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

Permittee Name: **Round Mountain Gold Corporation**

Facility Name: **Smoky Valley Common Operation**

Permit Number: **NEV0087052**
Review Type/Year/Revision: **Renewal 2025, Fact Sheet Revision 00**

A. Description of Facility

Location: The Round Mountain Gold Corporation (RMGC), Smoky Valley Common Operation (SVCO) is located in Big Smoky Valley in northwest Nye County, Nevada, approximately 45 miles northeast (by air) of the town of Tonopah and 54 miles southeast (by air) of the town of Austin. The mine and process facility are located within portions of Sections 1-3, 10-12, 14, and 15, Township 9 North (T9N), Range 43 East (R43E); Section 6, T9N, R44E; Section 11-14, 23-26, and 34-36, T10N, R43E; and Section 7-8, 17-20, and 29-32, T10N, R44E; Mount Diablo Baseline and Meridian.

Characteristics: The SVCO facility is comprised of an open pit, waste rock dumps, two exploration declines, a reusable asphalt-lined heap leach pad (HLP), process and storm event ponds, three active dedicated heap leach facilities, mill and flotation facility, and tailings impoundment designed to extract silver and gold. The SVCO is authorized to process up to 110,000,000 tons of ore annually, based on the current 2,000 tons per hour mill design throughput capacity, the current cumulative heap leaching rate of 56,550 gallons per minute (gpm), current production equipment fleet and capacities, the grade and oxidation state of the ore, and the size distribution of the gold and silver present. Processing methods at SVCO include the following:

- Heap leaching of uncrushed lower-grade ore on the South, West, and North Dedicated HLPs;
- Crushing and heap leaching of higher-grade ores on the Reusable Pad; and
- Gravity and flotation concentration of higher-grade sulfide ores followed by leaching of the concentrate in the Mill.

These processing methods produce high-grade gold and silver concentrates suitable for recovery in the refinery furnace and gold and silver cyanide solutions suitable for processing at the Adsorption, Desorption, and Reactivation (ADR) Facility.

The facilities at SVCO are required to be designed, constructed, operated, and closed without any release or discharge from the fluid management system except for meteorological events that exceed the design storm event.

The Permittee operates an open pit mine and cyanide heap leach facility (Gold Hill Project [GHP]) five miles north of the SVCO and is only accessible through the SVCO site. Refer to Water Pollution Control Permit (WPCP) NEV2010110 and Fact Sheet for specific design and operational details, monitoring, reporting and recordkeeping requirements.

When the site closes, a pit lake is predicted to form which is predicted to be a sink. Pit water quality is expected to be circum-neutral to moderately alkaline (pH 7.95 to 8.40) and will meet Profile III with the exception of fluoride, due to the elevated concentrations in the existing groundwater. The Permit requires continuing investigation of the pit lake as the project progresses along with updates to the pit lake predictive model.

In addition, the Permittee operates Rapid Infiltration Basins (RIBs) west and south of the SVCO site for the purpose of managing and reintroducing dewatering water from the mine into the local groundwater basin. Refer to WPCP NEV0091030 *"Smoky Valley Common Operation—Valley RIB Complex"* and WPCP NEV2012102*"Smoky Valley Common Operation—South RIB Complex"* Fact Sheets for specific design and operational details, monitoring, reporting, and recordkeeping requirements.

Site Access: *From Tonopah*--proceed on U.S. Route-6, 6 miles east to the junction of SR-376. Proceed north on SR-376 approximately 49 miles to the SVCO mine site entrance. *From Austin*--proceed east on US Route-50, 12 miles east to the junction of SR-376. Proceed south on SR-376 approximately 58 miles to the SVCO mine site entrance.

B. Synopsis

Permitting History: WPCP NEV0087052, first became effective on 2 January 1992. The SVCO was a 50 percent partnership between RMGC, a wholly-owned subsidiary of Kinross Gold Corporation, and Barrick Gold Corporation with RMGC as the operator and Permittee of record until January 2016 when RMGC acquired the other 50 percent of SVCO from Barrick Gold Corporation.

