top-mounted 8-inch diameter overflow pipe that will also discharge to the GQSP. Solution is pumped from the tank to the Mill 5 Tailings Sump through a 4-inch diameter HDPE pipeline at approximately 125 gpm using a horizontal magi-drive pump mounted at the base of the tank. The pump is equipped with a variable frequency drive (VFD) to control the fluid level in the tank. The flow rate is monitored with a flow meter.

Four existing pipelines were modified with sections of SDR 11 HDPE pipeline, placed in lengths as needed, and rigid 316-stainless steel pipeline for final connection to the new GQSPPBS tank installation. The existing 4-inch diameter HDPE pipeline that conveys draindown from the Gold Quarry Heap Leach Pad was extended from the opposite end of the GQSP along the pond crest to the tank. This 4-inch diameter pipeline is located within an 8-inch diameter HDPE pipeline for secondary containment and placed beneath at least two feet of cover to protect it from freezing.

A new fiberglass barge, equipped with a pump, is used to evacuate solution from the GQSP through a 4-inch diameter pipeline. The barge discharge pipeline connects to a conveyance pipeline for direct discharge to the Mill 5 Tailings Sump.

<u>Gold Quarry Bio-Leach Test Project (decommissioned September 2004)</u>**:** A Bioleach Test Project was approved and constructed on top of the Gold Quarry Heap Leach Pad between September and December 1994. The Gold Quarry Heap Leach Pad liner system served as primary containment for the Bioleach Test Project; therefore, the pads and ponds for the Bioleach Test Project were not designed for total solution containment. The test project was decommissioned under direction of the Division’s Bureau of Mining Regulation and Reclamation (BMRR) Closure Branch in September 2004; however, a description of the original facility follows.

The Bioleach Test Project was comprised of two leach pads; one a bio-oxidation pad with five separate cells; the other an 80-mil HDPE-lined pad located to the east of the bio-oxidation pad for ammonium thiosulfate leaching after bio-oxidation of carbonaceous-sulfidic ore. The bio-oxidation pad covered approximately 625,000 square feet and had a capacity of approximately 1,408,000 tons loaded in two approximately 35-foot lifts. The ammonium thiosulfate leach pad covered approximately 456,000 square feet and had a capacity of approximately 811,000 tons with a total height of 50 feet.

Both pads had solution collection pipeline systems that reported to process solution ponds. The two-cell, 80-mil HDPE-lined bio-oxidation process solution pond and the ammonium thiosulfate process solution pond were designed to contain the draindown volume from the pads during a 24-hour shutdown period. Overflow pipelines reported to the Gold Quarry solution transfer channel and then to the Gold Quarry Pregnant Solution Pond. Any overflow from the pregnant solution pond reported to the stormwater pond. The bio-oxidation process solution pond also served as containment for the inoculum and sulfuric acid tanks. The emergency containment available at the Gold Quarry heap leach facility was verified as sufficient to contain the 25-year, 24-hour storm event and to withstand the 100-year, 24-hour storm runoff with the addition of flow from the Bioleach Test Facility.

The ammonium thiosulfate gold recovery plant was located on top of the Gold Quarry Heap Leach Pad. Gold recovery from the ammonium thiosulfate leach process, similar to the Merrill-Crowe process, used a circuit that included clarification, deaeration, and the addition of copper powder. The resulting gold-rich precipitate was dewatered and melted in the refinery to produce doré bullion.

Both the bio-oxidation and ammonium thiosulfate pads were designed for multiple loadings. Bio-oxidized ore, depending on gold grade, could be transported to the South Area Leach facility (WPC Permit NEV0088011) for processing on the conventional cyanide heap leach pads or to Mill 5 for conventional cyanide milling. Following ammonium thiosulfate leaching, the spent sulfidic-carbonaceous waste material was used, as permitted, for embankment expansion of the Mill 5/6 Central TSF or placed in a Gold Quarry waste rock disposal facility as approved by the Division.

<u>Gold Quarry Refractory Ore Stockpile Pad</u>**:** The Gold Quarry Refractory Ore Stockpile Pad (GQROSP) is a pre-1995 construction. No as-built drawings or other information are available and the construction pre-dates any of the more recent plans generated for refractory ore stockpile and waste rock dump design, construction and monitoring. However, it is believed the original pad, with a footprint of approximately 89.9 acres, was constructed with a 1-foot thick, LPSL base, compacted to a permeability $\leq 1x10^{-6}$ cm/sec. The pad is sloped toward the existing Gold Quarry Refractory Ore Stockpile Collection Pond (GQROSCP) and precipitation reporting to the pad surface migrates by gravity to the GQROSCP, located at the southeast edge of the site.

A minor modification was approved in May 2008, and completed in mid-December 2008, which expanded the pad on the north and south sides to accommodate increased ore tonnage from the Gold Quarry Pit and numerous pits located in the North Area. The expansion was designed in accordance with the Newmont Mining Corporation *Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan, January 2003*.

The north side expansion measures approximately 14.3 acres and the south side measures approximately 29 acres. The expanded pad will have an ultimate footprint of approximately 133.2 acres. Each of the 2008 expansion areas is constructed with a 6-inch thick prepared subgrade compacted to 90% maximum dry density (ASTM Method D1557), overlain with a 12-inch thick LPSL compacted to a measured permeability $\leq 1 \times 10^{-6}$ cm/sec, and covered with a 36-

inch thick protective layer of road-wearing course material with a permeability > 1 x 10^{-3} cm/sec, a nominal particle size of 12-inches diameter, and no more than 10% of the material passing the minus No. 200 mesh sieve. The perimeter of the entire pad is bermed to a height at least 2 feet above the upper surface of the protective layer.

The compacted LPSL base of each expansion is graded to drain to a sedimentation basin constructed with a 3-foot thick base of ≤ 1 x 10^{-6} cm/sec LPSL material. The north sediment basin empties to a 15-inch diameter slotted corrugated CPEP and solution is conveyed by gravity to the GQROSCP. The CPT pipe is located in a vee-ditch constructed with a LPSL base and is encapsulated within select drain rock and 8-oz/yd^2 geotextile. The south sediment basin empties to a LPSL-lined channel that conveys solution directly to the GQROSCP. To optimize function, the design calls for no more than 3 feet of sediment to accumulate above the deepest point in either sediment basin.

<u>Gold Quarry Refractory Ore Stockpile Collection Pond</u>**:** In March 2004, the Division identified low pH solution collecting in a depression downgradient from the Area 20 Refractory Ore Stockpile located within the original Gold Quarry Refractory Ore Stockpile Pad (GQROSP). A remediation design was approved as an EDC in October 2004, and constructed during the 2005 construction season. The system is comprised of a collection channel, solution collection pond, and a collected solution conveyance pipeline designed to handle inflow of 90 gpm.

The solution collection channel was constructed on the downgradient toe of the stockpile and consists of a minimum 1-foot thick LPSL keyed into the LPSL beneath the stockpile. The LPSL was compacted to 90 percent of the maximum dry density as determined by ASTM Method D1557. In-situ permeability of the compacted soil layer was measured at 1.47 x 10^{-8} cm/sec. A 4-inch diameter perforated HDPE pipe was placed along the full length of the solution collection channel, covered with clean gravel fill, and encapsulated with a layer of 8-oz/yd^2 non-woven geotextile.

The GQROSCP has a constructed capacity of 907,200 gallons with a 1.5-foot freeboard. The pond capacity is sufficient to contain 7 days of continuous inflow at the maximum design rate of 90 gpm or the 25-year, 24-hour storm event volume reporting from the upgradient GQROSP. The pond is constructed with a soil sub-base compacted to 90 percent of the maximum dry density (ASTM Method D1557) and a 1-foot thick LPSL compacted to 90 percent of the maximum dry density (ASTM Method D1557). The pond liner system is comprised of a smooth 80-mil HDPE secondary liner, a layer of 200-mil geonet, and a textured, white, 80-mil HDPE primary liner. The geonet layer serves as an LCRS that reports to a 2,140-gallon LCRS sump filled with select drain gravel and encased with 8-oz/yd^2 geotextile within the HDPE liners. The sump may be evacuated through a 10-inch diameter HDPE inclined riser pipe. Collected solution may be evacuated from the pond with an installed submersible pump through a 24-inch diameter slotted stainless steel riser pipe at a minimum 100 gpm. Evacuated solution is conveyed to the Mill 5/6 Tailings Booster Pump House for discharge to process through a 4-inch diameter HDPE pipeline placed within an 8-inch diameter HDPE containment pipeline.

An EDC was approved in November 2008, to install an automated pumping and conveyance pipeline system to evacuate an unlined ARD sump and convey ARD solution to the collection pond. An investigation of the source and flow paths of ARD at the refractory ore stockpiles, completed during summer 2008, indicates that ARD does not readily infiltrate the underlying clay-rich native soil and that a French drain constructed in 2005 to collect ARD is not functioning as designed. Instead, solution flows downward to the contact between native ground and the engineered haul road fill, then laterally to the ARD sump.

The Gold Quarry Refractory Ore Stockpile ARD Collection Sump and conveyance system is comprised of a vertical, 36-inch diameter, perforated HDPE pipe wet-well placed in the center of the sump that is backfilled with well-rounded, carbonate-free, minus 6-inch diameter drain rock. The sump backfill is overlain with a layer of geotextile fabric anchored at the sump edges. A 12-inch diameter, perforated HDPE casing is centrally located within the wet-well with nominal ¾-inch diameter, well rounded, carbonate-free rock placed in the annulus between the two pipes. The wet-well casing is equipped with a stainless steel, self-priming centrifugal pump designed to pump 50 gallons per minute at 80 feet of head. Pumping cycles are controlled by sensors that activate the pump when the fluid level in the sump reaches a depth of 5 feet and de-activate the pump when the sump fluid level is evacuated to a remaining 1.5-foot fluid depth.

The design of the pipeline surface route gradient, the installation of an air/vacuum release valve, and the elimination of the check valve on the intake pipe, ensure that the system will self-drain and minimize the potential for damage due to freezing. The conveyance pipeline is equipped with a totalizing flow meter and pressure gauge. The conveyance pipeline is approximately 1,020 feet long and is constructed of prefabricated 4-inch diameter secondary containment by 2-inch diameter primary containment (SDR17 by SDR11) HDPE pipe. The pipeline is sleeved in an 8-inch diameter steel pipeline where it is buried to pass beneath the haul road. Both the primary and secondary pipelines will discharge to the GQROSCP.

The stockpile, collection channel, solution collection pond, ARD collection sump and conveyance system, all associated components, and any collected solution are managed in accordance with the Newmont Mining Corporation *Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan, January 2003*. In addition, monitor well M56-3 was constructed downgradient of the facility to monitor groundwater quality, which is reported on a quarterly basis.

Mill 5: Mill 5, constructed in 1988-1989 (2007, personal communication from Newmont), can process both run-of-mine oxide ore and bio-oxidized refractory leach ore at an average throughput of 20,000 tons per day (tpd). Following primary crushing, ore passes through a pair of 22-foot by 30-foot static grizzlies, installed as part of a minor modification to the Permit approved 16 September 2004, that remove plus 16-inch diameter material for secondary crushing.

The minus 16-inch diameter ore is stored in the 87,000-square foot Mill 5 Feeder Stockpile, which was enlarged and upgraded as part of a minor modification to the Permit approved 16 September 2004. The sloped, LPSL base of the enlarged pad was constructed in two 6-inch lifts, with demonstrated permeability $\leq 1 \times 10^{-6}$ cm/sec, and covered with a 3-foot thick protective layer of drainage material. All runoff from the stockpiled material is diverted by a perimeter berm, constructed of LPSL material with demonstrated permeability $\leq 1 \times 10^{-6}$ cm/sec, to a subgrade, reinforced concrete drop inlet and conveyed via an 18-inch diameter HDPE pipeline with secondary containment, comprised of a layer of 80-mil HDPE liner wrapped around the pipeline, to the Mill 5 Feeder Stockpile Collection Pond. The Mill 5 Feeder Stockpile and associated components are managed in accordance with the January 2003 Newmont Mining Corporation *Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan*.

The Mill 5 Feeder Stockpile Collection Pond has a capacity of approximately 466,650 gallons and can contain all pad runoff generated by the 100-year, 24-hour storm event with a 2-foot freeboard. The collection pond is constructed over a prepared sub-base with primary and secondary 80-mil HDPE liners. A geonet layer between the HDPE liners will serve as an LCRS to collect any solution escaping primary containment and transfer it to a leak collection and detection sump. The LCRS sump is filled with clean gravel and can be evacuated via an 8-inch diameter HDPE riser pipe.

The Mill 5 processing components are located either within a process building with concrete floors and stemwalls or on peripheral bermed or walled concrete containment with collection sumps to provide the required containment. Pipelines are, in places, single-walled and either located on concrete containment or are above ground where they can be visually inspected. In August 2002, a secondary containment upgrade to the sodium cyanide distribution pipeline system was approved as an EDC. The new system, installed wherever sodium cyanide solution pipelines are located outside building containment, consists of heat-traced carbon steel pipelines placed within transparent PVC piping with drain valves located within containment.

Crushed oxide run-of-mine ore, bio-oxidized ore, and sulfide ore are reclaimed from the Mill 5 Feeder Stockpile by two apron feeders and dropped onto a belt conveyor for transport and for addition of lime. (Note: The original stockpile had three apron feeders. One was eliminated with the 2004 minor modification upgrade to the stockpile.) The pH-controlled ore is conveyed to a semi-autogenous grinding

(SAG) mill where a cyanide solution is added while the ore is further reduced in size before being fed to a vibrating screen for separation. The SAG mill screen overflow is belt fed to secondary cone crushers and recirculated back to the SAG mill. The resulting SAG mill screen underflow passes through a network of cyclones and ball mills for final size classification. The resulting ore slurry product is pumped to a thickener where flocculant is added and from which underflow is pumped to CIL tanks located in two trains of four CIL tanks each. Activated carbon, pumped counter-current to solution flow in the CIL tanks, allows gold to adsorb onto the carbon. The gold-loaded carbon is captured on screens and pumped to a carbon handling facility where the gold is stripped from the carbon with an electrolyte solution and sent to the refinery for final processing. Barren carbon is screened and regenerated in one of two kilns for re-use.

A minor modification, approved in December 2007, authorized construction of two additional leach tanks (2400-TK-40 and 2400-TK-41) at the head of the existing CIL circuit. New secondary containment, hydraulically linked to drain to the existing CIL circuit containment, was constructed to accommodate the new tanks plus a future third leach tank (2400-TK-39), if required. However, no final design for the third tank and its foundation was provided as part of the approved minor modification application. Therefore, an additional engineering design review, payment of an EDC Permit modification fee, and construction approval will be required prior to construction of the third leach tank.

Each of the two open-topped, steel leach tanks are equipped with a rubber-lined, dual-impeller agitator and measure approximately 52 feet in diameter and 55 feet high to provide approximately 873,000 gallons of capacity in each tank. The tanks have steel bottoms and are mounted on concrete ring-walls backfilled with structural fill covered with a 6-inch thick oiled-sand cushion layer. Leak detection consists of perforated, 1-inch diameter PVC collector pipes, placed on the cushion layer, that pass through weep holes cast into the ring wall.

The expanded and hydraulically linked secondary containment provides in excess of the required 110% containment volume for the largest vessel within the linked secondary containment area (see below). The new portion of the secondary containment is constructed of a minimum 8-inch thick reinforced concrete floor, which is thickened to 30 inches beneath the tank foundations, and enclosed by a 5-foot high, 9-inch-thick new or vertically extended existing, reinforced concrete wall. To meet finished design grades, structural fill was placed as needed in 10-inch maximum-thickness lifts beneath the containment floor over a minimum 8-inch thick sub-base of scarified native material. The fill and sub-base were moisture conditioned to within ± 2% of the optimum moisture content and compacted to a minimum 98% of the Standard Proctor maximum dry density (ASTM Method D698).

The existing thickener underflow and cyanide addition pipelines were re-routed from the existing CIL circuit to feed directly to the new tanks. No activated carbon is added to the new tanks as they are designed only to improve gold recovery through additional solution residency time. No increase in the circuit flow was created or authorized by the minor modification. Leached slurry flows by gravity from the new portion of the expanded circuit into the existing CIL circuit.

The December 2007 minor modification design also included construction of upgraded secondary containment with a series of concrete launders (aprons) and notches, cut into the top of containment walls to serve as weirs, that hydraulically link the new and existing Mill 5 CIL and carbon-in-pulp (CIP) containment areas and the existing Mill 6 leach and CIP containment areas. In the event of a spill, solution reports to a clean-out sump that measures 6-feet wide, 6-feet long, and 6-feet deep, located at the south corner of the new CIL tank containment. The clean-out sump is equipped with a dedicated 400-gpm slurry pump that can be used to return spill material to either CIL tank with a 4-inch diameter, reinforced flex hose with quick-disconnect fittings for connection to a vertical carbon steel pipe attached to the side of each CIL tank.

Tailings material generated in the CIL circuit is pumped to the Mill 5/6 Central TSF. The James Creek TSF remains active only for use during an emergency upset condition in the Mill 5/6 Tailings Booster Pump House.

As part of a minor modification upgrade approved 16 September 2004, pre-regulation, buried tailings slurry conveyance and solution reclaim pipelines in the vicinity of Mill 5 were sleeved with water-tight corrugated exterior, smooth interior, polyethylene pipe to provide secondary containment wherever they are buried under access roads and ramps. The secondary containment pipelines extend a minimum of 10 feet beyond the toe of any road or ramp.

An EDC was approved in April 2014 for further containment upgrades for tailings and reclaim pipelines. Construction occurred from April 2014 to January 2015. The approximately 7,000-foot long section of the tailings pipeline corridor extends from near Mill 5/6 Tailings Booster Pump House 1 (adjacent to the James Creek TSF) to the milling and flotation facilities in the Mill 5 area. The affected pipelines are the two 20-inch diameter HDPE Mill 5 tailings pipelines, which were replaced with 21.5-inch diameter SDR 11 HDPE pipelines; the two 20-inch-diameter HDPE Mill 5/6 reclaim pipelines, which were replaced with 21.5-inch diameter SDR 11 HDPE pipelines; the two 12-inch-diameter HDPE Mill 6 tailings pipelines, which were replaced with 16-inch diameter SDR 11 HDPE pipelines; and one underdrain pipeline, which was replaced with 16-inch diameter SDR 11 HDPE pipe where it is exposed in the pipeline channel and 12-inch diameter SDR 11 HDPE pipe where it is sleeved within secondary pipe in buried sections. A new 6-inch diameter SDR 11 pumpback pipeline was also added to allow the evacuation of catch ponds along the pipeline corridor and pumping of the catch pond solution to the existing Mill 5 Concrete Emergency Catch Pond. The reclaim and underdrain pipelines were replaced from just north of the Mill 5/6 Tailings Booster Pump House to the Mill 5 facility, but the tailings pipelines were replaced over a shorter distance (approximately 4,000 feet) from near the northeast corner of the James Creek TSF to the Mill 5 facility. The tailings and reclaim solution flow rates did not change as a result of the EDC.