Current Facility Status: Based on the 2022 mining schedule, mining is anticipated to continue till 2031 and leaching will continue till late 2030 or early 2040. It is anticipated that the ultimate pit bottom will occur at an elevation of 4,120 feet above mean sea level (amsl) and approximately 2,000 feet below ground surface (bgs). A pit lake will form and predictive modeling results indicate that the lake will rise to a maximum elevation of 5,601 feet amsl (600 feet bgs), 200 years after the cessation of all dewatering. If the in-pit waste rock facility is placed in the pit the maximum elevation is approximately 6 feet lower. The open pit is currently dewatered at a rate of approximately 5,200 gpm and is expected to increase to 9,675 gpm with the approved Phase W pit expansion. A total of 42 dewatering wells are located within the confines of the SVCO site, with only a small number of these wells active at any given time due to scheduled mining in and around the wells. Dewatering water not used for consumptive purposes at the SVCO site is reintroduced back into the local groundwater basin via RIBs permitted under WPCP NEV0091030 and NEV2012102.

Waste Rock Characterization and Management: The Permittee has identified 45 waste rock lithotypes at the SVCO site, based on rock type, oxidation state, and type of alteration. Once identified, a numerical code is assigned to each lithotype. Of the 45 waste rock lithotypes identified at the SVCO, 13 lithotypes have the propensity to generate acid rock drainage (ARD) based on geochemical characterization results (i.e. MWMP [Meteoric Water Mobility Procedure], NMSP [Nevada Modified Sobek Procedure a.k.a. Acid-Base Accounting] and HCT [Humidity Cell Testing]) and are referred to as "designated waste" for waste rock management purposes. If any of the thirteen designated wastes are mined during a reporting quarter, composite samples obtained from blasthole cuttings and collected for ore control are submitted for geochemical characterization.

Designated waste was initially managed by encapsulation within the waste rock dumps by placing the material no closer than 25 feet from the exposed top of the waste dump, and no closer than 75 feet from the face of the final angle of repose of the final slope. The base of the dumps must maintain a thickness of at least 25 feet of non-potentially acid generating (non-PAG) material above which the designated waste is blended with waste rock with excessive neutralization capacity.

Because of the extended mine life and the potential shortage of suitable (non-PAG) cover material, the Permittee submitted an Engineering Design Change (EDC) on 30 March 2015 requesting a reduction in cover thickness at the SVCO. During the course of the Division's review, the Division requested the Permittee revise the existing SVCO and GHP waste rock management plan (WRMP) with additional characterization and predictive modeling data to further support the request to reduce non-PAG cover in thickness. The WRMP revision was submitted to the Division on 8 May 2015.

The EDC was approved by the Division on 25 June 2015, including the revised WRMP and classification methodology. Since all but one of the 13 material types identified as designated waste at the SVCO is un-oxidized and contains some sulfide minerals, the Permittee decided to simplify the waste rock classification system at the SVCO for the purposes of waste rock management. Designated waste was re-defined by a combination of rock type and oxidation state. Based on the revised classification system, waste rock material types that are oxidized and do not contain visible sulfides, are now classified as non-designated waste. Waste rock material types that are partially oxidized or completely un-oxidized and contain visible sulfides (i.e., pyrite) are classified as designated waste.

The newly revised classification system is more conservative than the waste rock classification as defined in the 1997 Addendum and 2009 WRMP. The previous designated waste types are still classified as designated waste, with the exception of one particular waste rock type (Type "9-1-4 Transitional Oxide Phyllic Tuff") which is no longer classified as such. This particular rock type does not contain visible sulfides and constitutes less than five percent of the total waste rock encountered. This is discussed in greater detail in *"Waste Rock Management Plan for the Round Mountain Mine and Gold Hill Area (May 2015)."*

Although the Division approved the revised waste rock classification methodology, only interim approval was granted for the reduction in non-PAG cover thickness layer for PAG waste rock. The Permittee proposed that waste rock identified as designated waste be placed on a nominal 10-foot thick base comprised of non-designated waste material, placed at a minimum of 10 feet internal from any final (regraded) dump face, and placed to accommodate a future cover of non-designated waste material with a nominal thickness of at least 10 feet.

Interim approval over the reduction in cover thickness was due to Division concerns over the limited soil cover test plot data provided by the Permittee in support of the cover layer reduction. The data was obtained from the nearby GHP site and that this site has experienced less than normal precipitation amounts during the 3-year period of record. As additional data is generated from the test plot operation is collected, reviewed, and evaluated, the Division requires the Permittee to continually re-evaluate the 10-foot non-PAG cover thickness.

In November 2020, the management of waste rock was transitioned to be managed under *"Waste Rock Management Plan Round Mountain Mine" (29 September 2020)*. In the updated WRMP, the encapsulation thickness was reduced from a 10-foot thickness to a 5-foot thickness. This change was completed based on the results of the study at the GHP that have been monitored since 2012. The results of the plot study confirmed a 1-foot cover is sufficient to minimize infiltration.

Underground Exploration Declines: The Permittee developed two exploration declines to facilitate exploration drilling. The decline (South) will mine through the bottom portion of the permitted Phase W pit expansion and circumvent the eastern and southern Phase W pit and floor. The decline will be approximately 4,500 feet long and is expected to intersect Type 2, Type 3 and Type 4 lithologies, which are all non-oxide. The volume of the decline is less than 0.001% of the ultimate pit lake and would be submerged by almost 100 feet of water within two years of no active dewatering.

An EDC approved August 2023 will allow for a second exploration decline (North) that will be constructed approximately 200 feet from the South exploration decline and will be between elevations 4,590 and 4,220 feet above mean sea level. The twin decline will be 17 feet wide and 19 feet tall with arched backs and a roughly 250-square-foot cross-sectional area. The decline is expected to intersect similar lithologies as the South decline and samples of waste rock will be collected approximately every 200 feet along the decline development. Samples will be tested in accordance with other waste rock samples for the WPCP monitoring program.

In November 2024, a minor modification was approved by the Division approved a 18,300-foot expansion to the existing exploration decline. This expansion will enhance safety by providing secondary access, a ventilation/escapeway, and will enable further exploration activities. This Phase 2 expansion of the underground exploration reached 3,675 feet above mean sea level.

In January 2025, a major modification was approved by the Division, allowing RMGC to collect additional data to support its exploration efforts and assess the feasibility of a potential underground mine. RMGC proposed five bulk sampling events for crushing and metallurgical testing. The general modification covers up to five bulk sampling events to be identified during the development of the exploration decline and ongoing exploration drilling. While the exact locations and quantities of the samples are not yet determined, each bulk sampling event will be limited to approximately 50,000 tons and will occur within the same general area as the Phase 1 and Phase 2 exploration declines. For each bulk sampling event, RMGC will submit detailed documentation—including the sampling location, tonnage, and analysis of potential impacts on the pit lake study—to the Division as a Non-Fee Review. The first specific bulk sampling (Sampling #1) will involve approximately 40,000 tons of Type 4 material (a 50% ore and 50% waste rock) for crushing and metallurgical testing at the Round Mountain Mill. The sampling area will cover roughly 500 by 500 feet, significantly smaller than the 18,300-foot Phase 2 underground exploration decline.

Underground Contact Water Treatment Plant: RMGC is proposing to pump contact water from the underground sumps of the exploration decline to a water treatment plant at the bottom of the open pit. The system will remove total suspended solids, oil, and grease from the contact water. As much of the treated water will be pumped back underground for reuse, any excess will be pumped to the Upper Fire Water Pond to be used as makeup water for operations. The solids collected will be managed as ore, waste, or PCS depending on the characteristics of the material and the oil and grease will be handled and disposed of according to Federal solid waste regulations and RMGC Solid and Hazardous Waste Management Plan.