The upgrades include three sections of 80-mil HDPE-lined pipeline channel (with an 80-mil HDPE wear sheet installed on top of the 80-mil HDPE channel liner) interspersed with three sections where the pipelines are sleeved inside larger diameter secondary pipes where they are buried under haul roads and where they approach the Mill 5 area. At the two more westerly of the three haul road under-crossings, the lined pipeline channel terminates at a vertical concrete transition wall at the road embankment. The channel liner is extrusion welded to the concrete transition wall via an HDPE strip embedded in the concrete wall. The secondary pipe sleeves penetrate, and are sealed to, the concrete transition wall, and continue under the road crossing. The secondary pipes are 30- to 36-inch diameter HDPE for the 21.5-inch diameter tailings and reclaim pipes, 24-inch diameter HDPE for the 16-inch diameter tailings pipes, 18-inch diameter HDPE for the 12-inch diameter underdrain pipe, and 12-inch diameter HDPE for the 6-inch diameter pumpback pipe.

On the southwest side of the haul road under-crossing closest to Mill 5 (under the Mill 5 Feeder Stockpile ramp southwest of the Mill 5 Concrete Emergency Catch Pond), the lined pipeline channel terminates and the pipes transition to pipe-in-pipe secondary containment, but instead of being sealed to a concrete transition wall, as described above, the secondary pipes boot through the 80-mil HDPE channel liner. Prior to this EDC construction, the tailings, reclaim, and pumpback pipelines had already been upgraded with pipe-in-pipe secondary containment under the Mill 5 Feeder Stockpile ramp. These pipelines were left sleeved within the existing non-perforated CPEP secondary pipes under the ramp, but were encased in concrete on either side of the ramp where the HDPE secondary pipes transition to the non-perforated CPEP secondary pipes. The underdrain pipeline is the only pipeline that was upgraded with new HDPE secondary pipe under the Mill 5 Feeder Stockpile ramp. On the northeast side of the Mill 5 Feeder Stockpile ramp, the tailings, reclaim, underdrain, and pumpback pipelines continue to the Mill 5 facility with pipe-in-pipe secondary containment.

Stormwater that falls in the tailings pipeline channel secondary containment, any leakage from the primary pipelines, and any intentional drainage of the pipelines is collected in two single-lined HDPE emergency catch ponds (the existing 60-mil HDPE-lined Tailings Emergency Catch Pond #5, and the new 80-mil HDPE-lined Tailings Emergency Catch Pond #4), and in the existing concrete pond at Mill 5 (Mill 5 Concrete Emergency Catch Pond). All three single-lined ponds are subject to the 20-day evacuation requirement in the Permit. The Tailings Emergency Catch Ponds #4 and #5 are evacuated to the Mill 5 Concrete Emergency Catch Pond via a dedicated 6-inch diameter HDPE pumpback pipeline, and the Mill 5 Concrete Emergency Catch Pond is evacuated to the Mill 6 Tailings Box in the adjacent mill complex, the contents of which are pumped to the Mill 5/6 TSFs.

As part of the 2014/2015 tailings pipeline upgrade EDC, additional concrete secondary containment was constructed adjacent to the Mill 5 Concrete Emergency Catch Pond associated with new drain pipes and valves. Various pipeline connections to the mill facilities were also modified.

An EDC was approved by the Division in January 2016 for a new haul road crossing over the lined tailings pipeline channel a short distance southeast of the Mill 5/6 Tailings Booster Pump House. The existing 80-mil HDPE pipeline channel liner was extended both leading to and after the haul road crossing, and all pipelines are contained within 30-inch diameter steel secondary pipe sleeves under the haul road. Additionally, on either side of the haul road crossing, all secondary pipe sleeves are booted through an 80-mil HDPE liner flap installed on, and keyed into, the face of the road embankment. The embankment liner flaps are welded to the pipeline channel liner. In addition to the seven existing tailings and reclaim pipelines, the EDC included the installation, at the haul road crossing only, of five new tailings and .reclaim pipes that will ultimately be connected to the Mill 5/6 East TSF.

An EDC approved by the Division in August of 2019 approved additional containment upgrades to the TBPH An approximately 32-foot wide, 600-foot long textured 80-mil HDPE lined channel will be constructed to the west of the existing tailings pipelines and will be routed under an existing light vehicle access road. The channel will be constructed utilizing cut and fill methods with fill being moisture conditioned to within 2% of the optimum moisture content and compacted to 90% of the maximum dry density, as determined by ASTM Method D1557. The corridor will ultimately drain to a low point along the corridor and to an HDPE lined pond, however, this pond was determined to not be needed at the time of the approval. Areas to receive liner will utilize a 12-inch thick prepared subgrade, which will consist of materials free of particles in excess of 2-inches in diameter and will be moisture conditioned and compacted to the same specifications listed above.

The haul road crossing will consist of four 30-inch and one 18-inch carbon steel pipelines that will provide containment and tailings pipeline protection. The steel pipelines will be installed above the 80-mil liner, which will be continuous underneath of the pipelines, and will be surrounded by a layer of compacted pipe bedding and backfill material (minimum 90% maximum dry density) to a depth of 2.5 feet above the tallest pipeline. A 12-inch thick layer of road waring course will be placed above the pipe backfill.

A concrete containment area will be constructed to the west of the existing TBPH concrete containment and will consist of an approximate 32.6-foot by 22.2-foot concrete slab that will utilize 36-inch tall stem walls and be tied into the existing TBPH-1 containment. The concrete slab and walls will utilize series of waterstops to provide a leak proof containment for control joints and when being placed adjacent to existing containment and concrete piers located in the pad area. The pad will have a general slop of 2% to convey release solution to the newly constructed conveyance channel.

An EDC was approved by the Division in August 2016 for an Anglo-American Research Laboratory (AARL) Strip Circuit Expansion Project of the Mill 5 facility. The new expansion was constructed to the North-East side of the overflow thickener tanks of the Mill 5 facility. The EDC consists of removing part of the existing concrete containment for the Mill 5 overflow thickener tanks and construction of a new concrete containment basin. There will be a caustic tank (not currently permitted as of 2017 renewal), truck ramp, pumps, and boilers constructed and placed in the new containment basin. The addition of these new process components will increase the efficiency of the Mill 5 AARL strip circuit. The caustic tank is not included in this EDC and will be its own individually permitted as its own EDC.

The construction consisted of a portion of the existing Mill 5 CIC containment basin being removed within and a new concrete containment basin being constructed. Where new-to-existing or new-to-new concrete meets, there will be Division approved non-expanding flexible PVC waterstops installed in addition to a standard sealant. The waterstops used have been approved based on the potential process fluids that the stops could encounter in the event of a release. Around the perimeter of the expansion project, there will be a 9¾-inch curb constructed to ensure adequate containment in the event of a release. Around the platform of the truck ramp there will be a wash down trench that can route fluid to the floor of the containment basin. There will be a 5½-inch curb constructed that separates the containment for the CIC overflow and the AARL Carbon Stripping Expansion. The separated containment basin for the AARL expansion will have a containment of 8,078 gallons which give the basin the ability to contain 110% of the largest container (Loaded Carbon Tank).

There are a total of two sumps in the Mill 5 CIC containment basin along with a retrofit containment overflow basin. A new sump was constructed to pump released process fluids from the Mill 5 CIC thickener overflow tanks to the Mill 5 emergency catch pond. The existing sump for the CIC overflow was retrofitted for the AARL expansion, where the collected process fluids would also be pumped to the Mill 5 catch pond. The floors of each “separated” containment basin will be gradually graded to the lowest point of the floor where the sumps are located. If the AARL expansion containment basin becomes overflown, the process fluid will spill over the curb and run down gradient to the containment overflow basin. The curb will direct run-off from a 25-year, 24-hour storm event, on the uncovered sections of the containment basin, to the containment overflow basin. The rebuilt containment overflow basin was constructed of newly poured concrete joints fitted with Division-approved waterstops and a standard sealant. The overflow basin has a 20-inch gravity fed HDPE pipeline that leads to the Mill 5 emergency catch pond. The 20-inch HDPE pipeline penetrates the overflow basin wall and is fitted with a thermoplastic vulcanizate waterstop pipe ring and have standard seam sealant applied when finished.

Mill 5 Flotation Circuit: A minor modification was approved 19 December 2003, to incorporate a flotation circuit as part of the Mill 5 process. Pilot tests to produce a representative characterization sample of flotation tailings for comparison with characterization data for historic tailings generated by Mill 5 demonstrated no change to the waste stream that could significantly alter the potential for the tailings material to degrade waters of the State.

The flotation circuit processes bio-oxidized or sulfide ore slurry. Flotation reagents that may be added for proper flotation at various points throughout the flotation circuit path may include, but are not limited to, lead nitrate, copper sulfate (depressants for sulfide minerals), xanthate (sulfide collector), synthetic alcohols, and synthetic glycols (frothers). On 09 March 2018 and 24 December 2018, the Division approved the utilization of carbon dioxide and Orform® CO210 Collector (sulfide collector), respectively, in the Mill 5 flotation circuit. The majority of the reagents are either recovered in the flotation process or consumed in the Mill 6 process.

Slurry is conditioned with additional reagent addition in a rougher/scavenger conditioning tank before being gravity fed into two parallel trains of eight rougher/scavenger cells. A third eight-cell train, also approved as part of the December 2003 minor modification, was constructed in mid-2005. Tailings from the rougher/scavenger cells reports to a surge tank prior to introduction into the thickening, clarification, and gold recovery circuit similar to that employed in Mill 6.

Concentrate from the rougher/scavenger cells may report to the concentrate thickener or to the cleaner conditioning tank where additional reagents are added prior to introduction of the material by gravity to a series of eight cleaner flotation cells. Concentrate from the cleaner cells reports to the concentrate thickener. Tailings from the cleaner cells reports to a surge tank prior to entering the thickening, clarification, and gold recovery circuit described above.

Flocculant may be added at the concentrate thickener to promote dewatering of the flotation concentrate. In June 2011, an EDC was approved to construct an automated pump and pipeline system within in the existing Mill 5 building containment to distribute flocculant mixed with recycled Mill 5 process water directly to the thickeners. The automated pipeline distribution system eliminates the labor-intensive task of moving one-ton totes of liquid flocculant and manually adding product to the thickeners. Concentrated flocculant is delivered by tanker truck and off-loaded to a bulk storage tank located within the Mill 5 building containment. After mixing with recycle water, the diluted flocculant is distributed through pipelines located either over existing secondary containment or within new secondary containment pipelines to the thickeners.

Thickener overflow is returned to the mill water tank for use as make-up water. Underflow material is fed to a concentrate filter press and dewatered to 10% to 20% moisture content. The filtrate solution from the filter press is returned to the concentrate thickener and the dewatered concentrate is conveyed to the Mill 6 refractory ore feeder stockpile for ROTP or approved off-site processing.

Mill 5 Flotation Concentrate Filter Press Expansion Project**:** A minor modification was approved in May 2010, for construction of two additional flotation concentrate filter presses as the Mill 5 Flotation Concentrate Filter Press Expansion Project (Filter Press Expansion). The additional filter presses, plus operational enhancements to the existing Mill 5 flotation and filter press circuit, operate in parallel with the existing system to increase concentrate production from 245,000 wet tons per year (wtpy) to 694,000 wtpy.

The Filter Press Expansion components are contained in a new, metal-clad process building located approximately 200 feet southeast of the Mill 5 Flotation Circuit Concentrate Surge Tank Area. The process building measures approximately 80 feet wide by 102 feet long by 70 feet tall and is constructed on a curbed, reinforced concrete slab. The building is hydraulically linked to the reinforced concrete containment for the dedicated concentrate thickener tank, located at the southeast corner of the building, to provide in excess of the required 110% solution containment. Both containment slabs are internally sloped to collection sumps and the thickener is constructed on supports to allow visual leak detection. All new concrete joints are constructed with flexible polyurethane waterstops.

Concentrate is pumped from the Mill 5 surge tanks via overhead dual-walled containment pipelines to the concentrate thickener where flocculant may be added to promote dewatering of the flotation concentrate. The secondary containment of the dual-walled pipelines can be drained through spigots located within existing containment. Thickener overflow is returned to the mill water tank for use as make-up water. Underflow material is fed to a 26-foot diameter by 24-foot high Concentrate Storage Tank located inside the Filter Press Expansion process building. Concentrate is fed from the storage tank to either of two filter presses, which are identical in design to the two filter presses located in the Mill 5 circuit. The filter presses dewater the concentrate to approximately 10% to 20% moisture content. The filtrate solution from the filter press is returned to the concentrate thickener and the dewatered concentrate is conveyed to the Mill 6 refractory ore feeder stockpile for ROTP or approved off-site processing.

Mill 5 Liquid Flotation Concentrate Slurry Load-Out**:** An EDC was approved in late April 2009, to construct a permanent truck load-out containment pad to facilitate transport of liquid flotation concentrate slurry from the Mill 5 flotation circuit. The ability to ship liquid concentrate off site, primarily to the Twin Creeks facility, which has a permitted load-out pad, helps to overcome short-term problems associated with shortages of filtered concentrate feed that can be generated by the

Mill 5 circuit. The permanent pad replaces a temporary pad approved and constructed as an EDC modification in February 2009, which was removed as part of the permanent construction.

The permanent drive-on-drive-off pad consists of an 8-inch thick, steel-reinforced concrete slab that measures 20 feet wide by 40 feet long that is curbed and sloped to drain to an existing concrete slab that measures 26 feet wide by 32 feet long. As part of the permanent construction, the existing slab was retrofit with a new concrete containment curb and a new collection sump. All curbing and concrete joints are constructed with flexible waterstops. Slurry is conveyed from the Mill 5 flotation circuit to the tanker trucks through an aboveground, 4-inch diameter schedule 40 steel pipeline. Any spilled slurry is returned to process.

The trucks are U.S. Department of Transportation (DOT) approved, stainless steel, over-the-road tankers comprised of a 5,000-gallon main tanker and a 3,000-gallon pup tanker. The hydraulically linked load-out pad area has a capacity of 9,100 gallons, which exceeds the required 110% containment volume of 6,900 gallons for the largest tanker and precipitation reporting to the pad area. The slurry will be transported in accordance with all applicable State, federal, and local regulations. It is estimated that a maximum of 20 trucks per day will be loaded with a daily average being eight to nine trucks.

<u>Mill 5 Acid Addition System</u>**:** An EDC was approved in September 2005, to construct an acid addition system for the Mill 5 flotation circuit. Sulfuric acid can be added as a pH control agent for future treatment of bio-oxidized ore. The process utilizes concentrated liquid 92% to 98% sulfuric acid manufactured at Mill 6 at an average consumption rate of 2 to 3 gallons per hour. To meet anticipated demand, sulfuric acid will be transported an average of once per day using a DOT-approved 3,700-gallon over-the-road tanker truck. The facility, located on the northeast side of the Mill 5 building adjacent to the existing reagent building and MIBC (Methyl Isobutyl Carbinol) storage area, is comprised of a concrete truck load-out pad, a storage facility with dedicated secondary containment, distribution pipelines with secondary containment, and spill collection sumps.

The concrete load-out pad is constructed with concrete access berms, stem walls, and a collection and evacuation sump designed to contain 110% of the potential spill from the approved tanker truck. All concrete joints are completed with acid-resistant waterseal material.

Sulfuric acid is stored in a 17,000-gallon carbon steel tank, which has capacity adequate for approximately 3 days of operation. The tank is located within a Novolac® epoxy-coated concrete containment area with a dedicated solution collection sump and evacuation pump. The containment area is sized to accommodate 110% of the storage tank capacity in the event of a catastrophic failure and is constructed with a dedicated solution collection sump and evacuation pump. Leakage solution is conveyed to the Mill 6 tailings sump via a 2-inch diameter HDPE pipeline placed within a 'clear' 4-inch diameter PVC secondary containment pipeline with inspection valves. The acid storage tank is equipped with level indication and alarms, one operational and one standby distribution pump, and 2-inch diameter stainless steel distribution pipelines with 4-inch diameter 'clear' PVC pipeline secondary containment. The containment pipeline will be inspected on a monthly schedule for flow at inspection valves placed within building containment.

Mill 6 & Refractory Ore Treatment Plant (ROTP): The Mill 6 - ROTP, with an average daily design throughput of 8,500 tons, was constructed in 1992, and is used to process refractory (sulfidic and/or carbonaceous) ore. Several major components, such as a thickener, leach tanks, and conveyors, were transferred to Mill 6 during construction as part of the decommissioning of Mill 2. Final approval of Mill 2 decommissioning and Mill 6–ROTP construction was given as a minor modification to WPC Permit NEV0090056 on 02 June 1994.

Similar to Mill 5, Mill 6 ore passes through a primary jaw crusher and is conveyed to a radial stacker. Alternatively, Mill 6 ore may be crushed at the South Area Leach (SAL) facility and trucked to the crusher and stacker. The crusher and feeder stockpile areas are managed in accordance with Newmont's *Refractory Ore Stockpile and Waste Dump Design, Construction & Monitoring Guidelines* (1995 Version), to prevent acid generation from long-term storage of refractory ores and waste rock.

Apron feeders and conveyors transport ore from the 180,000 square foot Mill 6 ore stockpile to the Mill 6 drying and grinding system where either lime or trona is added to control SO_2 emissions and pyrite or organic concentrates are added to the ore for additional fuel value in the roasting process. The concentrate material storage area is constructed on a compacted base, demonstrating measured permeability ranging from 6.4×10^{-7} to 7.9×10^{-9} cm/sec, and is graded to drain to the stormwater collection pond.

An EDC was approved by the Division in October of 2017, for the construction of a 17,000 square foot ore stockpile expansion to the west of the existing Mill 6 Ore Stockpile Pad. The pad area was brought up to within 4 feet of the final elevation using compacted and random fill. A 1-foot thick, compacted, low hydraulic conductivity soil layer was placed above the common fill and exhibited a permeability of approximately 4.4×10^{-7} cm/sec. A minimum 3-foot thick layer of overliner material was placed on top of the LHCSL to protect against damage from vehicle traffic. Two 6-inch perforated corrugated polyethylene pipes, at the northern most corner of the expansion, were placed to assist in the transport of meteoric water, which percolates through the overliner material, to the Mill 6 sump. Both the overliner and low hydraulic conductivity soil layer, were graded to drain to the Mill 6 Feeder Stockpile Sump with a minimum slope of 1%.

The original unlined stormwater collection basin was upgraded as part of an EDC approved on 20 October 1999. The upgraded stormwater collection pond, which also receives any flows from the Mill 5 ore stockpile, has a sub-base and conveyance channels constructed in two 6-inch thick lifts and re-compacted to a measured permeability $\leq 1 \times 10^{-7}$ cm/sec. A layer of Geotextile covered with riprap protects the conveyance channels. The pond is designed to contain flows from the 25-year, 24-hour storm event.

Following grinding and drying, refractory ore enters the ROTP portion of Mill 6 and is fed into one of two parallel roaster trains where it is heated, oxidized, and quenched with water. To obtain the required high roasting temperatures, fuels, including but not limited to, kerosene, diesel, and pyrite-bearing or carbon-bearing secondary materials, such as Mill 5 flotation concentrate, are used. After quench-water is added, the calcine slurry is pumped to precipitation tanks to control scaling of pipelines between the quench and neutralization circuits. In the neutralization tank, the calcine slurry is mixed with milk-of-lime to control pH in the gold extraction process. The slurry is then pumped to a thickener tank where a flocculant is added. The thickener underflow is pumped to CIL tanks where the activated carbon is moved countercurrent to the solution flow. Once the carbon becomes gold-loaded, it is captured on screens and pumped to the carbon handling facility where gold is stripped from the carbon with an electrolyte solution that is sent to a refinery for final processing.