The underground contact water treatment plant will consist of addition of flocculant (Hyperfloc AF-304 and contingent ferric chloride) to the contact water that will settle out in a clarifier. The underflow from the clarifier will go the sludge bay (which may use a geobag) while the overflow will proceed to an oil water separator and then be stored in a finished water tank for reused in operations. The water treatment plant will be constructed with a concrete containment with waterstops that will contain over 110 percent of the largest tank. The EDC incorporates a temporary and permanent designs that will be installed while the underground exploration declines are advanced.

Current Operations: Depending on the ore grade, run-of-mine (ROM) ore is transported by haul trucks to either: a) the Heap Leach Process Circuit; b) the Gravity Separation Circuit; or c) the Ore Milling and Gold Recovery Circuit. Overburden material is transported by truck to either the North or South Waste Rock Dumps or stockpiled elsewhere on the property for use as growth medium during final reclamation.

High grade ROM ore is crushed to minus ¾-inch, combined with lime and then transported and placed onto a high-grade HLP, referred to as the Reusable HLP (R-Pad) where it is leached with dilute sodium cyanide solution. Lower grade ROM is transported directly to either the South Dedicated HLP (SDED), West Dedicated HLP (WDED), or North Dedicated HLP (NDED), and leached with dilute sodium cyanide solution.

Pregnant leach solution from the HLPs is collected in HDPE-lined solution collection ditches and conveyed to either the South Dedicated Carbon Adsorption Plant (CAP), North Dedicated CAP, or directly to the ADR Facility. Loaded carbon collected from the South Dedicated CAP and North Dedicated CAP is transported via truck to the ADR Facility for gold recovery and carbon regeneration.

The combined total heap leach application rate is 57,550 gpm for all the heap leach facilities. The heap leach solution application rate of the HLPs are as follows: Re-useable Pad (R-Pad) at 3,200 gpm, South Dedicated HLP at 13,000 gpm, West Dedicated HLP at 29,350 gpm, and North Dedicated HLP at 12,000 gpm.

R-Pad Circuit, ADR Facility, and Associated Process Components

The R-Pad Circuit is comprised of a HLP, four ponds (a process pond and three event ponds), and the ADR Facility. In addition, there are three 20,000-gallon process solution tanks (pregnant, lean, and barren solution tanks) located on the west side of the ADR Facility used for solution management.

R-Pad Heap Leach Pad: The R-Pad is constructed in two, 7-inch lifts of asphaltic concrete with an asphalt-rubberized membrane between the lifts. Lifts are placed on 12 inches of compacted, granular fill overlying a scarified and compacted native soil surface. At the time of their installation (ca. 1994), the asphaltic-concrete pad liners exhibited very low permeabilities and met the 1×10^{-11} centimeters per second (cm/sec) criteria for geosynthetic liners. A network of leak collection and detection ports is used to monitor the volume of leakage collected on a weekly basis. Any solution collected in the ports is returned to the R-Pad.

The high-grade ROM ore is leached for a period of 90 to 120 days with dilute sodium cyanide solution. Following leaching, the spent ore on the R-Pad is allowed to rest for one to three days and is either transferred to the South Dedicated HLP, West Dedicated HLP, or North Dedicated HLP for additional leaching or rinsed from one to four days using fresh water, and then allowed to drain for one to three days. The rinsed spent ore is either transferred to the Mill for additional processing or used on roadways. The rinsed spent ore utilized for roadway construction must meet stabilization criteria prior to off-loading, pursuant to NAC 445A.430.

R-Pad Solution Ponds: The ADR Barren Solution Pond (Pond 1), ADR #1 Event Pond (Pond 2), ADR #2 Event Pond (Pond 3), and ADR Phase 6A Event Pond (Pond 38) are all associated with the R-Pad and ADR Facility. The pond numbers in parenthesis refer to the Permittee's pond numbering system for the SVCO, implemented at the request of the Division due to the confusing nature of prior pond identification systems.