Following the gold removal from the carbon, the barren carbon is filtered and regenerated for re-use in one of two kilns. Fine carbon that is determined to not be suitable for gold recovery is temporarily stored on concrete containment prior to shipment for off-site processing. Bevill exempt carbon from air pollution controls associated with the benefaction process are evaluated for reuse and recycling. Carbon which is determined to be unsuitable for reuse will be introduced to the tailings circuit at Mill 5 and discharged to the TSF with the tailings stream.

The Mill 6 facility also includes a gas cooling and cleaning circuit, a sulfuric acid plant, and an oxygen plant. All secondary streams from Mill 6 either report to a tailings sump or are recycled. Roasting by-products include sulfuric acid and mercury. The acid may be used on site or sold. Mercury is managed in accordance with applicable regulations.

The TK-26 tank and its associated concrete containment were constructed in 1993 as a component of the original Mill 6 Refractory Ore Treatment Plant. The TK-26 tank has a capacity of approximately 380,000 gallons and is used exclusively for the storage of liquid sulfuric acid produced in Mill 6. Ground movement beneath the slab and years of weathering had caused the containment of the tank to become compromised and allow for a release to occur in late 2017.

The Division approved an EDC, on 22 November 2017, to remove the existing concrete slab, and subgrade that were contamination by the compromised containment. When contaminated soil was found, the soil was excavated and replaced with a clean granular backfill that will ensure no ground movement will occur. The backfilled material was then be covered with a 10-inch layer of random fill that was be moisture conditioned and compacted, according to American Society of Testing and Material Method D1557, to 90% of its maximum dry density.

The new slab is similar in construction to the existing pad, with a 6-inch thick concrete slab reinforced with a single layer of epoxy coated rebar. The new slab utilizes retrofit and ribbed flat PVC waterstops at all existing to new concrete tie-ins and at all new construction and control joints, respectively. The finished pad will have a sealer/sealant applied to further protect the concrete pad from weathering.

Quench-water (thickener overflow) used in the Mill 6 ROTP reports to a cooling facility prior to re-use in the process. The facility is designed to cool approximately 7,900 gpm of quench-water from 104º F to 79º F. The facility is comprised of a spray area, a cooling pond, a spill pond, and a stormwater pond.

The quench-water spray area is approximately 125 feet by 600 feet in plan dimension and is located along the south bank of the quench-water cooling pond into which it drains. The spray area is double-lined and leak-detected. Construction, from bottom to top consists of a 12-inch thick clay layer, compacted in maximum 6-inch-thick lifts to 90% Modified Proctor dry density, determined by ASTM Method D1557, and permeability < 1 x 10^{-7} cm/sec, an 80-mil HDPE secondary liner, a layer of HDPE geonet, and an 80-mil HDPE primary liner. While repairs were being made to the spray area liner system in September 2006, it was discovered that the leakage collection and recovery system is not hydraulically linked to the quench-water cooling pond leak detection sump per the approved design. As a result, a "flow-no flow" leak detection pipe (QPALD) was installed to provide visual monitoring.

The quench-water cooling pond is double-lined, leak-detected, and has a maximum capacity of 5,800,000 gallons. The pond base and liner construction is the same as that used for the quench-water spray area. The pond leak detection sump, filled with clean, low-fines (<5% minus-200 mesh) granular material (100% <1.5-inch diameter), is sandwiched between the primary and secondary synthetic liners in the northeast corner of the pond, has a capacity of approximately 2,000 gallons, and can be evacuated via an inclined, 8-inch diameter HDPE riser pipe.

Cooled quench-water flows from the bottom of the cooling pond to the quench-water pump station via a 36-inch diameter steel pipeline. The 36-inch diameter pipeline riser is encased in concrete where it exits the pond floor. The pond synthetic liners are booted to the pipeline at the exit point into the concrete encasement. The 36-inch diameter pipeline exits the concrete encasement into a 54-inch diameter steel pipeline that provides pipe-in-pipe style secondary containment for the smaller pipeline. The pipe-in-pipe containment is leak-detected after it enters the pump station secondary containment sump. The leak detection system consists of a 4-inch diameter steel pipeline connected into the bottom side of the outer containment pipeline and flanged to a 4-inch diameter HDPE pipeline, which is routed to a vertical 12-inch diameter HDPE leak detection observation well.

The quench-water pump station is constructed of reinforced concrete with walls and floors approximately 2 feet thick. The tank internal dimensions measure approximately 24 feet long by 18 feet wide by 22 feet deep. The top of the pump station wall is slightly above the crest of the quench-water cooling pond. The pump station structure sits within an excavated trapezoidal-shaped box sump that provides secondary containment. The sump wall soils are compacted and covered with a layer of 80-mil HDPE liner. A layer of geotextile was placed over the HDPE prior to filling the sump with drainage collection material. The lower portion of the sump is filled with clean gravel and the upper portion is filled with common fill material. A 12-inch diameter, vertical, HDPE pipe, placed to within 6 inches of the bottom of the sump, serves as a leak detection well (QWPS). However, the box sump is not sealed and meteoric fluid can infiltrate and accumulate. Therefore, a determination of a process solution leak can only be determined with chemical analysis.

An upgradient storm water retention pond prevents storm water runoff debris from entering the quench-water cooling pond. The storm water retention pond has a capacity of 262,000 gallons and is not lined or leak-detected. Overflow reports to the quench-water cooling pond.

A 2,700,000 gallon Emergency Spill Pond is located downgradient of the quench-water cooling pond and the Mill 6 facility. This pond provides secondary containment for the TK-050 neutralization feed tank, which is primary containment for the slurry from the roasters. The spill pond volume will cumulatively contain the 100-year, 24-hour storm event, 110% of the neutralization tank capacity (188,000 gallons), and a ½–hour slurry pipe flow of 8,200 gpm. The spill pond has a single 80-mil HDPE liner placed on 12 inches of clayey material compacted in maximum 8-inch lifts to a minimum 90% Modified Proctor dry density and permeability $\leq 1 \times 10^{-7}$ cm/sec. The pond does not have leak detection. Pond overflow will discharge to the downgradient stormwater pond via an HDPE-lined channel.

The stormwater pond has a maximum capacity of 3,760,000 gallons. The pond is constructed of a single 80-mil HDPE liner placed on clay liner bedding, compacted in maximum 6-inch-thick lifts to a minimum 90% Modified Proctor dry density and permeability $\leq 1 \times 10^{-7}$ cm/sec.

As with Mill 5, the primary Mill 6 components are contained within a process building with concrete floors, stemwalls and recovery sumps. Process components outside the building are located within concrete containment with at least the required minimum 110% containment volume. It was determined in May 2000 that some portions of the process pipelines within the Mill 6 ROTP did not have appropriate secondary containment. These were upgraded to double-wall or equivalent secondary containment piping as part of an EDC approved in August 2000 and implemented in November 2000.

An EDC was approved 07 November 2007, to upgrade the Mill 6 ROTP weak acid bleed-off pipeline between the wash tower (6500-TW-01) and the sludge tank (6700-TK-47). A portion of the pipeline, approximately 195 feet in length, was removed from overhead pipe racks that run above concrete containment and placed underground. The buried portion of the pipeline is comprised of a 4-inch diameter SDR-11 HDPE primary pipeline contained within an 8-inch diameter SDR-17 HDPE secondary containment pipeline. The dual-wall pipeline is buried approximately 4 feet below ground surface in a 2-foot-wide trench backfilled with bedding sand and compacted backfill. The secondary containment pipeline daylights at the Gas Cleaning Plant concrete containment and the downgradient sludge tank where it is also equipped with a 1-inch diameter leak detection port (M6-ABL).

An EDC was approved 20 July 2010, for construction of the Mill 6 Mercury Bleed Stream Circuit. The circuit consists of installation of a new tank (Mercury Stream Tank identified as 6500-TK-018) and associated conveyance pipelines and valves that will allow removal of some of the dissolved calomel (mercurous chloride (Hg_2Cl_2)) and mercuric chloride ($HgCl_2$) solution from the Mill 6 gas cleaning loop and convey the solution to the existing Mill 6 CIL tanks (400-TK-014 and 400-TK-015).

Mercury solution bleed from the gas cleaning loop can be temporarily stored in the new cone-bottomed, pedestal-mounted, reinforced fiberglass Mercury Stream Tank measuring approximately 12 feet in diameter by 9 feet-4 inches high. The tank capacity is approximately 3,400 gallons. The tank containment consists of a curbed, reinforced concrete containment slab measuring approximately 20 feet by 18 feet in plan, that is hydraulically linked to the existing mercury scrubber containment located on the east side of the Mill 6 facility. All containment capacity exceeds the minimum regulatory 110% volume and the new containment construction includes placement of flexible thermoplastic waterstops along construction joints and a surface coating of epoxy sealant.

The mercury bleed solution, with a pH range between 1 and 4 standard units, can be conveyed from the Mercury Stream Tank through a 2-inch diameter HDPE primary pipeline at a maximum design flow rate of 50 gpm over a distance of approximately 2,200 feet. The new pipeline is routed along existing pipe racks over existing concrete secondary containment, beneath a road through an existing concrete secondary containment pipe trench, along an existing HDPE-lined secondary containment ditch, and double-contained as pipe-in-pipe along existing pipe racks to the discharge point at the Mill 6 CIL tanks. The flow can be directed to either CIL tank 400-TK-014 (primary discharge) or 400-TK-015 (secondary discharge) and re-incorporated into the process circuit flow.

In March of 2017, Newmont began accumulating elemental mercury recovered from on-site air pollution control devices in accordance with the Mercury Export Ban Act. The accumulated elemental mercury will be stored within the ZADRA facility until the Department of Energy (DOE) has built its long term mercury storage facility. The ZADRA facility will provide a secure location with appropriate secondary containment and will enable the mercury to be stored in a manner consistent with RCRA regulation. Elemental mercury will be shipped when construction of the DOE long term storage facility is complete.

Mill 6 Magnetic Separator**:** An EDC was approved on 02 March 2010, for construction of the Mill 6 Magnetic Separator. The modification of the process circuit incorporates a multi-step magnetic physical separation process to allow the recovery from the Mill 6 tails stream of additional gold that is encapsulated within magnetic maghemite (Fe^{++}-deficient magnetite) particles formed during the Mill 6 ROTP ore roasting process. The circuit addition does not alter the Mill 6 ROTP process tails flow rate of approximately 4,400 gpm, or the discharge chemistry, except for the removal of gold-bearing magnetic particles.

Feed to the magnetic separator process circuit starts at a 7,046 gallon distribution tank located outside the Mill 6 ROTP tails sump building within dedicated concrete containment that is hydraulically linked to building containment. Mill 6 ROTP tails entering the distribution tank is pumped to a gravity distributor with a capacity of 1,212 gallons.

The (high intensity) magnetic separator circuit is located within the Mill 5 process building and is hydraulically separated from the Mill 5 components with dedicated secondary containment for all tanks, pumps, and sumps. Flow from the gravity distributor is equally divided to feed six double, fixed rare earth magnet, permanent rolling drum separators. The double rare earth separators are arranged in series to create a rougher system comprised of six primary magnetic separators followed by six secondary magnetic separators. This portion of the circuit separates magnetic particles from the tailings slurry to produce primary and secondary magnetic concentrate slurry.

The primary and secondary concentrates are mixed in a 1,540 gallon magnetic cleaner feed tank before being pumped to the first stage of the two-stage cleaner magnetic separators. The cleaner magnetic separators are comprised of a fixed ceramic magnet inside a rolling drum that separates the feed slurry into a final maghemite slurry concentrate and a magnetic tails.

The final products are a magnetic maghemite cleaner concentrate that is comingled with Mill 5 flotation concentrate for processing in the autoclave located at the Twin

Creeks Mine, a magnetic cleaner tails that is processed through the Mill 5 CIL circuit, and a non-magnetic rougher tails that passes through the Mill 6 tails sampler prior to discharge to the Mill 5/6 Central TSF.

Processing Off-Site Mined Material: An EDC modification was approved in October 2009, authorizing processing of off-site ore from other Permittee-owned facilities and from non-Permittee-owned facilities at Mill 5 or Mill 6. Off-site mined material may be processed in individual batches or blended with the Mill 5/6-Gold Quarry-James Creek Project ore for processing. Off-site ore must be stored on the permitted ore stockpile or other approved containment pads upon delivery and at all times prior to processing. Individual batch tonnages and composite ore characterization data are to be provided in quarterly reports.

Since the initial approval of the EDC and subsequent modification of the Permit, there have been a number of non-fee reviews proposing to process off-site ores, concentrations, and loaded carbon. Below is a list of off-site materials that the Permittee is authorized to process.

Off-Site Ore		
Facility Name	**Permit Number**	**Approval Date**
Cripple Creek and Victor	Out of State	22 August 2016
Long Canyon Mine	NEV2014110	22 August 2016
Emigrant Mine	NEV2005107	22 August 2016
Arturo Mine	NEV2013101	19 June 2019
Cortez Hills Project	NEV2007106	14 June 2019
Pipeline Project	NEV0093109	14 June 2019
Barrick Goldstrike Mine	NEV0090056	14 June 2019
Getchell Mine Project	NEV0086014	21 May 2020
North Block Project	NEV0091029	21 May 2022
Fire Creek Project	NEV2007104	29 July 2020
Goldrush Underground Mine	NEV2016104	17 December 2021
Off-Site Concentrate/Carbon		
Twin Creeks Mine	NEV0089035	15 November 2016
Long Canyon Mine (Carbon)	NEV2014110	21 May 2020
Golden Sunlight Mine	Out of State	17 December 2021
Phoenix Concentrate	NEV0087061	04 August 2022

Mill 5 and Mill 6 Cyanide Code Conformance Upgrades: An EDC was approved in September 2008, to upgrade secondary containment in the Mill 5 and Mill 6 yard and vehicle access lane areas to comply with the requirements of the International Cyanide Code for the Manufacture, Transport, and use of Cyanide (Cyanide Code). Although the upgrades to meet Cyanide Code requirements for secondary containment do not technically meet all NAC 445A design requirements for secondary containment, they will greatly improve spill control measures and reduce the potential to degrade waters of the State. The approved upgrades consist of grading revisions to convey discharges to containment; construction of additional containment volume in certain existing ponds; excavation of some buried tailings and other pipelines within the Mill 5 yard to install secondary containment pipelines; and paving of the Mill 5 and Mill 6 yard areas and vehicle access lanes with cement asphalt.

The grading design directs runoff from the southeast portion of the Mill 5 yard and access lanes to the existing 1.9 million gallon, single layer HDPE-lined, Mill 6 Emergency Catch Pond. This storm and spill pond can easily contain the design 116,000 gallon stormwater runoff volume. The grading design also directs runoff from the remaining portion of the Mill 5 yard and access lanes to the existing concrete Mill 5 Concrete Emergency Catch Pond (also known as the Mill 5 Emergency Dump Pond). To accommodate the runoff generated by the 100-year, 24-hour storm event reporting to this area, the Mill 5 Concrete Emergency Catch Pond volume was increased from approximately 150,000 gallons to approximately 330,000 gallons, with a 1-foot freeboard, by increasing the wall height by 4 feet and extending the pond width and access ramp width by 20 feet. All new construction used reinforced concrete and incorporates the installation of flexible reinforcement bars and 'Adeka'-type waterstops along concrete joints. An 18-inch diameter HDPE overflow pipe installed above the freeboard elevation directs overflow into an existing drainage and sediment control basin. Runoff from the Mill 6 paved area will be conveyed via a 12-inch diameter HDPE pipeline to the existing 3.76 million gallon single layer HDPE-lined ROTP stormwater pond. The pond has sufficient capacity to accommodate the 24,000 gallon runoff for the design 100-year, 24-hour storm event.

Pipelines in the Mill 5 area that were excavated and replaced with dual containment pipelines or reinstalled with secondary containment piping included the Mill 6 tailings pipelines, the Mill 5 tailings pipelines, and the seepage water pipeline. The secondary containment sleeves daylight and discharge into the concrete emergency dump pond.

For the approved paving construction, cement asphalt is asphaltic material placed in compacted layers (70 blows determined by the Marshall compaction method) over an aggregate base compacted to 95% Modified Proctor dry density and a sub-base compacted to 90% Modified Proctor dry density (ASTM Method D1557). In areas where 'heavy' vehicles (design load is a Caterpillar 988 loader) will operate, asphalt cement was placed in a minimum 3-inch thick compacted layer over an 8-inch thick compacted aggregate base. In areas where 'light' vehicles operate, asphalt cement was placed in a minimum 2-inch thick compacted layer over a 6-inch thick compacted aggregate base. The asphalt is sloped at a minimum 1% grade up to a maximum 5% grade where vehicles routinely operate. The drainage centerline of the paved areas is constructed with a concrete gutter that measures 4 feet wide and 6 inches thick below grade, with a 2-inch drop from side to center. Routine inspections are required to maintain the integrity of the containment system.

An EDC was approved by the Division in August 2015 for expansion of the asphalt paving between process buildings in four areas that were not previously paved in 2008/2009: 1) the southwest portion of mill area between the main Mill 2/5 building and the crusher and filter buildings; 2) the northwest side of the flotation building; 3) a small area between the northwest side of the main Mill 2/5 building and the reagents building; and 4) the alleyways between the refinery and the Mill 2 building. The design of the asphalt paved areas is similar to the previous 2008 paving design. The new asphalt is 4 inches thick in all areas, except for area (3) above, where the asphalt is 3 inches thick. In area (1), the asphalt is graded toward a new shallow-vee-shaped concrete gutter in the center of the area. The gutter is graded to drain stormwater and any process solution spillage to the below-grade one-piece HDPE Mill 2 Southwest Yard Gutter Sump. The gutter sump gravity drains via a buried double-walled pipe (12-inch diameter HDPE primary pipe inside a 16-inch diameter HDPE secondary pipe) to the below-grade one-piece HDPE Mill 2 Southwest Yard Pump Sump located approximately 35 feet to the northeast of the gutter sump. Stormwater and process spillage collected in the Mill 2 Southwest Yard Pump Sump is pumped via a 2-inch diameter overhead pipe to a sump inside the Mill 2 building and then to tailings. Any leakage collected in the secondary buried pipe between the two below-grade sumps is evacuated via a 4-inch diameter HDPE leak detection riser port (M2-SWYP) located adjacent to the Mill 2 Southwest Yard Pump Sump.

With the August 2015 EDC approval, the Division added a limitation to the Permit requiring proper maintenance and use of the asphalt pavement, including, but not restricted to, frequent sealing of seams and cracks. When such maintenance is adequate, process solution spills on the asphalt are not considered releases to the environment (and are not reportable to the Division as releases); however, if there is evidence that process solution has flowed through or beyond the asphalt to the environment, a release must be reported and cleaned up in accordance with the Permit, the approved Emergency Response Plan, and applicable regulations.

The Division approved of an EDC, on 23 June 2021, for the Permittee to excavate, prepare the subgrade, and asphalt paved an approximate 65,220 area of the existing Mill 6 facility, which was primarily dirt and a product of the age of the facility (early 1990’s construction). For the paving construction, asphaltic material was placed in compacted layers (92% of the Rice Max Theoretical or 96% of the Marshall compaction methods) over the aggregate base that was compacted to 95% Modified Proctor dry density atop a sub-base that was compacted to 95% or 90% Modified Proctor dry density depending upon the anticipated traffic conditions (‘heavy’ or ‘light’). In areas where ‘heavy’ vehicles will operate, asphalt cement was placed in a minimum 4-inch thick compacted layer over a 6-inch thick compacted aggregate base. In areas where ‘light’ vehicles operate, asphalt cement was placed in a minimum 2-inch thick compacted layer over a minimum 4-inch thick compacted aggregate base.