The ADR Barren Solution Pond (Pond 1) is approximately 375 feet by 375 feet by 30 feet deep and has a volume of 16.8 million gallons at two feet of freeboard. The pond is double-lined with 60-mil high-density polyethylene (HDPE) as the primary liner and 40-mil HDPE as the secondary liner over a layer of soil compacted to achieve a maximum permeability of 1×10^{-6} cm/sec (95 percent compaction, ASTM [American Society for Testing and Materials] Method D1557). A layer of geonet provides drainage between liners to a sump which is evacuated via a 4-inch-diameter polyvinyl chloride (PVC) pipe.

The ADR Barren Solution Pond (Pond 1) is used primarily when heap leach return flow rates exceed plant processing capacities and during plant shutdowns. The pond provides surge capacities to help maintain even flow rates between the ADR Facility and the HLPs. Solution is stored in the ADR Barren Solution Pond (Pond 1) until it can be returned to the R-Pad and West Dedicated HLP leaching circuits.

The ADR Barren Solution Pond (Pond 1) is equipped with two reclaim pumps to recirculate solution from the pond back into the active circuit. The pumps cycle to maintain even flow rates in the system; therefore, some solution is always maintained in the pond. The operators maintain normal operating ranges in the plant by controlling the make-up water addition and leach solution output. Solution levels are visually tracked by operators as they perform system inspections, as-well-as being monitored through computer-based output readings.

The ADR Barren Solution Pond (Pond 1) is connected to the storm event ponds via HDPE-lined spillways. The single-lined storm event ponds are designed and constructed to contain flows resulting from the 25-year, 24-hour storm event from the West Dedicated HLP. The ponds are lined with 40-mil HDPE over a 12-inch layer of native soil, compacted to achieve a maximum permeability of 1×10^{-6} cm/sec (95 percent compaction, ASTM Method D1557).

ADR #1 and #2 Event Ponds (Ponds 2 and 3), and the ADR Phase 6A Event Pond (Pond 38) have volumes of 0.6, 2.8, and 6.3 million gallons, respectively at two feet of freeboard.

Two submersible pumps in the ADR Barren Solution Pond (Pond 1) pump solution to the West Dedicated Feed Sump. Process solutions report to the ADR #1 and #2 Event Ponds (Ponds 2 and 3) only when there is a system upset.

The three 20,000-gallon steels tanks (Barren Feed, Lean, and Pregnant) are located on a concrete pad to the west of the ADR Facility and are surrounded by a concrete curb. A drain line, located between the Lean and Pregnant tanks within the containment area, directs any overflow of lean solution to the ADR Barren Solution Pond (Pond 1).

Barren Solution leaving the last carbon column at the ADR Facility flows to the West Dedicated Feed Sump and Barren Feed Tank where it is pumped back to the West Dedicated HLP and Reusable HLP (R-Pad). Phase 6A Return Tank Solution returning from the Phase 6A is pumped to either the ADR Process Facility or R-Pad for additional loading. Pregnant Tank Solution returning from the R-Pad and West Dedicated HLP is pumped to either the South Dedicated CAP and/or the ADR Process Facility.

The Evaporation Pond (Pond 4) was constructed in 2004 with the ADR Plant and was closed with Division approval in 2014 for the Expansion 7A of the West Dedicated Pad.

ADR Facility: The ADR Facility consists of a series of fluidized carbon adsorption tanks. Pregnant solution is passed through the carbon adsorption columns. Gold and silver are adsorbed onto the carbon columns and the resulting barren solution reports to the barren pond and then is returned to the leach pads.

The loaded carbon is stripped using hot caustic solution under pressure. Following the stripping operation, the carbon is washed with nitric acid, neutralized with caustic, rinsed with soft water, thermally regenerated in a rotary kiln and then recycled back to the adsorption tanks. The resulting gold/silver sludge undergoes additional processing, including electrowinning and electro-refining, with doré bars as the final end product. The entire ADR Facility has secondary containment of at least 110-percent of the volume of the largest storage vessel.

In an effort to optimize operations at the ADR Facility, an EDC approved by the Division on 22 May 2013 authorized piping changes to ADR Barren Feed Pumping and Piping Circuit. The ADR Barren Feed heap leach solution distribution piping was changed from a series of multiple risers to a main riser system to the top of the pad, which is designed to distribute solution to the leach areas similar to existing practices.

The change included one, 24-inch steel pipeline to distribute leach solution up to the top of the heap leach pad, then distributing flows using 18-inch steel pipe, followed by various sizes of HDPE pipe for the leach distribution fields, again similar to existing operations. To accommodate this change, and to achieve a pumping rate of 11,300 gpm, the current pumps for the ADR Barren Feed required upgrading for system head (TDH) and total flow. The three operating pumps were replaced with two higher horsepower operating pumps, with one designated as standby.

A Minor Modification, approved by the Division on 25 June 2013 authorized an increase in the stripping capacity at the ADR facility by adding two additional 2-ton stripping vessels and associated heat exchangers, in addition to the existing two, 2-ton strip vessels and exchangers, currently these are not constructed as of the 2022 Renewal.

An EDC approved November 2016, added two new 8-ton carbon holding tanks and a 4-ton attrition tank. A new 2-horsepower (hp) pump and pipeline was also installed to transfer solution from the electrowinning circuit to the strip circuit. These carbon holding tanks increases the adsorption and strip efficiency.

The new 2-ton additional strip vessels are designed to reduce stripping time as much as possible, and are located within the existing ADR building just adjacent to the existing 2-ton strip vessels. Strip tanks are 3-feet in diameter, 21-feet high stainless steel 125-pounds per square inch (psi) pressure vessels which match the configuration of the existing strip vessels. Under current operating practices, only one strip vessel is operated at any given time with a maximum flow rate to the electrowinning (EW) cells of approximately 80 gpm. A 2-hp motor pumps solution from the electrowinning cells into the strip holding tanks through 60 feet of 2-inch-diameter stainless steel piping.

An EDC approved August 2023, added a carbon truck pad to offload Carbon. The carbon truck pad, a concrete pad approximately 20 feet wide by 40 feet long, will be located on the east side of the ADR. Water stops at control joints and/or saw cuts, and grading will direct potential spills into the ADR building for containment with berms on the remaining three sides.

South Dedicated HLP Circuit, Associated Process Components, and Operation

The South Dedicated HLP Circuit is comprised of a single HLP constructed in five phases with an available leach area of 756 acres and a cumulative leach solution application rate of 13,000 gpm. In addition, there are three process solution ponds, four storm event ponds, and the South Dedicated CAP.

South Dedicated HLP: Construction of the South Dedicated HLP commenced with Phase 1 in 1996. Phases 1 through 4 utilized 80-mil HDPE underlain with a 12-inch thick layer of leached ore residue material (approved for placement pursuant to NAC 445A.430) compacted to achieve a maximum permeability of 1×10^{-6} cm/sec (95 percent compaction, ASTM Method D1557). A minimum 18-inch thick overliner blanket consisting of minus 2-inch gravel from the coarse portion of the spent ore from the R-Pad (and approved for placement pursuant to NAC 445A.430) is placed above the synthetic liner to facilitate the placement of ore and to protect the liner from vehicular traffic.

Maximum height of the South Dedicated Pad is limited to 450 feet above the synthetic liner surface. Phase 5 construction utilized a prepared subgrade consisting of 12 inches of a compacted low permeability soil with a maximum permeability of 1×10^{-6} cm/sec (95 percent compaction, ASTM Method D1557), a liner of textured 60-mil HDPE, and an overliner consisting of minus 2-inch gravel derived from the coarse portion of the spent ore from the R-Pad and stabilized pursuant to NAC 445A.430. Minimum overliner thickness is 36-inches.

The Phase 5 HLP is divided into two cells of equal ore capacity, each separated by a 2.5-foot-high internal berm. Each cell has an independent solution collection system consisting of perforated 4-inch-diameter Type SP corrugated polyethylene tubing that reports to a buried solution channel located along the west edge of the pad.