The paved area is sloped at a minimum 1% grade to the drainage centerlines, which consist of concrete valley gutters that slope 2% from side to center. The valley gutters lead to concrete catch basins which will route stormwater flows into a 12-inch high-density polyethylene pipeline. The flows will then travel to existing underground vaults which will transport solutions to the Emergency Spill Pond, where they are pumped to Tank 50 and used as make-up water for the Mill 6 Facility. Waterstops were utilized at all concrete construction and expansion joints and rubberized sealants where asphalt meets the valley gutters and catch basins.

An EDC proposing to asphalt pave the remaining areas within the Mill 6 Facility was approved by the Division in October 2022. The Permittee proposed to excavate, prepare the subgrade, and asphalt pave the remaining unpaved areas of the Mill 6 facility (103,930 square feet) that were not paved as part of the 2021 efforts. For the paving construction, cement asphalt is placed and compacted (92% of the Rice Max Theoretical or 96% of the Marshall compaction methods) to create a 4-inch thick layer over a 10-inch thick aggregate base compacted to 95% Modified Proctor dry density and a sub-base compacted to 90% of the Modified Proctor dry density (ASTM Method D1557).

The paved areas will be sloped at a minimum 1% grade to the drainage centerlines, where concrete valley gutters will be constructed and measure 3 feet wide and 6-inches thick below grade. The valley gutters will lead to concrete catch basins which will route stormwater flows to the existing Mill 6 Catch Emergency Pond or the newly proposed, single HDPE lined stormwater ponds designated as Pond A and Pond B. The stormwater ponds are designed to accommodate the 25-year, 24-hr storm event (7,030 and 7,775 gallons for Pond A and Pond B, respectively) and collected solutions will be removed and added to the process circuit within 20-days of any storm event. Waterstops will be utilized at all concrete construction and expansion joints and rubberized sealant where asphalt meets the valley gutters and catch basins.

90-Day Accumulation Building: The Permittee constructed a 3,200-square-foot steel building to temporarily store Resource Conservation and Recovery Act waste prior to shipment off-site and mercury flasks until the Department of Energy procures the flasks in the future. The building utilizes an 8-inch-thick reinforced concrete slab and 10-inch-tall stem walls, constructed of 4,000 pound per square inch concrete, to provide containment of waste materials. Footings are incorporated into the design to accommodate the pre-manufactured steel building that secures the waste and protect it from precipitation. Retrofit or dumbbell style waterstops were utilized at all control and cold joints to provide for a waterproof containment.

Two sumps were installed, and slab sloped, to allow for solution/material collection and removal should it be needed. The building containment provides approximately 1,110 gallons of storage which exceeds the requirements of Nevada Administrative Code (NAC) 445A.436 due to the largest vessel within the containment being 55 gallons. The concrete loading dock, which utilizes the same concrete, reinforcement, and waterstops as the building containment, also provides sufficient containment to meet NAC 445A.436 requirements while having sufficient capacity to contain the 25-year, 24-hour design storm event.

James Creek TSF: The James Creek TSF, located primarily in Section 2, T33N, R51E, MDB&M, is an engineered, clay-lined impoundment constructed in 1985. The facility was designed to use peripheral discharge of tails from the north, east, and south to manage the supernatant pond. The James Creek TSF is currently only used to contain process solution in the event of an emergency via the HDPE overflow pipeline from the Mill 5/6 Tailings Booster Pump House. The facility also receives dust suppression and washdown water from the SAL Secondary Tertiary Crusher. The impoundment covers an area of approximately 250 acres.

The James Creek TSF impoundment basin clay layer was constructed on a 6-inch thick, grubbed and scarified subgrade, compacted to a minimum 85% of maximum Standard Proctor dry density (ASTM Method D698) at +/-3% optimum moisture content. However, no as-built permeability measurement data for the basin layer is available. Wherever fill material was placed, to level the base or to maintain a constant gradient, it was compacted to a minimum 95% of maximum Standard Proctor dry density. A 2-inch thick layer of clean sand was placed on the prepared clay layer after which a soil sterilant was applied to the entire impoundment basin surface.

Two parallel finger drains, located 200- to 500-feet apart and roughly parallel to the original James Creek channel, were constructed directly above the clay basin layer for solution collection. The finger drains run parallel to and approximately equi-distant from the central long-axis of the impoundment. The finger drains are connected by three cross drains located at 1000- to 1500-foot intervals along the long axis of the impoundment. Reclaim solution entering the finger drain collection system reports to a toe drain located along the upstream base of the downgradient embankment. Solutions pass through the main embankment via the embankment main drain to a downstream cut-off toe drain. The finger drains, cross drains, main drain, and both toe drains are sand- and gravel-filled and geotextile encapsulated.

As originally designed, reclaim solution collected in the downstream embankment cut-off toe drain reported, via a 12-inch diameter HDPE pipeline, to the James Creek TSF Underdrainage Pond (closed 2006 - see below), which was double-lined and equipped with an LCRS. The LCRS construction consisted of ⅛-inch thick geonet sandwiched between 80-mil thick HDPE primary and secondary liners. Any solution entering the LCRS was transmitted to a 4-foot by 4-foot by 4-foot gravel- and sand-filled leak detection sump, also located between the primary and secondary liners. The sump was evacuated via a 12-inch diameter HDPE riser pipe. Any solution collected was pumped back into the underdrainage pond.

In March 1990, the Division approved construction of an additional underdrain system in the southwest portion of the James Creek TSF. A 3000-foot-long, 200-

foot-wide collection system reports to an "internal" 30-mil thick PVC-lined decant sump. The collection system consists of a dendritic pattern of 6-inch diameter, 100-foot-long sections of perforated CPEP bedded in 4 feet of gravel underdrain material, connected at 200-foot intervals to a 10-inch diameter collector pipeline that terminates at the internal sump. Any fluid collected can be pumped to Mill 5/6 for use as make-up water.

In 1990, it was determined, based on the presence of WAD cyanide and elevated TDS in downgradient monitoring wells, that the James Creek TSF was leaking process solution into groundwater. A remediation plan was implemented and pump-back wells were installed and operated until 1996. At that time, water quality data from monitoring wells located within, and downgradient from, the remediation area reported values below Profile I reference values for the affected groundwater. This was in part due to cessation of regular operation of the James Creek TSF and, in part, due to successful pump-back of the contaminated groundwater. However, regular groundwater quality monitoring and reporting continued for all wells.

In November 2001, the Division approved an EDC to abandon several of the remediation pump-back wells and water quality monitoring wells required by the remediation plan due to continued water quality results that met Profile I reference values. The reporting requirement was also modified to be part of the regular annual reporting in accordance with the Permit. Quarterly sampling of four water quality monitoring wells continues and two pump-back wells are operationally maintained in the event they are needed. On 18 January 2017, the Division gave approval to remove monitoring well JC-PB5 as it has limited access throughout the year and had been dry since 2003.

An EDC was approved 22 August 2002, which allowed construction of a gravity fed, double-walled pipeline to convey collected fluid directly from the underdrainage collection system directly to the relocated Gold Quarry Solution Pond. The construction involved insertion of a 3-inch diameter HDPE pipeline into an existing 10-inch diameter pipeline that was installed beneath the Gold Quarry waste rock facility in 1998. The 10-inch containment pipeline and the 3-inch diameter conveyance pipeline were successfully hydrostatically tested prior to commissioning.

An EDC, approved 1 November 2005, authorized permanent final closure of the James Creek TSF Underdrainage Pond, since all underdrainage solution is now conveyed directly to the relocated Gold Quarry Solution Pond. For closure, solution in the Underdrainage Pond was evacuated to the Mill 5 facility, pipelines leading to the sump were capped and the sump removed, associated pumps and tanks were rinsed and removed, and the pond liner was left in place after being cut and folded over on itself. The pond location was backfilled with a minimum 5-foot thick cover of alluvium and channels were constructed to divert stormwater around the closed pond site. Closure was completed 7 September 2006.

James Creek TSF Tails Material Internal Relocation**:** A minor modification to the Permit was approved on 25 May 2006, which allowed for relocation of tailings material within the James Creek TSF facility. The relocation of material from the northwest limit of the facility was necessary to accommodate expansion of the Gold Quarry Pit wall in a southeast direction. Approximately 7.4 million tons of tailings and Carlin Formation (Carlin) material were excavated and relocated in two separate phases to the Southern Stockpile and Eastern Stockpile, located in the southern and eastern portion, respectively, of the TSF. An engineered setback of approximately 500 feet was maintained between the crest of the cut slope and the toe of the relocated tailings material.

The relocated tailings material was placed on the stockpiles in 25-foot lifts to a maximum 50-foot height for the Eastern Stockpile. An EDC, approved in December 2009 to accommodate relocation of additional material to stabilize the Gold Quarry Pit wall, authorized an increase in material placement height for the Southern Stockpile only, to a maximum 125 feet. The approved final side-slope angle of the Southern Stockpile was increased to 5H:1V but the design side-slope angle approved for the Eastern Stockpile was not changed from the original 6H:1V.

Phase I included excavation and relocation of approximately 5.5 million tons of tailings and Carlin material. The tailings material was excavated to a final slope of 7H:1V, all within existing containment. The cut slope was covered with a minimum 18-inch-thick sand-and-gravel drainage blanket. A seepage collection trench, up to 80 feet deep and approximately 4,700 feet long, was constructed along the toe of the cut slope. The seepage collection trench is designed to collect and convey residual draindown solution and meteoric runoff via a 6-inch diameter perforated corrugated CPEP placed at a minimum 0.5% grade in the bottom of the vee-trench. The CPEP is encased in 5 feet of drainage gravel wrapped in a layer of 10-ounce non-woven geotextile and reports to a 48-inch diameter HDPE vertical solution collection sump. The collection sump extends approximately 5 feet below the CPEP invert and is equipped with a dedicated automated submersible pump. Collected solution is conveyed from the collection sump via the buried single-wall solution management pipeline to existing ponds constructed at the southeast corner of the TSF. The solution management pipeline and ponds are all located within the TSF containment area. Solution conveyed to the ponds either infiltrates or evaporates. In the event of high solution flows, solution could be pumped to the near-by Mill 5/6 Tailings Booster Pump House for addition to the process circuit.

Phase II included excavation and relocation of approximately 1.9 million tons of tailings and Carlin material. This phase allowed construction of the southeast Gold Quarry Pit wall layback. The western portion of the seepage collection trench was removed but a bench, graded toward the interior of the TSF and 60 feet wide as measured from the toe of the cut slope to the edge of the pit wall, was maintained. Prior to the pit expansion, a minimum 3-foot thick layer of growth media and amended non-PAG waste rock cover was placed and seeded over the entire TSF surface to minimize surface water infiltration and the potential for contamination of runoff draining from the surface of the TSF.

James Creek TSF Tails Material External Relocation**:** Relocation of additional tailings material from the James Creek TSF to accommodate further southeastward expansion of the Gold Quarry Pit was approved as part of a minor modification for the SAL Project, Water Pollution Control Permit NEV0088011, in October 2009. Unlike the internal relocation, approved in 2006 and completed in 2008 as described above, the additional material was relocated externally to a new Dry Stack Facility constructed as a minor modification adjacent to and buttressed against the north and west sides of the SAL Project Non-Property Phase VI Heap Leach Pad.

Removal of tailings material for the external relocation required two phases of construction, just as was required for the internal relocation. Phase I included excavation of a trench, ranging in depth ranging from 0 to 120 feet, parallel to the proposed pit expansion limit. The tailings and underlying Carlin formation material were excavated away from the proposed future pit limit to a permanent cut slope of approximately 5H:1V. Approximately 10.4 million tons of tailings and Carlin material were removed and relocated to the Dry Stack Facility. A new seepage collection trench and collection sump, identical to the system constructed for Phase I of the internal relocation in 2008 (see above), was constructed along the toe of the tailings cut slope and tied into the existing solution conveyance pipeline that reports to ponds located at the Mill 5/6 Tailings Booster Pump House.

Phase II included expansion of the pit wall and removal of the western portion of the trench to create a 60-foot bench as measured from the toe of the remaining tailings cut slope to the edge of the final pit wall. As with the original 2008 internal relocation construction, a 1.5-foot thick drainage layer of mixed sand and gravel was placed on the finished cut slope and covered with a 1.5-foot thick layer of growth medium to prevent erosion and to direct storm flows to the collection system located at the toe.

The portion of the James Creek tailings mass that will remain following the external relocation activity was evaluated for seismic stability and the potential for both ‘flow liquefaction’ and ‘cyclic mobility’. The material was modeled for the 224- and 2475-year return seismic events using cone penetration test data collected in 2009. Based on the analysis, flow liquefaction is not expected. Up to 2 feet of deformation in the tailings mass, due to cyclic mobility, could result from the 2475-year seismic event; however, the material will not flow and movement into the pit is highly unlikely. The calculated cut slope stability factor of safety (FOS) is ≥1.9 for static; ≥1.0 for pseudostatic; and ≥1.4 for post-earthquake analyses. These data indicate failure is unlikely.

James Creek TSF Embankment Material Excavation and Stabilization**:** An EDC was approved 22 February 2010, to allow excavation of a portion of the James

Creek TSF embankment and minor amounts of tailings material. The work was required to further remediate and stabilize areas adjacent to slope landslides in the south Gold Quarry Pit highwall that occurred in late December 2009. The EDC represents “Stage A” of a multi-stage evaluation and remediation plan. Additional formal modification of the Permit will be required to incorporate future plan stages as additional geotechnical data are developed.

Stage ‘A’ mining activity required removal of approximately 2,000,000 tons of embankment material from the upper western abutment and crest of the embankment in the vicinity of the Nine Points Slide and the Challenger/Gray-Tuff Fault Graben Slide. Stability analysis, using a final slope angle of 7 to 10%, resulted in a minimum static FOS of 4.3 and a minimum pseudo-static (seismic) FOS of 2.2.

Drill cuttings from three drill holes into the embankment were used to perform MWMP-Profile II tests prior to excavation. Based on the test results, the material was removed to approved containment; either the Mill 5/6 West TSF for embankment waste rock or the Converted Dry Stack Facility (located at the South Area Leach Project, NEV0088011) for any tailings material.

Gold Quarry Pit North Access Ramp Stabilization: In April 2009, following two weeks of precipitation, a landslide scarp developed in the Carlin Formation material exposed in the North Ramp access to the Gold Quarry Pit adjacent to the Nine Points Intersection. A 3-Phase design was developed to stabilize the adjacent James Creek TSF embankment, contained tails material, and the North Access Ramp.

Phase 1, implemented in mid-October 2009, required establishing a wider intersection at a lower elevation away from the area of the slope instability and outside the limits of the James Creek TSF embankment. Approximately 600,000 tons of primarily Carlin Formation material and minor amounts of fill material were removed.

An EDC modification was submitted 29 October 2009, and approved 04 November 2009, to construct Phase 2 and a proposed Phase 3, if required. Phase 2, was implemented immediately and required removal of approximately 20,000 tons of embankment material by cutting a slot approximately 200 feet long (north-south), 165 feet wide (east-west), and 25 feet deep. Approximately 1,000 tons of ‘clay plug’ and cover material were also removed. No tails material was removed. All excavated material was placed in an approved PAG waste rock disposal facility. The resulting slope stability was analyzed and indicates a minimum static FOS of 3.8 and a minimum pseudo-static FOS of 2.7.

Phase 3 is authorized and would be implemented if additional scarp remediation is needed. This would be the case if the scarp develops to a stable form that allows mining to the crest of the Phase 2 cut or instability propagates further to the east. Phase 3 excavation would develop a slope approximately 150 feet high with an angle of 25°. Phase 3 would require excavation of a total of approximately 2,000,000 tons of material: approximately 1,927,000 tons of Carlin Formation, which would be stockpiled for later use in reclamation and cover activities; 42,000 tons of embankment material, which would be placed in an approved PAG waste rock disposal facility; and 30,000 tons of tails and clay plug material, which would be placed in existing stockpiles internal to the James Creek TSF. Slope stability analysis indicates the design will have a minimum overall static FOS of 1.7 and a minimum overall pseudo-static FOS of 1.2. A temporary cover will be placed with final shaping of the slope and cover placement occurring as part of the overall tailings relocation project.

Gold Quarry East Side Mill 5/6 Central TSF Alluvium Storage Facility: An EDC design was approved in May 2010, to provide permanent storage for alluvium removed from the Gold Quarry Pit to stabilize the pit highwall following the 2009 pit wall collapse. The Permittee estimated approximately 100 million tons of alluvium would need to be moved to stabilize the pit wall and allow for a required pit expansion.

Construction of the Gold Quarry East Side Mill 5/6 Central TSF Alluvium Storage Facility (5/6 Alluvium Facility) was initiated in early 2012. The 5/6 Alluvium Facility abuts the east embankment of the Mill 5/6 Central TSF in a generally north-south alignment from the access ramp on the north end of the TSF to a point just north of the original Mill 5/6 Central TSF Underdrain Pond 1, and between the existing lined underdrain pipeline corridor on the east and the approved Mill 5/6 East TSF tailings/reclaim pipeline corridor on the west. Prior to the 5/6 Alluvium Facility construction, existing topsoil stockpiles located within a 150-foot-wide zone along the proposed footprint were relocated to other stockpiles for use in future reclamation activities. The footprint of the 5/6 Alluvium Facility was grubbed and additional topsoil and organics was moved to topsoil stockpiles.

The 5/6 Alluvium Facility was constructed in 20-foot lifts with a minimum 175-foot wide 'outer slope zone' comprised of material with an upper limit of plasticity of 15 and a moisture content no greater than 8% above the optimum dry density determined by Modified Proctor (ASTM Method D1557) to form a stable 3H:1V east-facing slope. The overall 5/6 Alluvium Facility footprint is approximately 750 to 1,200 feet wide and 6,000 feet long. At a maximum design height of 200 feet, the facility accommodates approximately 13.6 million cubic yards of alluvium (approximately 14.7 to 16.5 million tons). At the join-line between the embankment face and the final storage facility lift, a 60-foot wide pipeline corridor bench was constructed to accommodate the future Mill 5/6 East TSF tailings/reclaim pipeline corridor.

The Mill 5/6 Central TSF Basin 'C' 12-inch diameter HDPE pipeline, Basin 'D' 12-inch diameter HDPE pipeline, and Embankment Face Drain Outlet 8-inch diameter pipeline all exit the toe of the Mill 5/6 Central TSF embankment and converge in a geomembrane-lined trench reporting to the Mill 5/6 Central TSF

Underdrain Pond 2. Valves on these pipelines were left in the 'open' position, coated in asphalt, and the valve box backfilled with concrete. The three pipelines were concrete-encased within the geomembrane-lined trench for a distance of approximately 150 feet from the embankment toe and covered with a minimum 2 feet of structural fill prior to placement of alluvium.

Two additional pipelines report to the Mill 5/6 Central TSF Acid Pond 3 located at the northeast corner of the impoundment. The first pipeline provides drainage for the embankment foundation along the north side of the impoundment. The surface runs of this pipeline were converted to pipe-in-pipe construction prior to construction of the 5/6 Alluvium Facility and placement of alluvium. Valves were locked open in the same manner as the valves on pipelines reporting to Underdrain Pond 2 described above. The second pipeline is a surface drain designed to collect flow from the sides of a narrow interior corner constructed in the waste rock facility adjoining the north TSF embankment. This pipeline has never exhibited flow. Therefore, the pipeline traverse was visually inspected prior to construction of the 5/6 Alluvium Facility and the pipeline was abandoned in place by filling it with concrete.

The 5/6 Alluvium Facility design was evaluated for structural stability. Slope stability analysis using the design criteria results in a block failure static FOS of 1.3 and a maximum deformation of 16 inches. Analysis for circular failure results in a static FOS of 1.4 and a maximum deformation of 10 inches.

The 5/6 Alluvium Facility stormwater conveyance channels were designed to convey, and stormwater runoff/sediment collection ponds were designed to contain, with a minimum 1-foot freeboard remaining in the ponds, the 100-year, 24-hour storm event volume reporting from three 5/6 Alluvium Facility watersheds. The design incorporates three channels and three collection ponds. These are identified as: 1) the North Ditch and North Runoff/Sediment Collection Pond, which convey and collect runoff from the northeast portion of the 5/6 Alluvium Facility; 2) the Central Ditch and Central Runoff/Sediment Collection Pond, which convey and collect runoff from the central east slope of the 5/6 Alluvium Facility; and 3) the South Ditch and South Runoff/Sediment Collection Pond, which convey and collect runoff from the entire west slope and south extent of the 5/6 Alluvium Facility.

The North and Central ditches are constructed along the eastern limit of the 5/6 Alluvium Facility. The South Ditch is constructed along the 60-foot wide pipeline corridor bench over a distance of approximately 6,500 feet, is lined with 80-mil HDPE liner, and discharges to the collection pond at the south end of the ditch through a 'rundown channel' comprised of a 48-inch diameter corrugated steel culvert with a perforated cap and protective rip-rap on the upgradient inlet side. Sediment must be removed from the runoff/sediment collection ponds and stormwater is allowed to evaporate or slowly infiltrate. However, the South Runoff/Sediment Collection Pond is also equipped with a perforated 48-inch diameter, 60-inch high riser pipe that will allow drainage of this pond through a 48-inch diameter culvert that passes beneath the pond embankment.

Mill 5/6 Central TSF: The Mill 5/6 Central TSF (originally named "New Mill 2/5 TSF," and then "Mill 5/6 TSF") is located in portions of Sections 11, 12, 13, and 14, T33N, R51E, MDB&M. The Mill 5/6 Central TSF starter impoundment was constructed in 1992, with phased expansions and additional embankment lifts completed in 1994, 1998, 1999, and 2001. The ultimate Phase III-B embankment lift, approximately 50 feet high, was completed in July 2007.

The impoundment occupies an area of approximately 800 acres, can provide approximately 135 million tons of storage capacity, and is designed to contain dewatered tailings to a height of approximately 275 feet above the surface of the HDPE liner at the lowest point beneath the supernatant pond. The Mill 5/6 Central TSF is designed to maintain 3 feet of freeboard and withstand the 100-year, 24-hour storm event.

Embankment construction consists of a starter embankment with subsequent downstream raises for expansions. The final embankment slopes are designed to be at 2.5H:1V or flatter. The embankment is constructed of random fill mine waste compacted with haul trucks. Some PAG waste was used in construction of the embankment but was placed within acid-neutralizing material within the core of the embankment. A seal zone approximately 6 feet thick, comprised of clayey, high fines content, mine waste compacted to a permeability $\leq 1 \times 10^{-7}$ cm/sec, covers the interior of the east and south embankments. Except for the final Phase III-B construction, the upstream embankment area adjacent to the supernatant pond is covered with a layer of smooth 80-mil HDPE, underlain with 6-oz/yd^2 geotextile, to provide erosion protection from potential wave action. The final Phase III-B embankment raise construction utilized a textured 80-mil HDPE liner in place of the smooth-surface liner used in all earlier construction phases.

The south and east embankments are primary structural elements and have a separate drainage system to maintain a low phreatic surface within the embankment. The drains consist of 4-inch diameter perforated CPEP in gravel beds that collect and convey solution to 6-inch diameter solid HDPE pipelines for transfer to the underdrain solution collection ponds. Five geotextile-lined seepage collection cut-off trenches, containing a 6-inch diameter perforated CPEP surrounded with drainage filter material, are located at the downstream toe of the east embankment. Each trench is sealed from above with compacted, clayey, non-PAG mine waste to inhibit surface water infiltration. The trenches drain to individual seepage collection sumps filled with drainage filter material enclosed in geotextile. Each seepage collection sump is equipped with an automatic submersible pump to evacuate solution to the northern-most underdrain solution pond (Mill 5/6 Central TSF Acid Pond 3).

The west and north embankments abut the SWRDF and serve as waste rock disposal facilities. Drainage is less critical on these upgradient embankments and is accomplished by extending the basin underdrain collection pipeline system beneath and into the embankments.

Mill tailings, and sewage from the Carlin North and South area facilities (approved by Authorization to Discharge Permit NEV0095016), are pumped to the Mill 5/6 Tailings Booster Pump House where Caro's acid is added to neutralize cyanide for wildlife protection. The permanent Caro's Acid Plant, with 110% containment and an alarmed overflow sump, was approved to replace a mobile facility as part of an EDC in November of 2000. Tailings are pumped at 9,700 gpm (approximately 28,000 tpd) from the Mill 5/6 Tailings Booster Pump House through three 24-inch-diameter HDPE pipelines located in a containment ditch. The containment ditch is lined with 80-mil HDPE liner and also contains two 24-inch-diameter HDPE solution reclaim pipelines. Meteoric water and any process solution discharge in the containment ditch report by gravity to the adjacent James Creek TSF via a buried single-walled pipeline.

Over the years, failures of pipelines, pumps, and valves have resulted in releases of tailings slurry and associated process solution outside the original limited containment of the Mill 5/6 Tailings Booster Pump House and onto unlined areas. An EDC was approved in December 2011, to construct large secondary containment aprons in four areas located on all external sides of the building to capture future spills and reduce clean-up efforts.

The aprons are constructed as steel-reinforced concrete slabs with stemwalls. The stemwalls and the slope of the slab base are designed to direct solution to existing or new collection sumps within the slab or in the building for evacuation to approved containment. Existing louvered vents on the north side of the building were replaced with solid panels to prevent high pressure solution spray from exiting the building. Area 1, located on the east side of the building, was constructed to support a 75-ton capacity crane and Area 2, located on the west side of the building, was constructed to accommodate tanker trucks off-loading concentrated hydrogen peroxide for the Caro's Acid Plant. New concrete was constructed with flexible embedded waterstops along all joints and retrofit waterstops were used where new concrete meets existing concrete containment or the building slab.

An EDC was approved in September of 2016 for upgrades to the Central Tailings Booster Pump House #1. The previously installed system consisted of a 9,000 gallon gland seal water tank with two pumps that pressurize a common manifold that fed the six tailings pumps in the pump house. The inability of the system to handle pressure drops and the requirement to shut down all pumps to work on the common gland seal water system opted for an updated system. The approved design incorporated a 6,000 gallon tank with six individual pumps that each feed one of the six tailings pumps. The improved gland seal system allows the option to shut down each individual pump without need to decommission the entire system. The original 9,000 gallon gland seal tank was left in place to be used for housekeeping purposes.

Caro's acid, as stated above, is added to the tailings stream for cyanide destruction prior to the tailing being pumped to a tailings storage facility (TSF). The tailings enter into an approximate 28,000 gallon tank, housed within the TBPH1, where Caro's acid is added and mixed. The addition of Caro's acid occasionally results in a buildup of nitrogen dioxide gas inside the TBPH1 that poses a health risk to the employees working within the building. In February of 2018, the Division gave approval for the construct of additional 41,000 gallon tank within the containment aprons of the TBPH1, where the nitrogen dioxide off-gassing will not pose a threat to the health of the employees working within the TBPH1. The 41,000 gallon tank will gravity feed to the 28,000 gallon tank via a 4-foot discharge flange. From the 28,000 gallon tank, the tails will be discharged to one of the TSF's by three 24-inch diameter high density polyethylene pipelines.

The containment aprons and TBPH1 building containment provide approximately 84,000 gallons of capacity which exceeds the regulatory requirement, per NAC 445A.436. In the event an upset exceeds the containment of the TBPH1 and the containment aprons, the aprons are graded to direct any potential release to the containment of the James Creek TSF pipeline corridor. This corridor has the ability to transfer solution to the James Creek TSF via a buried 24-inch single walled pipe in the event of an upset. The new tank will be constructed on a 36-foot by 21-foot reinforced concrete foundation constructed of 4,000 pound per square inch concrete. Waterstops will be utilized around the floor of the foundation to minimize the potential of solution traveling under the pad. Waterstops will also be utilized in the construction of the associated curbing that will direct any released solution to the containment of the James Creek TSF pipeline corridor.

Tailings are distributed sub-aerially within the impoundment from 6-inch diameter drop bars located along an approximately 8,000-foot-long beach on the north and west sides of the impoundment. Approximately two-thirds, 5,000 to 6,000 feet, of the beach has active deposition at all times. Supernatant solution is pumped to reclaim pipelines from a floating barge located in the operating supernatant pool at the southeast corner of the impoundment.

The Mill 5/6 Central TSF impoundment is constructed on a 12-inch-thick layer of clayey mine waste, compacted to a measured permeability $\leq 1 \times 10^{-7}$ cm/sec, which overlies cleared, grubbed, and compacted natural soils. The compacted clay layer is covered with a 1-foot thick layer of drainage blanket material, comprised of spent leach ore and pit-run gravel from designated borrow areas, to provide hydraulic relief on the clay layer. The specification of the drainage blanket material was modified during construction to allow up to 20% content of material passing minus-200 mesh and 100% passing minus-6-inch. In the supernatant pond area and adjacent embankment, the drainage blanket material is covered with a layer of 6-

oz/yd^2 geotextile, which serves to protect the overlying 80-mil HDPE synthetic liner from puncture. This design is illustrated in as-built drawing 1070-331.

A system of underdrain solution collection pipelines (USCP) was installed within the drainage blanket with a minimum drainage gradient of 1%. The USCP system is comprised of four individual sub-systems, each made up of 4-inch diameter CPEP laid out in a dendritic pattern approximately along the natural drainage topography. Three systems drain the impoundment basin while the fourth (northernmost) drains only the impoundment embankment. The USCP system, in general, drains from west to east. The 4-inch diameter CPEP branches feed to a central 4-inch diameter CPEP which, depending upon location in the basin, joins to either twinned 6-inch or single 8-inch diameter solid HDPE collector pipelines that carry solution under the embankment through a concrete encasement to one of three double-lined and leak-detected underdrain solution ponds located along the east side of the impoundment. The northernmost pond, Acid Pond 3, also collects flow from the SWRDF, located along the north embankment, and from the embankment itself, due to the use of PAG waste in the core of the original embankment construction. Each underdrain pond as originally constructed has capacity for 1,000,000 gallons of solution. However, the southernmost pond, Underdrain Pond 1, was relocated as part of the Mill 5/6 East TSF construction and has a capacity of approximately 2.28 million gallons (see below).

As part of an EDC approved in May 2010, an alluvium storage facility was constructed adjacent to the toe of the Mill 5/6 Central TSF eastern embankment. The alluvium storage facility buried USCPs associated with Underdrain Pond 2 and Acid Pond 3, which necessitated the following modifications to the USCPs. The USCPs draining Basins ‘C’ and ‘D’ of the Mill 5/6 Central TSF, which feed Underdrain Pond 2, are now encased in concrete underlain by 80-mil HDPE where they are covered by the alluvium storage facility. The 8-inch diameter HDPE USCP from the northern foundation drain of the Mill 5/6 Central TSF, which feeds Acid Pond 3, is now contained within a 10-inch diameter HDPE secondary pipe adjacent to a 4-inch diameter CPEP, all of which are underlain by 80-mil HDPE liner, under the alluvium storage facility. A pipe that was designed to convey drainage to Acid Pond 3 from an old stockpile previously covered under ramps near the northeast corner of the Mill 5/6 Central TSF, was abandoned in place by cutting the pipe and capping its ends during construction of the alluvium storage facility, because flow had never been observed in the pipe.

The engineered containment for Underdrain Pond 2 and Acid Pond 3, from bottom to top, consists of a 12-inch-thick, moisture conditioned, clayey mine waste material base, compacted to a maximum permeability of 1 x 10^{-7} cm/sec; a ⅛-inch thick layer of geotextile; an 80-mil-thick HDPE secondary liner; a layer of drainage net, which forms part of the LRCS; and an 80-mil-thick HDPE primary liner. Each solution underdrain pond has a centrally located solution collection sump. A sand-filled, 350 gallon LCRS sump (P2LCS and P3LCS) lies below the primary HDPE liner at the low end of the solution collection sump. Any solution reporting to the

LCRS sump can be evacuated through a 10-inch diameter HDPE riser pipe, which is sandwiched between the primary and secondary liners and daylights at the pond crest.

Reclaim solution flows by gravity from Underdrain Pond 2 and Acid Pond 3 through a 12-inch diameter HDPE reclaim solution pipeline that protrudes into the solution collection sump from below. The reclaim solution pipeline is encased in a 12-inch-thick concrete slab that underlies the geotextile beneath the pond collection sump and exits through the pond embankment to the underdrainage collection sump. A submersible pump automatically transfers reclaim solution to one of the main reclaim solution pipelines located in the adjacent containment ditch. All reclaimed solution is pumped back to Mill 5/6 for use in the processing circuit.

Mill 5/6 Central TSF Underdrain Pond 1, Relocated Underdrain Pond 1, and Associated Piping**:** The original southernmost underdrain pond, Mill 5/6 Central TSF Underdrain Pond 1, was closed and a new replacement pond was constructed in 2015 approximately 1,240 feet north of the original pond location as part of construction of the Mill 5/6 East TSF. The original pond, pond leak detection sump P1LCS, and pump station was abandoned by removing all infrastructure and backfilling the area to accommodate construction of the Mill 5/6 East TSF basin footprint. The new Mill 5/6 Central TSF Relocated Underdrain Pond 1 leak detection sump is identified as P1LCS-A, and a new reclaim pump sump leak detection sump is designated LCRS-5.

Concurrent with the 2015 construction of the Mill 5/6 Central TSF Relocated Underdrain Pond 1, the existing underdrain solution conveyance pipelines from the Mill 5/6 Central TSF that reported to the original Mill 5/6 Central TSF Underdrain Pond 1 [three 12-inch diameter HDPE pipes (Mill 5/6 Central TSF Basin A and Basin B underdrains and embankment face drain) and one 8-inch diameter pipe (Mill 5/6 Central TSF embankment foundation drain)] were extended approximately 1,350 feet through an extension of the concrete encasement, which transitions into pipe-in-pipe construction shortly before the pipe outfall on the southeast side of the relocated pond. Existing underdrain solution conveyance pipelines from the Mill 5/6 West TSF were also extended with pipe-in-pipe construction [two 12-inch diameter HDPE primary pipes (Mill 5/6 West TSF embankment face and foundation drains) within 16-inch diameter HDPE secondary pipes, and one 18-inch diameter HDPE primary pipe (Mill 5/6 West TSF basin drain) within a 24-inch diameter HDPE secondary pipe] along a bench on the east embankment of the Mill 5/6 Central TSF to an outfall on the west side of the relocated pond. Two concrete slabs provide secondary containment for the pipelines near their outfalls at the crest of the Relocated Underdrain Pond 1.

The Relocated Underdrain Pond 1 has a greater capacity than the original Underdrain Pond 1 (2.28 million gallons versus 1 million gallons, respectively). The Relocated Underdrain Pond has a square shape measuring approximately 185 feet from crest to crest with 2.5:1 side slopes. The pond liner system, from bottom to top, is comprised of a 12-inch thick prepared subgrade with a permeability ≤ 1 x 10^{-6} cm/sec when compacted to 92% of maximum dry density as determined by ASTM Method D1557 (actual permeabilities in the as-built report vary from 3.6 x 10^{-8} cm/sec to 1.4 x 10^{-7} cm/sec), an 80-mil smooth HDPE secondary liner, a geonet LCRS, and an 80-mil textured HDPE primary liner. The LCRS layer will convey any escaping solution to a 2,000 gallon leakage collection sump (P1LCS-A) filled with clean gravel encapsulated in 10-oz/yd^2 geotextile. The LCRS sump can be evacuated through a 12-inch diameter, HDPE, inclined riser pipe placed between the primary and secondary liners that daylights at the west pond crest.

Identical to the design for the Mill 5/6 East TSF underdrain ponds, reclaim solution is conveyed by gravity from the Relocated Underdrain Pond 1 to an adjacent reclaim sump through a screened, 24-inch diameter HDPE reclaim riser pipe in the pond bottom. The reclaim riser extends at least 2-feet above the pond bottom, is connected to the pond liner system with extrusion welds and a stainless steel strap with neoprene gasket, and is anchored within a concrete support block that was poured in-place prior to pond liner construction (but after, and on top of, reclaim sump liner construction). The reclaim riser is constructed with a 90-degree elbow within the support block and conveys solution through a 24-inch diameter HDPE inlet pipeline located on pipe bedding placed on the primary liner of the adjacent reclaim sump.

The exposed surface of the reclaim sump has a semi-circle footprint measuring approximately 200 feet at the surface. The other half of the sump footprint extends beneath the adjacent pond liner footprint. The semi-circle portion of the sump has side slopes of 2.5H:1V. The reclaim riser pipe and support block are contained within a double-lined and leak-detected liner envelope wedge formed by the overlying underdrain pond liner system and the underlying reclaim sump liner system (see below). The primary and secondary reclaim sump liners are extrusion welded to the secondary liner of the underdrain pond to ensure containment integrity.

The reclaim sump subgrade design is similar to that constructed at other Permittee facilities and is constructed with a liner system comprised, from bottom to top, of a 12-inch thick prepared subgrade with a permeability ≤ 1 x 10^{-6} cm/sec when compacted to 92% of maximum dry density as determined by ASTM Method D1557, an 80-mil smooth HDPE secondary liner, a geonet LCRS, and an 80-mil textured HDPE primary liner. The lined area of the reclaim sump is backfilled to surface grade with random fill material placed in 12-inch thick loose lifts and compacted to 90% of the maximum dry density (ASTM Method D1557). The reclaim LCRS layer will convey any escaping solution to a 2,000-gallon sump (LCRS-5) filled with clean gravel encapsulated in 10-oz/yd^2 geotextile. The LCRS sump can be evacuated through a 12-inch diameter, HDPE, inclined riser pipe placed between the primary and secondary liners that daylights on the west crest of the Relocated Underdrain Pond 1 south of the pond LCRS riser pipe.

Within the sump, the inlet pipeline from the underdrain pond is equipped with a wye to direct flow to two 54-inch diameter spirolite risers mounted on a reinforced concrete pad constructed over an 80-mil HDPE wear sheet. Two vertical-drive pumps, mounted on a reinforced concrete slab constructed on the surface, will recover solution from the sump and pump it through a single 12-inch diameter HDPE reclaim solution pumpback pipeline that connects to the nearby existing tailings reclaim solution pipeline to Mill 5/6. The surface slab also includes a vertical 10-inch diameter HDPE sump evacuation pipe. The lower 5 feet of the evacuation pipe, where it reaches the base of the reclaim sump, is perforated to allow evacuation of fluid from the sump, if necessary. Evacuation and monitoring of the reclaim sump via the evacuation pipe is not required in the Permit, because it is not an LCRS; the fluid is contained by the double liners of the reclaim sump [which include their own LCRS (LCRS-5, described above)].

<u>Mill 5/6 Central TSF Seepage Collection Trenches</u>**:** Five seepage collection trenches were constructed downgradient of the underdrain solution ponds with the long axis perpendicular to the overall easterly flow gradient direction. Based on drill hole information, each trench was over-excavated with a backhoe approximately 2 feet into the underlying Carlin Formation and sloped toward the middle of the long axis of the trench. The entire excavated trench surface was covered with a layer of 8-oz/yd^2 geotextile. The downgradient side of each trench was covered with a layer of 80-mil HDPE. Prior to filling the trench with drainage material and sealing the surface with a minimum 1-foot thickness of compacted clayey material, sections of 6-inch diameter perforated CPEP were placed from both ends of the trench to feed a centrally located seepage collection sump. The collection sump is constructed of a geotextile–HDPE envelope filled with coarse drainage material. The sump envelope is penetrated by the perforated CPEP, which transmits any seepage to the sump. A pair of 12-inch diameter, HDPE vertical riser pipes, slotted on the lower 6 feet, can be used for observation and evacuation of any seepage fluids collecting in the sump. The seepage Cut-off Trench 4 (PD4) and Cut-off Trench 5 (PD5) were abandoned during the 2015 construction of the Mill 5/6 East TSF.

<u>Mill 5/6 Central TSF Monitoring and Closure</u>**:** During March 2003, in response to elevated hydraulic-head pressure piezometer readings for the northern portion of the impoundment liner system, two additional groundwater-monitoring wells, M56-1 and M56-2, were constructed adjacent to the eastern toe of the impoundment embankment. The wells are completed to depths of 230 feet and 260 feet respectively. The static water table occurs at a depth of 168 feet bgs in M56-1 and 203 feet bgs in M56-2. Analysis of water taken from these wells at the time of completion indicates the water is of high quality and no constituents were in excess of the Profile I reference values. As part of the Mill 5/6 East TSF construction, wells M56-1 and M56-2 were replaced with new monitoring wells M56-1A and M56-2A, respectively.

In response to a Schedule of Compliance requirement to investigate the potential effects of elevated hydraulic head pressures on the liner and embankment systems, several field-engineering activities were completed and a report was prepared on 20 July 2004. The investigation identified the primary cause of the elevated pressures to be associated with rodent damage to underdrain pipes within the northern-most Basin ‘D’ that was not fully inspected and repaired prior to the introduction of tailings into the basin. Subsequently, portions of the underdrain system piping failed and fine sediment migrated into the system. Although functional, portions of the Basin ‘D’ system exhibit restricted flow. Basins ‘A’, ‘B’, and ‘C’ are, in general, fully functional.

The report concludes that the liner system and embankment have not been compromised. It also concludes that management of the facility in accordance with minor operational changes will prevent groundwater degradation. The report recommendations were accepted as an EDC modification to the Permit on 17 August 2004. The modifications included the addition of new basin piezometers B-14, B-15, B-16, B-18, and B-19; the deletion of embankment piezometer E-12, which was improperly installed; scheduled basin backflushing using newly developed protocols for pressurizing the system to prevent pipe damage and to prevent further tightening of material within the pipe system; routine monitoring and quarterly reporting of data and operational results; and water quality analysis of any fluid collected in the cut-off trenches.

In September 2003, an EDC was approved to allow a change to placement of an evapotranspiration cover method for the impoundment embankment. The cover is now a store-and-release design to limit meteoric water infiltration and enhance establishment of vegetation. The store-and-release cover design consists of a minimum 1-foot thick LPSL, compacted to 85% Modified Proctor at optimum dry density and a maximum field permeability of $1x10^{-5}$ cm/sec. The material used for the LPSL has a minimum plastic index (PI) of 10 and a minimum 35% of the material passed the No. 200-mesh sieve. The overlying growth medium layer is comprised of non-reactive oxide material placed in a minimum 4-foot thick layer. A layer of coarse oxide drain rock lies between the LPSL and the overlying growth medium at the toe of the embankment. A 4-inch diameter perforated CPEP pipe was placed perpendicular to the embankment slope at the LPSL-drain rock interface and reports to “daylight” pipes placed at 300-foot intervals along the embankment toe to discharge meteoric flow not captured by vegetation or the growth medium.

Mill 5/6 West TSF: The Mill 5/6 West TSF, a fully synthetic-lined facility, was approved as a major modification in early 2007. The facility is located in portions of Sections 14, and 15, T33N, R51E, MDB&M. The first of three phases of embankment construction, initiated in mid-2007, was commissioned in November 2010. Phase II construction commenced in 2011 and was completed in October 2012. Phase III construction commenced in 2011 and was completed in December 2014.

Phase I accommodates approximately 1.5 years of tailings deposition (14 million tons), Phase II approximately 2 years of tailings deposition (17.1 million tons), and Phase III approximately 2.5 years of tailings deposition (20 million tons) for a total of approximately 51.1 million tons with a design dewatered material density ranging between 60 and 70 pounds per cubic foot. Two filling scenarios have been evaluated. One scenario alternates deposition between the existing and new facility on an annual basis, beginning on completion of Phase I, and the other fills the existing facility to capacity in 2012 before deposition moves to the new facility. In either scenario, available design capacity in both impoundments will be exhausted during 2018.

The Mill 5/6 West TSF resides within a natural drainage cut off by the Mill 5/6 Central TSF, which creates a closed basin for the West TSF starter embankment. The Mill 5/6 West TSF requires earth fill embankments on the north, south, and east sides. Existing topography will impound tailings material on the west side. The constructed embankments are designed with 2.5H:1V downstream slopes and 2H:1V upstream slopes. Upstream slopes along the west 'topographic' embankment are designed at 2.5H:1V.

The Mill 5/6 West TSF design shares approximately 2,400 feet of the Mill 5/6 Central TSF west embankment as a buttress for its east embankment. The completed crest of the West TSF Phase III east side embankment is approximately 46 feet wide and rises approximately 96 feet above the ultimate Mill 5/6 Central TSF west side embankment. However, the Mill 5/6 West TSF design does not hydraulically link the two facilities. The south embankment has the greatest vertical height with 215 feet of embankment fill and the northwest corner of the embankment exhibits the highest elevation at 5,651 feet amsl. Until just prior to the time the West TSF is closed, the supernatant pool will be operationally located in the southeast corner of the facility. The embankment crest elevation in the pool area is designed at 5,543 feet amsl during Phase I, 5,589 feet amsl during Phase II, and 5,635 feet amsl during Phase III. A minimum operational 5-foot freeboard will be maintained in the supernatant pool area at all times. Storm event design incorporates a 3-foot freeboard.

The embankment serves as a waste rock disposal facility through the use of PAG material as embankment structural fill. Several raises of the Mill 5/6 Central TSF embankment were constructed with PAG waste and the Mill 5/6 West TSF embankment is designed with similar construction. In the Mill 5/6 West TSF, PAG fill was placed within the north, east, and south embankments. All PAG embankment fill was placed in accordance with the Newmont *Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan, January 2003* (Plan 2003), which requires, at a minimum, a compacted foundation constructed of a minimum 1-foot thick layer of neutral or acid-neutralizing material compacted to 90% maximum dry density (ASTM Method D1557) to achieve a permeability no greater than $1x10^{-5}$ cm/sec. The low permeability embankment foundation was covered with a minimum 10-foot thick layer of material exhibiting an ANP:AGP ratio of at least 3:1. PAG material within the embankment is encapsulated in accordance with the Plan 2003. In areas where PAG material is used, the downstream slope of the embankment is covered by a 1-foot thick layer of low permeability material to decrease the infiltration of meteoric water into the PAG interior. The low permeability layer uses similar material to that used for the embankment seal zone (described below), and like the seal zone, is compacted to a minimum 90% of the maximum Modified Proctor (ASTM Method D1557) dry density. The low permeability layer is covered by a minimum 3-foot thick layer of growth media. Underneath the low permeability layer on the downstream embankment slope, a 15-foot horizontal thickness of non-PAG encapsulation material was placed over and outward of the PAG embankment core. The crest of the embankment in PAG-fill areas includes a minimum 10-foot thick encapsulation layer of non-PAG material on top of the PAG material, plus a 1-foot thick layer of low permeability material to decrease the infiltration of meteoric water into the PAG interior. Overlying the low permeability layer on the embankment crest is a minimum 3-foot layer of growth media capped by a 1-foot thick compacted road wearing course for the TSF perimeter road.

The embankment foundation in most of the supernatant pool area (north, east, and south embankments) contains three embankment foundation drains to collect any meteoric fluid infiltrating through the embankment. The drains are constructed of 6-inch diameter perforated CPEP. The drains roughly parallel the embankment faces at separation distances of between 200 and 400 feet, with one drain under the upstream embankment toe, one drain under the outer limit of the embankment foundation, and a middle drain between the other two. The perforated embankment foundation drains convey collected solution by gravity to the centrally located reclaim pipeline slot where a single, solid 12-inch diameter HDPE (SDR 11) embankment foundation drain outlet pipeline exits the embankment within a reinforced concrete casement.

The embankment design incorporates a low permeability seal zone on the upstream face of the embankment. The seal zone provides a low permeability layer between the geomembrane liner and the underlying coarser embankment fill to minimize seepage through the random fill in the event of a liner defect. The seal zone material consists of a mixture of high plasticity sandy clay and coarse gravel or non-PAG fill material. The mixture also improves the material strength of the seal zone to meet the minimum 28-degree friction angle requirement dictated by the stability analysis. The seal zone material is placed over the embankment fill in maximum 12-inch lifts, compacted to a minimum 90% of the maximum Modified Proctor (ASTM Method D1557) dry density to achieve a coefficient of permeability no greater than 1×10^{-6} cm/sec. The embankment seal zone measures a minimum 6.7 feet true thickness (15 feet horizontal) in the entire supernatant pool area, and a variable distance beyond the supernatant pool area depending on phase, and 1-foot true thickness elsewhere. In the Phase I embankment, the minimum 6.7-foot thick seal zone covers the upstream faces of part of the north embankment, all of the east embankment, and part of the south embankment. The Phase II and Phase III embankment construction includes the 6.7-foot thick seal zone on all raises of the north, east, and south embankments, and the 1-foot thick seal zone on the southwest and northwest embankments.

An embankment face drain is constructed under the upstream embankment face in the supernatant pond area, for approximately 2,550 linear feet of the south embankment and approximately 2,400 linear feet of the east embankment, as measured from the reclaim slot in the southeast corner of the TSF. The limits of the embankment face drain represent the maximum northward and westward design limits for the supernatant pool. The face drain consists of a layer of double-sided geonet/geotextile composite placed between the underlying seal zone and the overlying 80-mil HDPE TSF liner. Outside of the face drain area, the 80-mil HDPE TSF liner lies directly on top of the seal zone. The toes of the Phase II and Phase III embankment face drains are tied to the top of the Phase I and Phase II embankment face drains, respectively, via drainage pipes installed at approximately 25-foot spacing along the flat benches that separate the phases. In the event of a leak in the HDPE liner in the face drain area, the geonet/geotextile composite serves as an LCRS, which reports to a 6-inch diameter perforated CPEP embankment face drain pipeline located under the Phase I embankment toe. The face drain pipeline is located within an 18-inch deep trench and is surrounded with clean gravel encapsulated in 10-oz/yd^2 non-woven geotextile. The perforated CPEP pipe face drain pipelines transition to 12-inch diameter solid HDPE and drain to a common low point at the southeast corner of the impoundment in the reclaim slot. At the reclaim slot, the two pipelines combine as a single pipeline that extends under the embankment within a reinforced concrete encasement located in the reclaim slot.

A stability analysis was completed for the Mill 5/6 West TSF embankment using a modeled centerline height of 210 feet and crest width of 30 feet in the area of the supernatant pool. The modeled upstream and downstream embankment slopes were 2.0H:1V and 2.5H:1V respectively. The analysis was performed with a normal operating freeboard of 5 feet and a storm event freeboard of 3 feet. The resulting minimum static FOS was 1.4. Seismic analysis indicates a maximum deformation of 24 inches for the modeled event with no failure of the embankment and no overtopping of the supernatant pool. Approximately 1 foot of embankment settlement was anticipated to occur during Phase I construction and up to 1 foot additional settlement was expected in the 30-month period following construction.

The impoundment basin construction included clearing of vegetation, stripping of topsoil, and stockpiling of the topsoil for future reclamation activities. The stripped foundation basin was graded in a cut-and-fill operation to form smooth contours with a minimum slope of 1.5% and maximum slope of 3H:1V that will allow gravity drainage to the reclaim slot excavated at the south end of the basin. The basin subgrade was compacted to a minimum 90% of the maximum Modified Proctor (ASTM Method D1557) dry density. The reclaim slot extends at a slope of about 0.75% through the basin as a solution collection point beneath the supernatant pool area and under the embankment as a pipeline corridor.

The basin footprint covers a total area of approximately 9,500,000 square feet and was constructed in three phases with individual areas of approximately 6,970,000 feet^2 (Phase I), 2,030,000 square feet (Phase II), and 532,000 square feet (Phase III). The entire basin is lined with 80-mil HDPE geomembrane tied to the embankment liner system. A 1-foot thick layer of fine-grained gravel or sand, with a maximum particle dimension of 1-inch, serves as a protective layer for the geomembrane throughout the TSF basin. A layer of 10-oz/yd^2 non-woven geotextile is placed under the 80-mil HDPE geomembrane in the supernatant pool area only (the portions of the basin adjacent to the sections of the south and east embankments where the embankment face drain is installed).

The underdrain solution collection system is comprised of a network of 4-inch diameter, perforated CPEP and slotted HDPE pipe placed in a herringbone pattern on the geomembrane protective layer and covered with an 18-inch-thick drainage blanket of coarse gravel containing no more than 8% minus 200-mesh fines material. A layer of 10-oz/yd^2 non-woven geotextile covers the drainage blanket. The 4-inch diameter collection pipes are spaced at 75-foot intervals within the supernatant pool area and 100-foot intervals outside the pool area. The herringbone collection system reports to three solution collection header pipelines constructed of 12-inch diameter perforated CPEP and slotted HDPE pipe. Each of the solution collection header pipelines daylights on the west limit of the impoundment and is equipped with a removable cap to provide access for flushing activities if needed. The underdrain solution collection pipeline system reports to the basin underdrain outlet pipeline, which consists of a 12-inch diameter HDPE (SDR 11) pipe capable of carrying a peak flow of approximately 2,400 gpm.

The underdrain solution collection pipeline parallels the embankment face and embankment foundation drain pipelines beneath the embankment, encased in reinforced concrete, via the reclaim slot. The three single-wall solution pipelines remain within the reinforced concrete encasement beneath the embankment foundation for a distance of approximately 1,500 feet before daylighting into the Underdrain Valve Access Pad. The pad is lined with a single layer of 80-mil HDPE placed on a prepared sub-base. The liner is covered with a minimum 8-inch thick layer of protective, sandy, pipe bedding material beneath all pipeline runs. Pipe bedding material, placed in maximum 8-inch thick lifts, is compacted to a minimum 90% of the maximum dry Modified Proctor density (ASTM Method D1557).

Within the Underdrain Valve Access Pad, each single-wall pipeline is constructed with a wye fitted with a cap and butterfly valve that provides access for pipeline clean-out operations. Each pipeline is also equipped with an in-line gate valve to be used during maintenance of a pipeline and a butterfly valve, placed in series, to provide operational control of solution to the Mill 5/6 Central TSF Relocated Underdrain Pond 1, the southernmost underdrain pond, which was relocated during construction of the Mill 5/6 East TSF. The operational flow control is necessary to ensure the pond pumping capacity of 1,400 gpm is not exceeded. From the pad to the pond, a distance of approximately 6,300 feet, each of the three 12-inch diameter HDPE pipelines passes through a boot in the pad liner and into an individual 16-inch diameter HDPE pipeline that provides pipe-in-pipe secondary containment.

Mill 5/6 West TSF Tailings Slurry and Reclaim Pipelines**:** Tailings slurry conveyance to the Mill 5/6 West TSF utilizes existing pipelines from the Mill 5/6 mill complex and Mill 5/6 Tailings Booster Pump House. The original design also called for installation of additional pumps at the existing Mill 5/6 Tailings Booster Pump House but later analysis indicated the existing pump house building would not easily accommodate additional pumps or maintenance access. An EDC modification was approved in September 2010 for construction of the Mill 5/6 West Tailings Booster Pump House at a location approximately midway along the west embankment of the Mill 5/6 Central TSF.

The Mill 5/6 West Tailings Booster Pump House steel building encloses a stem-walled, reinforced concrete slab measuring approximately 37 feet by 98 feet in plan. All concrete construction joints incorporate embedded flexible waterstops. The building slab is sloped to a central collection ditch that will convey spills directly into the Mill 5/6 Central TSF.

Existing pipelines from the Mill 5/6 Tailings Booster Pump House convey slurry to three pumps located within the Mill 5/6 West Tailings Booster Pump House building containment. Tailings slurry is pumped to the Mill 5/6 West TSF through three 24-inch diameter HDPE tailings delivery pipelines routed along the crest of the Mill 5/6 Central TSF and onto the north, northwest, and southwest embankment crests of the West TSF. The tailings pipes pass through 30-inch diameter steel secondary pipes where they cross under the embankment crest road at the northeast corner of the Mill 5/6 West TSF. The tailings delivery pipelines transition to 21.5-inch diameter HDPE tailings distribution pipelines on the embankment crest, from which subaerial tailings distribution is accomplished using multiple 6-inch diameter HDPE drop bars located at intervals along the interior slope of embankment. The drop bars are placed on a sheet of 80-mil HDPE liner to minimize erosion of the embankment slopes. The termination point of each drop bar is fitted with a splash pad to minimize erosion of the basin drainage blanket. Single-point discharge pipelines, constructed of 21.5-inch diameter HDPE pipe, are located at six points along the main distribution pipelines and extend into the flatter portion of the impoundment basin to allow development of a tailings 'beach' while minimizing erosion of the drainage blanket.

The facility is designed for an average tailings slurry discharge rate of 23,200 short tons per day at an average solids content of 35%. The original approved design included a floating barge pump, located in the southeast corner of the facility, to recover reclaim solution from the supernatant pool. In April 2010, during the Phase I construction period, an EDC was approved to substitute a ramp reclaim system with elevation-adjustable pumps for the barge pump system. The 35-foot wide ramp accommodates three parallel 'cart' rails. Two pumps can be mounted, side-by-side, on each cart. A dedicated winch, mounted on the crest of the embankment, is used to raise and lower the carts along the rails to adjust the pump elevation as the supernatant pool elevation changes or to remove a pump for maintenance.

The rail reclaim system is attached to a steel-reinforced concrete slab installed on the 3H:1V slope along the upstream embankment face at the southeast corner of the impoundment. The slab was cast in place over the 80-mil textured HDPE embankment liner and seal zone. A vee-shaped key, cast into the base of the ramp along the long-axis centerline, fits into a mirror-image slot constructed in the lined embankment face to provide lateral stabilization of the ramp. The toe of the ramp was cast into a steel-reinforced, cast-in-place concrete buttress. The impoundment liner was welded to HDPE embed strips cast into the buttress to completely encase and seal the buttress and provide a transition to the impoundment basin liner system.

Initially, the concrete reclaim ramp was constructed to the Phase II embankment crest elevation by placing a mound of embankment fill. The reclaim ramp and associated pumping system was then extended to the final crest elevation during the Phase III construction.

The reclaim pipelines were routed via 30-inch diameter steel pipe sleeves through the embankment crest to convey solution by gravity to the existing reclaim solution conveyance system along the lower elevation Mill 5/6 Central TSF west side embankment crest. However, as part of the April 2010 EDC design, the pipeline was rerouted to the southeast corner of the impoundment rather than at the northeast corner as in the original approved design. The Phase III construction included plugging and abandoning the Phase II reclaim pipes where they penetrated the embankment crest. The steel pipes were cut off more than 15 feet horizontally from the Phase III embankment face and the pipe ends were plugged with concrete. The Phase III standard embankment construction, including seal zone, face drain, and 80-mil HDPE geomembrane liner, was then completed over the abandoned pipes to ensure containment integrity.

<u>Mill 5/6 West TSF Monitoring</u>**:** Groundwater occurs in the Carlin formation at a minimum depth of 200 feet below the Mill 5/6 West TSF and exhibits a shallow southeasterly flow gradient. Existing groundwater monitoring wells GQP-51 and GQP-46, located within the footprint of the new facility basin and not part of the Permit monitoring, were abandoned in accordance with NAC 534 requirements and supplemented with groundwater quality monitoring well GQP-46A. A new downgradient monitoring well (M56-4) was installed just south of the southeast corner of the Mill 5/6 West TSF as part of the major modification to the Permit. Additional facility monitoring, associated with the major modification to the Permit, includes 17 vibrating wire piezometers located within the 18-inch thick basin drainage blanket and six vibrating wire piezometers located within the embankment foundation to measure phreatic pressure (hydrostatic head). The piezometers are wired to three readout boxes. Readout box 56W-1, located outside

the southeast corner of the TSF near the Underdrain Valve Access Pad, is for the embankment piezometers. Readout box 56W-2, located on the southeast embankment crest near the reclaim ramp, is for basin piezometers P-1A, P-1B, P-2, P-3B, P-4, P-5B, P-8B, and P-9B. Readout box 56W-3, located on the north embankment crest, is for basin piezometers P-3A, P-5A, P-6A, P-7, P-8A, P-9A, P-10, P-11, and P-12. Also, three inclinometers installed in boreholes monitor embankment settlement, which is reported monthly to the Nevada Division of Water Resources, State Engineer.

Mill 5/6 West TSF Stormwater Diversion**:** A new stormwater diversion channel, constructed just west of the Mill 5/6 West TSF, and approximately 2,000 feet west and upgradient of the original Mill 5/6 Central TSF stormwater diversion channel, intercepts flow from five drainages covering a 768-acre watershed area. The diversion channel is aligned in a north-south direction, is approximately 2.5 miles long, and has a 20-foot wide access road located on the downgradient side. The design event modeled for the section of the stormwater diversion channel adjacent to the Mill 5/6 West TSF is the Probable Maximum Flood (PMF), which equates to 11 inches of precipitation over 3 days and 12.1 inches in 6 hours. For sections of the stormwater diversion channel located beyond the Mill 5/6 West TSF, the 500-year, 24-hour storm event was used for modeling. The diversion is designed with a minimum 2-foot freeboard and ranges from 15 to 20 feet wide and 1.5 to 5 feet of flow depth below freeboard and above riprap. Riprap dimensions range from 6 to 12 inches in diameter.

Mill 5/6 East TSF: The Mill 5/6 East TSF, a fully synthetic-lined facility, was approved as a major modification as part of the 2012 Permit renewal. The facility is constructed in portions of Sections 12 and 13, T33N, R51E, and Section 18, T33N, R52E, MDB&M. The facility footprint will cover approximately 480 acres of public and 349 acres of private land (total 829 acres), which includes a tailings basin area of approximately 383 acres (16.7 million square feet).

The facility, constructed in three phases beginning in late 2012, with embankment crest heights of 150 feet for Phase I (completed 2018), 185 feet for Phase II (completed 2020), and 220 feet for Phase III (not yet started), has a design capacity of approximately 100 million tons. A 14.5-foot 'bonus lift' on the Phase III embankment could increase the design facility capacity to approximately 112 million tons. The Mill 5/6 East TSF capacity, in addition to capacity remaining in the Mill 5/6 Central TSF and the Mill 5/6 West TSF, will extend the overall facility life to at least the year 2026, at a mill processing rate of approximately 14.5 million tons of ore per year.

The Mill 5/6 East TSF is constructed on relatively level native topography immediately east of the Mill 5/6 Central TSF. The west side embankment of the East TSF abuts approximately 2,600 feet of the Mill 5/6 Central TSF east side embankment. However, the two components are hydraulically independent and the ultimate East TSF embankment crest elevation will be approximately 190 feet below the ultimate Mill 5/6 Central TSF embankment crest elevation. The East TSF is rectangular with a west-to-east long axis measuring approximately 6,800 feet long by 3,500 feet wide between final crest centerlines. The minimum design crest width is 136 feet, except for the 'bonus lift,' which, if constructed, will measure approximately 50 feet wide.

The Mill 5/6 East TSF construction methods and functional elements are essentially identical to those used for the Mill 5/6 West TSF, except the Mill 5/6 East TSF embankment does not include a face drain. The embankment is continuously constructed using downstream construction during the life of the component. The embankment is designed with 2.5H:1V downstream slopes and 2H:1V upstream slopes. Until closure, the supernatant pool will be operationally located in the northeastern 40% of the impoundment basin footprint. A minimum operational 5-foot freeboard will be maintained in the supernatant pool area at all times. The storm event design incorporates a 3-foot freeboard.

The embankment foundation area was grubbed and stripped of topsoil to a depth of 8 to 12 inches and re-compacted to an in-situ permeability $\leq 1 \times 10^{-5}$ cm/sec using in-situ or imported material. Perforated CPEP, placed within the foundation footprint along natural drainages and under the downstream embankment toe of each phase of construction, collects water that infiltrates into the embankment. The 6-inch diameter CPEP is bedded within clean gravel encapsulated in 10-oz/yd^2 geotextile. At the downstream toe of the Phase I embankment, the embankment foundation drain pipelines converge into a single 18-inch diameter solid HDPE pipeline that conveys collected solution to the underdrain ponds. The pipework is extended, relocated, or replaced as the embankment toe advances for each phase of construction.

Twin 18-inch diameter HDPE embankment foundation drain outlet pipelines are placed in an open pipeline channel constructed as an inverted trapezoid shape, approximately 4 feet deep, 12 feet wide at the base, and lined with a single layer of smooth 80-mil HDPE liner placed over prepared subgrade. Downgradient of the Phase III downstream embankment toe, the channel splits into a north and south branch, and wyes and associated butterfly valves allow foundation drainage to be conveyed to either of the underdrainage ponds.

Embankment random fill on the upstream face is covered with a 20-foot wide (measured horizontally; approximately 9 feet thick when measured perpendicular) transition zone comprised of PAG and/or non-PAG structural random fill material limited to a 6-inch diameter particle size. The transition zone material keeps finer material in the overlying 15-foot wide (measured horizontally; 6.7 feet perpendicular) non-PAG alluvial bedding zone from migrating into the PAG and/or non-PAG structural random fill. The 80-mil HDPE liner directly overlies the alluvial bedding zone on the upstream embankment face.

The embankment serves as a waste rock disposal facility through the use of PAG material as embankment structural random fill (monitored quarterly in the Permit as GQ-56-DAM-E-RZ). Several raises of the Mill 5/6 Central TSF and the Mill 5/6 West TSF embankments were constructed with PAG waste and similar construction. All PAG embankment fill is placed in accordance with the Newmont *Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan, January 2003*, which requires, at a minimum, a compacted foundation constructed of a minimum 1-foot thick layer of neutral or net-neutralizing material compacted to a permeability of less than $1x10^{-5}$ cm/sec. The low permeability embankment foundation is covered with a minimum 10-foot thick (vertical) layer of material exhibiting an ANP:AGP ratio of at least 3:1. PAG material within the core of the embankment is encapsulated with a minimum 10-foot thickness of net-neutralizing encapsulation material (monitored quarterly in the Permit as GQ-56-DAM-E-EZ) on top, bottom, and both sides, in accordance with the 2003 Plan.

To protect Phase I and Phase II downstream embankment PAG random fill segments from infiltration of meteoric water prior to Phase III construction, a 3-foot thick layer of non-PAG material is placed on the interim downstream slopes continuous with the progressing lift. The final downstream embankment slope is covered with a minimum 15-foot wide non-PAG zone and an outer cover comprised of a minimum 1-foot thick layer of neutral or net-neutralizing material compacted to a permeability of less than 1×10^{-5} cm/sec permeability and a 4-foot thick layer of growth media.

All but about 16 acres of the total impoundment basin area of 383 acres was constructed during the Phase I embankment construction; the remainder, located in the southwest corner of the basin, will be constructed during Phase II embankment construction. Construction of the basin required demolition and backfilling of the existing Mill 5/6 Central TSF Underdrain Pond 1, abandoning two seepage cut-off trenches, constructing a new Relocated Underdrain Pond 1 approximately 1,500 feet further north, and relocating and extending solution conveyance pipelines associated with the Mill 5/6 Central TSF and Mill 5/6 West TSF underdrain systems (see description above).

Basin construction consists of clearing and grubbing the footprint, stockpiling of the topsoil for future reclamation activities, scarifying the in-situ subgrade to a depth of 8 inches, and moisture conditioning and shaping with cut-and-fill operations to form a smooth surface that drains to the east. The basin footprint incorporates two sub-Basins: Basin Area 'A', a south segment of the main basin; and Basin Area 'B', a north segment of the main basin. The shaped basin surface is compacted to create a non-yielding surface and any in-situ materials, such as coarse gravel and rock not suitable as geomembrane subgrade, are removed or covered with imported material. The entire basin and upstream face of the embankment are covered with a single layer of 80-mil double-textured HDPE liner.

Within the basin footprint, the HDPE liner is covered with a 12-inch thick protective layer comprised of material with a 1-inch maximum particle dimension and < 50% gravel. An 18-inch thick drainage layer, comprised of sand and gravel material with a maximum 3-inch particle dimension, ≤ 12% fines, and ≤ 40 % gravel, is placed over the protective layer. Within the basin area of the supernatant pool, the drainage layer is covered with a layer of 10-oz/yd^2 geotextile to minimize fines migration from the tailings.

An underdrain solution collection pipeline system is placed within the 18-inch thick drainage layer. The system is constructed to preferentially drain the two sub-Basins, Basin Area 'A' (approximately 45% of the basin area) and Basin Area 'B' (approximately 55% of the basin area). Within each sub-Basin, 4-inch diameter perforated CPEP, placed on 50-foot centers in a herringbone pattern, conveys solution to 12-inch diameter perforated CPEP main header pipelines. The main header pipelines connect into a single 12-inch diameter slotted HDPE header pipeline located along the central fall line of each sub-Basin. The two slotted HDPE header pipelines transect the entire length of the impoundment basin and are equipped with clean-out access on the west embankment. All perforated and slotted header pipelines are encased in clean gravel enclosed with a layer of 10-oz/yd^2 geotextile to minimize fines migration into the pipelines.

The 12-inch diameter slotted HDPE header pipelines are connected with reducer couplings to a pair of 18-inch diameter solid HDPE underdrain outlet pipelines at the upstream toe of the TSF embankment. The two underdrain outlet pipelines, each designed for a maximum 3,000-gpm flow, are connected with a tee, located approximately 5 feet upstream of the embankment toe, designed to balance flows between the pipelines. The outlet pipelines are double-booted to the basin and upstream embankment HDPE liner with extrusion welds and stainless steel straps with neoprene gaskets and extend beneath the embankment. Beneath the embankment, the pipelines are encased within a steel-reinforced concrete encasement measuring approximately 4-feet high by 7-feet wide and constructed on the embankment foundation. The two underdrain outlet pipelines exit the concrete encasement into the underdrain outlet pipeline channel at the future Phase III downstream toe of the embankment.

The underdrain outlet pipeline channel is constructed as an inverted trapezoid shape, approximately 4 feet deep, 12 feet wide at the base, and lined with a single layer of smooth 80-mil HDPE liner placed over prepared subgrade. A 45-foot long, 11-foot wide concrete slab with curbs is constructed in the channel bottom abutting the end of the underdrain pipe concrete encasement. In the slab area, each underdrain pipeline is equipped with gate valves, a pipeline clean-out, a butterfly valve to throttle flow, and a Palmer-Bowlus flume. A short distance downstream from the concrete slab, the pipelines connect to a wye that combines flow into a single 18-inch diameter solid HDPE underdrain pipeline. The single underdrain pipeline connects to another wye a short distance further downstream, which again separates flow into two 18-inch diameter HDPE underdrain pipelines, each equipped with a butterfly valve for flow control. At the pipeline wye, the channel splits into two channels to divert flow to either the North Underdrain Pond or the South Underdrain Pond.

In October of 2016, an EDC was approved by the Division for the realignment of the East Tailings Storage Facility (ETSF) underdrain, solution transfer, and acid pipelines. This EDC was proposed in order to minimize potential impacts to the James Creek Diversion in the event of a release, and to simplify pipeline alignment. The 16-inch diameter HDPE underdrain, 10-inch diameter HDPE solution transfer, and 4-inch diameter HDPE acid pipelines were constructed with pipe-in-pipe secondary containment when not traveling over an HDPE lined channel. The secondary containment pipes consisted of 24-inch, 14-inch, and 8-inch diameter HDPE pipelines, respectively. Acid resistant stainless steel flanges and hardware were installed on the 4- and 8-inch acid pipelines to prevent corrosion and minimize potential for a release. The pipeline realignment required the construction of a pipe bench on the south side of the haul road and the construction of two buried road crossings. The pipe bench was constructed of random fill and rock fill that was moisture conditioned to ± 2% of the optimum moisture content and compacted to 90% of the maximum dry density, as determined by ASTM Method D1557. Road crossings were constructed with 30-inch diameter carbon-steel pipelines that were buried approximately 4-feet deep to ensure that the realigned pipelines would not be crushed. Pipe bedding and pipe backfill were placed in maximum 8-inch lifts and moisture conditioned to ± 2% of the optimum moisture content and compacted to 90% of the maximum dry density, determined by ASTM Method D1557.

The North Underdrain Pond (NUP) and South Underdrain Pond (SUP) are identical in design and are constructed approximately 200 feet east of the ultimate Phase III east embankment downstream toe. Each pond is designed to contain the 48-hour power-loss draindown with a 4-million gallon capacity and a 3-foot freeboard. The pond design calls for a 5-foot operating freeboard. The NUP was constructed in 2013, and a deferral from the construction of the South Underdrain Pond was approved by the Division in May of 2018. However, the South Underdrain Pond design will remain in the event that it is needed in the future.

Each underdrain pond measures approximately 225 feet on a side at the crest and 25 feet deep with 2.5:1 side slopes. The pond liner system, from bottom to top, is comprised of a 12-inch thick prepared subgrade with a permeability ≤ 1 x 10^{-6} cm/sec when compacted to 92% of maximum dry density as determined by ASTM Method D1557 (pre-construction material testing resulted in an average permeability of 1.9 x 10^{-7} cm/sec), an 80-mil smooth HDPE secondary liner, a geonet LCRS, and an 80-mil textured HDPE primary liner. The primary liner is protected with a geomembrane wear sheet placed at the underdrain outlet pipeline channel inlet. The LCRS layer conveys escaping solution to a 5,000-gallon leakage collection sump filled with clean gravel encapsulated in 10-oz/yd^2 geotextile. The sump can be evacuated through a 12-inch diameter, HDPE, inclined riser pipe placed between the primary and secondary liners that daylights along the west side crest of each pond.

The ponds will be connected by a piped spillway if in the future it is determined that the SUP will be required and is constructed. The spillway will be constructed using two 18-inch diameter HDPE pipes placed at an invert elevation 4 feet below the pond crest. The pipes are designed to be placed in a trapezoidal trench, measuring approximately 12 feet wide at the base. The trench will be constructed with an 80-mil smooth HDPE secondary liner, an 80-mil textured HDPE primary liner, and a geonet LCRS on a 12-inch thick prepared subgrade with a permeability $\leq 1 \times 10^{-6}$ cm/sec. The trench liner system will be compartmentalized to direct leakage in the north half to the North Underdrain Pond LCRS sump, and south half leakage to the South Underdrain Pond LCRS sump. The trench will be backfilled with protective layer material comprised of 1-inch maximum particle size and < 50% gravel. The backfill is necessary to provide equipment access and protect the spillway integrity.

The Permittee proposed, in August of 2017, to not construct the SUP due to the determination that the NUP has sufficient storage and pumping capacity for the Mill 5/6 East TSF operations. The maximum anticipated undrain flow rate from the East TSF to the NUP is approximately 1,675 gallons per minute (gpm) with flows decreasing as tailings are deposited. The submitted request displayed that the two pumps at the NUP have the ability to convey 2,400 gpm, 1,900 gpm, and 1000 gpm when pumping over the Phase I, II and III embankment configurations, respectively. If underdrain flows remain over 1,000 gpm over the Phase III embankment configuration the pumps will be upgraded to accommodate the increased flow.

Underdrain reclaim solution is conveyed by gravity from each underdrain pond to the adjacent underdrain reclaim sump through a screened, 24-inch diameter HDPE reclaim riser pipe in the pond bottom. The reclaim riser extends more than 1 foot above the pond bottom, is connected to the pond liner system with double liner boots, extrusion welds, and a stainless steel strap with neoprene gasket, and is anchored within a concrete support block poured in-place prior to liner system construction. The reclaim riser for each underdrain pond is constructed with a 90-degree elbow within the support block and conveys solution through a 24-inch diameter HDPE inlet pipeline located on pipe bedding placed on the primary liner of the reclaim sump. The reclaim riser pipe and support block are contained within a double-lined and leak-detected liner envelope wedge formed by the overlying underdrain pond liner system and the underlying underdrain reclaim sump liner system (see below). The primary and secondary underdrain reclaim sump liners are extrusion welded to the secondary liner of the underdrain pond to ensure containment integrity.

The underdrain reclaim sumps are located adjacent to each other at the south end of the North Underdrain Pond and the north end of the South Underdrain Pond.

The surface perimeter of the lined area around each sump has a semi-circular footprint with radius extending outward approximately 90-95 feet from the sump risers. The other half of the sump footprint extends beneath the adjacent pond footprint. The semi-circular portion of the sump has side slopes of 2.5H:1V.

The underdrain reclaim sump subgrade design is similar to that constructed at other Permittee facilities. Each underdrain reclaim sump is constructed with a liner system comprised, from bottom to top, of a 12-inch thick prepared subgrade with a permeability less than 1 x 10^{-6} cm/sec when compacted to 92% of maximum dry density (as determined by ASTM Method D1557), an 80-mil smooth HDPE secondary liner, a geonet LCRS, an 80-mil textured HDPE primary liner, and a minimum 12-inch thick protective layer. The lined area of the underdrain reclaim sump is backfilled (above the protective layer) to surface grade with random fill material placed in 12-inch thick loose lifts and compacted to 90% of the maximum dry density (ASTM Method D1557). The LCRS layer conveys escaping solution to a 2,000-gallon sump filled with clean gravel encapsulated in 10-oz/yd^2 geotextile. The LCRS sump can be evacuated through a 12-inch diameter, HDPE, inclined riser pipe placed between the primary and secondary liners that daylights along the east side crest of each sump.

Within the underdrain reclaim sumps, the inlet pipeline from each underdrain pond is equipped with a wye to direct flow to two 54-inch diameter spirolite risers mounted on a reinforced concrete pad constructed over an 80-mil HDPE wear sheet. Two vertical-drive pumps, mounted to a reinforced concrete slab constructed on the surface, recover solution from the sump and pump it back to the TSF through a single 12-inch diameter HDPE underdrain reclaim solution pumpback pipeline. The surface slab also contains a 10-inch diameter HDPE sump evacuation pipe. The lower 5 feet of the evacuation pipe, where it reaches the base of the underdrain reclaim sump, is perforated to allow evacuation of fluid from the sump if necessary.

The 12-inch diameter underdrain reclaim solution pumpback pipeline is placed in a trapezoidal channel. The channel is lined with a single layer of textured 80-mil HDPE and protected from damage due to pipeline migration with an 80-mil smooth HDPE wear sheet. At the embankment toe, the underdrain reclaim pipeline is placed in a 15-inch diameter steel containment pipe up the downstream face of the impoundment. With each consecutive embankment lift and resulting toe advance, the pipeline and channel are covered in place and the pipeline re-established on the surface once the lift is completed.

A stability analysis was completed for a section through the east embankment and a section through the north embankment. In both cases, the sections included the adjacent underdrain ponds. Using standard dam safety procedures, model results exceeded both static and pseudostatic FOS requirements with minimum FOS values of 1.5 and 1.2, respectively, and a maximum pseudostatic deformation of < 3 inches. Settlement analysis for the west and east ends of the Mill 5/6 East TSF embankment indicates estimated settlements of 3 and 6 inches, respectively.

Mill 5/6 East TSF Tailings Conveyance and Deposition**:** Tailings slurry conveyance to the Mill 5/6 East TSF utilizes existing pipelines from the Mill 5/6 mill complex. From the Mill 5/6 Tailings Booster Pump House, three new 24-inch diameter SDR 11 HDPE tailings delivery pipelines are installed on a 60-foot wide bench constructed on the downstream slope of the east embankment of the Mill 5/6 Central TSF. The bench accommodates an access road with safety berm and a trench lined with a single layer of 80-mil HDPE for the pipelines. At the northwest corner of the East TSF, one delivery pipeline continues along the north crest of the embankment and the other two continue along the west and south portions of the embankment crest.

Sub-aerial tailings deposition is accomplished with multiple 6-inch diameter HDPE drop bars located along the delivery pipelines on the interior slope of the north, west, and south embankments. The delivery pipelines are divided into cells of 8 to 10 drop bars. Each cell is equipped with block valves to isolate the cell if necessary. The drop bars are placed on a sheet of 80-mil HDPE liner to minimize erosion of the embankment slopes. The termination point of each drop bar is fitted with a splash pad to minimize erosion of the basin drainage blanket. Single-point discharge pipelines are located at strategic points along the main distribution pipelines and extend into the flatter portion of the impoundment basin to allow development of a tailings ‘beach’ while minimizing erosion of the drainage blanket.

Mill 5/6 East TSF Supernatant Reclaim System**:** Reclaim of solution from the supernatant pool is accomplished using a ramp system with elevation-adjustable pumps for the barge pump system similar to the design constructed for the Mill 5/6 West TSF. An approximately 40-foot wide reinforced concrete ramp, constructed in the northeast corner of the impoundment, accommodates up to three parallel pairs of ‘cart’ rails if necessary. Two pumps can be mounted, side-by-side, on each cart and the final number of pumps will be determined based on the pumping capacity of the pump model selected. A dedicated winch, mounted on the crest of the embankment, will be used to raise and lower the carts along the rails to adjust the pump elevation as the supernatant pool elevation changes or to remove a pump for maintenance. The design eliminates the need with older designs to construct light-vehicle ramps on the embankment face to accommodate reclaim system maintenance activities.

The rail reclaim system is attached to a steel-reinforced concrete slab ramp installed at a 3H:1V slope along the upstream embankment face at the northeast corner of the impoundment. The slab is cast in place on a layer of 80-mil smooth HDPE liner placed as a wear-sheet on a layer of 10-oz/yd^2 geotextile to protect the underlying 80-mil textured HDPE embankment liner. A vee-shaped key, cast into the base of the ramp along the long-axis centerline, fits into a mirror-image slot constructed in the lined embankment face to provide lateral stabilization of the ramp. The toe of the ramp is cast into a steel-reinforced, cast-in-place concrete buttress.

The reclaim pumps are connected to a pair of headers located on the embankment slope that convey solution from the pumps to the two 30-inch diameter HDPE supernatant reclaim pipelines. The reclaim pipelines are routed along the north embankment and into the lined pipeline trench constructed along the east embankment of the Mill 5/6 Central TSF. The Mill 5/6 East TSF reclaim pipelines are tied into the existing 21.5-inch diameter Mill 5/6 reclaim pipelines near the Mill 5/6 Tailings Booster Pump House.

Tentative Plan Permanent Closure of TSFs: A conceptual closure plan anticipates use of a 3-foot thick layer of growth media as a final cover. The Mill 5/6 Central TSF will enter closure first, beginning 2 years after final deposition, when 50% of the surface will be covered. The remaining 50% will be covered with the final filling of the Mill 5/6 East TSF, which correlates to approximately 12 years after initial cover placement on the Mill 5/6 Central TSF. The Mill 5/6 West TSF will remain operational after construction of the Mill 5/6 East TSF Phase I and enter closure after the year 2020, which will allow its remaining capacity to be utilized during construction of the Mill 5/6 East TSF Phase II lift. The Mill 5/6 West TSF will enter closure about two years after final deposition and will be covered continuously over a 4-year period. Closure of the Mill 5/6 East TSF will begin approximately two years after final filling with the covering of 50% of the surface area. The remaining 50% will be left uncovered for the next 20 years to keep that portion of the East TSF open for recirculation of process solution and enhanced evaporation.

Draindown of 50 gpm, within 15 years after closure, is estimated for the Mill 5/6 West TSF and Mill 5/6 East TSF, and the Mill 5/6 Central TSF is estimated to exhibit draindown of 56 gpm after 25 years. Enhanced evaporation will be used for removal of solution until a draindown rate is achieved that can be maintained by a passive management system. The passive evapotranspiration/evaporation (ET/E) system will be located on and outside the Mill 5/6 East TSF impoundment and will be comprised of a 90-acre area on the southwest portion of the reclaimed basin surface, a 35-acre area along the northeast portion of the north embankment toe, and a 44-acre area along the toe of the east embankment. Passive management in the latter two areas, which are located outside containment, will be dependent upon draindown quantity and quality. A final permanent closure plan must be submitted at least two years prior to planned permanent closure in accordance with NAC 445A.447.

Component Monitoring and Fluid Management: The James Creek TSF is monitored with six downgradient monitoring wells. The James Creek TSF, a pre-regulation facility, was not constructed with the means to measure hydraulic head pressure on the clay liner. The Mill 5/6 Central TSF is monitored with five downgradient monitoring wells. One additional monitoring well, M56-4, was added with approval of the Mill 5/6 West TSF. During construction of the Mill 5/6 East TSF, existing monitor wells M56-1 and M56-2 were abandoned (M56-2 abandonment approved in April 2016) and replaced with wells designated M56-1A (installation planned for 2016) and M56-2A (installed in 2014), respectively. Another new monitoring well, M56-5, was installed in 2014 in the upper aquifer gradient flow direction, downgradient from the southeast corner of the Mill 5/6 East TSF embankment.

Hydraulic head pressures in the Mill 5/6 Central TSF are monitored with embankment piezometers, basin piezometers, and 'tree' type basin piezometers with three units per tree. Hydraulic head pressure monitoring for the Mill 5/6 West TSF consists of basin piezometers and embankment piezometers. Three borehole inclinometer systems monitor settlement in the Mill 5/6 West TSF embankment. Head pressures will be monitored in the Mill 5/6 East TSF with embankment piezometers and basin underdrain piezometers. Due to piezometer failures with time, operating piezometers are identified in the Permit.

Fresh make-up water for the mills is obtained from dewatering wells MC-2, GQDW-10, GQDW-11, GQDW-14, GQDW-15, and GQDW-16. Make-up water from the wells is combined and pumped to the South Area Leach TK-01 storage tank where it is sampled annually for water quality analysis.

The fluid management system is designed to remain fully functional and contain all process fluids and run-off accumulations resulting from the 24-hour, 25-year storm event. Except for the Mill 5/6 West TSF, diversion ditches located upgradient of all facility components are designed and constructed to divert storm flow from the 24-hour, 100-year event. Stormwater diversions for the Mill 5/6 West TSF are designed and constructed to withstand the Probable Maximum Flood event in the area immediately upgradient of the impoundment and the 500-year, 24-hour event for areas within the watershed but peripheral to the impoundment.

Stormwater flow is diverted away from the south embankment of the Mill 5/6 East TSF by a pair of stormwater channels constructed to convey the 100-year, 24-hour event flow. The channels converge downgradient of the component and enter a natural drainage. Storm flow from a small watershed area adjacent to the north embankment will report to two evaporation ponds that will be constructed during embankment construction. The ponds will contain and evaporate the anticipated 100-year, 24-hour storm run-off from the Phase I water shed. As the embankment toe advances during Phase II and Phase III construction, the contributing watershed footprint is reduced and the relative evaporation pond capacity increases. In the event the evaporation ponds do overtop, the flow will report to a natural drainage.

C. <u>Receiving Water Characteristics</u>

Mill 5/6 – Gold Quarry – James Creek Facilities Area: The Project facilities are located in the Lower Maggie Creek Basin, approximately ½ to 1 mile west of the Maggie Creek Channel. James Creek, an intermittent tributary to Maggie Creek, was diverted and relocated south of the Gold Quarry facilities and the South Area

Leach Project. Maggie Creek empties to the Humboldt River, approximately seven miles south of the facilities.

Groundwater in the Project area is controlled by two major aquifer systems: the carbonate bedrock aquifer system and the overlying Carlin Formation and alluvial aquifer system. Dewatering at Gold Quarry is primarily focused on the carbonate bedrock aquifer and drawdown in that aquifer has not been influenced by the overlying Carlin Formation and alluvial aquifer system. Limited dewatering in the Carlin Formation, conducted to stabilize the Carlin sediments exposed in the south wall of the Gold Quarry Pit, has resulted in the temporary change in gradient on the north side of the James Creek TSF.

Groundwater in the area of the James Creek TSF and Gold Quarry Heap Leach Pad was identified at pre-mining depths that ranged between 35 and 125 feet bgs. Pre-mining depth to groundwater beneath the Mill 5/6 Central TSF and Mill 5/6 West TSF ranged from 134 to 350 feet bgs, with a general flow direction of east-southeast. Groundwater depth measurements taken in August 2008 in monitoring wells SL-3, M56-1, and M56-2 indicate groundwater depths ranging from 145- to 203-feet below surface within the Mill 5/6 East TSF footprint.

Dewatering activities (< 20,000 gpm) in the immediate Project area have temporarily depressed the groundwater levels on the northwest side of the James Creek TSF. Groundwater gradients in this area are now to the northwest, toward the Gold Quarry Pit. Water levels and flow directions below the Gold Quarry Heap Leach Pad and the Mill 5/6 complex have not been affected by dewatering activities.

Groundwater is generally of drinking water quality. However, water from some wells contains elevated arsenic and may require treatment prior to discharge to Maggie Creek. (NPDES Permit NV0022268)

Leeville Mine: The Leeville Mine is located on the west flank of the Tuscarora Mountains within the Boulder Flat hydrographic area. The mine and support facilities are situated within Little Boulder Basin on the drainage divide near the headwater of Rodeo Creek and Sheep Creek, both of which are intermittent drainages. Flow occurs in these creeks in response to significant precipitation events and snowmelt runoff. Neither source supports sufficient flow to maintain a defined channel to the Humboldt River.

Historic groundwater flow in the Project area was generally to the southwest. This general flow direction has not been significantly affected by the dewatering at the Goldstrike Mine to the north or the Gold Quarry Mine to the south. The Leeville Mine is situated between the two cones of depression. Some faults in the area also appear to act as barriers to groundwater flow. However, records collected since 1993 indicate aquifer water levels in the Project area have generally been declining in response to the regional dewatering activities.

Two groundwater aquifers with limited intercommunication have been identified in the area of the Leeville Mine. The "Upper Plate" aquifer currently lies at a depth of 320 to 360 feet bgs and the "Lower Plate" aquifer lies at a depth of approximately 1,350 feet bgs. The Upper Plate aquifer is considered a low to moderate water producer. The Lower Plate aquifer is considered a high water producer. Production from an individual test well drilled into each aquifer resulted in flows of approximately 550 gpm and 2,600 gpm, respectively.

The Upper Plate aquifer water quality meets the Division's Profile I reference values except for arsenic (As), which ranges from 0.097 to 0.572 mg/L in test well samples. The Lower Plate aquifer water quality also meets the Division's Profile I reference values except for As, which averages 0.06 mg/L in the test well samples.

The Leeville Mine will require dewatering at an average rate of 25,000 gpm for the first two to three years of development and at an average rate of 8,000 gpm for the remainder of the mine life. Leeville Mine dewatering water is conveyed by pipeline to the Leeville Water Treatment Plant, WPC Permit NEV2002105. After treatment to meet the Division's Profile I reference values, the water is conveyed by pipeline to the Barrick Goldstrike Mines Boulder Valley Recirculation Project facilities (NEV0095114) for discharge.

Pete Mine: No dewatering in the area of the three open pits for the Pete Mine will be required during mining and none of the pits will reach a depth below the regional pre-dewatering groundwater elevation. Hydrologic studies confirm that water intercepted in exploration drill holes within and adjacent to the proposed pit boundaries was associated with perched zones with no measurable recharge capacity. The deepest pit bottom is planned for an elevation of 5,530 feet amsl. The fully recovered groundwater elevation is calculated to be approximately 250 feet lower in elevation. Therefore, no pit lake issues are anticipated.

Gold Quarry Predictive Pit Lake Model: The Gold Quarry Pit is located in the Maggie Creek basin north of Carlin Nevada. Mining of the Gold Quarry Pit began in 1985 and is currently ongoing. The Gold Quarry Pit reached groundwater in 1992, at a depth of approximately 600 feet below the pit rim. The Gold Quarry Pit is currently projected to reach a depth of 3,640 feet amsl or a depth of approximately 1,890 feet below the pre-mining surface. The Gold Quarry Pit will develop a pit lake once dewatering ceases after mining has been completed (currently projected by the end of 2042). The *"Gold Quarry Pit-Lake Chemogenesis Phase 6A/6B Expansion"*, dated 28 December 2021, predicts that the pit lake will begin to form in 2044 after the cessation of dewatering. The ultimate pit-lake elevation is predicted to be approximately 4,984 feet amsl, or approximately 1,334 feet in depth. The pit lake is predicted to be 90% recovered (by elevation) in 2270. Modeling results display that there will not be an outflow component to the pit lake. This is contrast to the 2017 predictive model that determined the pit lake would develop an outflow component at year 2073 due to water levels recovering sufficiently to reverse groundwater flow in the southeast portion of the pit, flowing towards the Humboldt River. The contrast between the two models is due to the 2017 groundwater model assuming that all excess precipitation resulted in direct groundwater recharge, rather than stream-channel runoff, leading to an over-estimate of the hydraulic conductivities.

Groundwater modeling coupled with geochemical modeling based on static and kinetic testing of pit wall rock indicate the predicted pit lake water quality will meet all Division Profile III reference values, with the exception of pH, arsenic, cadmium, and selenium. The predicted pH at the end of the 300-year simulation is between 8.1 and 8.8 standard units, with arsenic, cadmium, and selenium having concentrations of 0.97 mg/L, 0.12 mg/L, and 0.11 mg/L, respectively. Since these constituents will exceed their respective Profile III reference values, a Screening-Level Ecological Risk Assessment was performed to quantify risk to avian and mammalian life, as required by Nevada Administrative Code 445A.429.

Utilizing the no observed adverse effects level toxicity reference values, all Hazard Quotients were less than 1, indicating that no adverse effects would be observed if ingested by potential receptors.

D. Procedures for Public Comment

The Notice of the Division's intent to issue a Permit authorizing the facility to construct, operate and close, subject to the conditions within the Permit, is being published on the Division website: https://ndep.nv.gov/posts/category/land. The Notice is being mailed to interested persons on the Bureau of Mining Regulation and Reclamation mailing list. Anyone wishing to comment on the proposed Permit can do so in writing within a period of 30 days following the date the public notice is posted to the Division website. The comment period can be extended at the discretion of the Administrator. All written comments received during the comment period will be retained and considered in the final determination.

A public hearing on the proposed determination can be requested by the applicant, any affected State or intrastate agency, or any interested agency, person or group of persons. The request must be filed within the comment period and must indicate the interest of the person filing the request and the reasons why a hearing is warranted.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings must be conducted in accordance with NAC 445A.403 through NAC 445A.406.

E. Proposed Determination

The Division has made the tentative determination to issue the renewed Permit.

F. Proposed Limitations, Schedule of Compliance, Monitoring, Special Conditions

See Section I of the Permit.

G. Rationale for Permit Requirements

The facility is located in an area where annual evaporation is greater then annual precipitation. Therefore, it must operate under a standard of performance which authorizes no discharge(s) except for those accumulations resulting from a storm event beyond that required by design for containment.

The primary method for identification of escaping process solution will be placed on required routine monitoring of leak detection systems as well as routinely sampling monitoring well(s) and surface water. Specific monitoring requirements can be found in the Water Pollution Control Permit.

H. Federal Migratory Bird Treaty Act

Under the Federal Migratory Bird Treaty Act, 16 U.S. Code 701-718, it is unlawful to kill migratory birds without license or permit, and no permits are issued to take migratory birds using toxic ponds. The Federal list of migratory birds (50 Code of Federal Regulations 10, 15 April 1985) includes nearly every bird species found in the State of Nevada. The U.S. Fish and Wildlife Service is authorized to enforce the prevention of migratory bird mortalities at ponds and tailings impoundments. Compliance with State permits may not be adequate to ensure protection of migratory birds for compliance with provisions of Federal statutes to protect wildlife.

Open waters attract migratory waterfowl and other avian species. High mortality rates of birds have resulted from contact with toxic ponds at operations utilizing toxic substances. The Service is aware of two approaches that are available to prevent migratory bird mortality: 1) physical isolation of toxic water bodies through barriers (e.g., by covering with netting), and 2) chemical detoxification. These approaches may be facilitated by minimizing the extent of the toxic water. Methods which attempt to make uncovered ponds unattractive to wildlife are not always effective. Contact the U.S. Fish and Wildlife Service at 1340 Financial Boulevard, Suite 234, Reno, Nevada 89502-7147, (775) 861-6300, for additional information.

Modified by: Matthew Schulenberg
Date: **01 February 2023**

Revision 00: Permit effective **Day Month 2023**.