The buried solution channel is lined with 80-mil HDPE liner, underlain by 12-inch-thick layer of low permeability soil compacted to maximum permeability of 1×10^{-6} cm/sec (95 percent compaction, ASTM Method D1557). A wear sheet consisting of a single layer of 80-mil HDPE is placed under the French drain material to protect the HDPE liner. In addition, the buried solution channel is underlain by the Process Component Monitoring System (PCMS).

Pregnant solution is conveyed from the South Dedicated HLP to the process facilities via two HDPE pipelines or an HDPE lined open channel. The HDPE pipelines consists of a 24-inch-diameter solid wall HDPE standard dimension ratio (SDR) 11 pipe and a 30-inch HDPE SDR 17 pipe in an HDPE-lined open channel, the 30-inch line is connected to the sumps in the South Dedicated HLP. The open channel is lined with a minimum of 12 inches of low permeability soil material compacted to maximum permeability of 1×10^{-6} cm/sec (95 percent compaction, ASTM Method D1557) overlain by 60-mil HDPE. The channel depth is 3 feet. Solution from each cell is captured in its corresponding Solution Collection Sump and solution is conveyed to the process facilities via the HDPE pipe or allowed to overflow out of the sump and conveyed to the process facilities via the existing leach pad collection channel.

A PCMS is constructed beneath the buried solution channel and consists of a French drain underlain by a 60-mil HDPE liner and a 12-inch soil layer, compacted to maximum permeability of 1×10^{-6} cm/sec (95 percent compaction, ASTM Method D1557). The French drain is comprised of 4-inch-diameter perforated corrugated polyethylene tube-subsurface perforated (CPT-SP) pipe surrounded by the French drain material. Eight-ounce, non-woven geotextile is placed over the top of the French drain material from the overlying secondary liner to prevent the migration of fines into the PCMS drain.

The outlet of the PCMS ties into a 4-inch-diameter solid wall HDPE discharge pipe. The 4-inch-diameter pipe discharges into a 12-inch-diameter sump from which any collected fluid is pumped into the solution collection channel.

In the event of a release of solution to the environment, concentration data can be obtained from the sampling and analysis of the pregnant solution containing the highest metals loading and barren solution containing the highest cyanide concentration. A 5-foot-high perimeter berm has been constructed around the outside edges of the leach pad to contain process fluid within the lined area. The berm is constructed of random fill and the surface beneath the berm will be covered with secondary liner material. The 60-mil HDPE geomembrane covers the berm and is anchored near the exterior toe of the berm.

An EDC approved November 2017 by the Division, approved the replacement of the current barren solution pumps, the addition of a pumping booster station, and an additional header pipe to provide the pressure needed to reach the final designed height of the HLP and to provide for operational flexibility. The installation of the changes was completed July 2019 and the record of construction was approved September 2019.

South Dedicated Solution Ponds: There are three process ponds, referred to as the Pregnant Pond (Pond 6, also referred to as Process Pond #1-Preg), the Lean Pond (Pond 7, also referred to as Process Pond #2-Lean), and 48-hour Pond (Pond 5) associated with the South Dedicated HLP. In addition, there are four event ponds, referred to as the South Dedicated Event Pond #1 (Pond 8), the South Dedicated Event Pond #2 (Pond 9), the South Dedicated Event Pond #3 (Pond 10), and the South Dedicated Event Pond #4 (Pond 36) associated with the South Dedicated HLP. The Pregnant and Lean Ponds contain process solution for recirculation into the leaching system.

The five event ponds are designed to accommodate solution flows resulting from an upset in operational conditions or substantial storm events. The Pregnant and Lean Ponds have storage capacities of 6.0 and 5.4 million gallons respectively, with a freeboard elevation of two feet. Both ponds are double-lined with a 60-mil HDPE primary liner and a 40-mil HDPE secondary liner with leak detection system (geonet, sump, evacuation pipe) between liners placed over a 12-inch layer of native soil compacted to maximum permeability of 1 x 10^{-6} cm/sec (95 percent compaction, ASTM Method D1557).

The process ponds are connected via a buried 18-inch-diameter HDPE pipe-in-pipe with leak detection systems. Perforated pipes trace each solution line from the pond to the corresponding pump sump. Within the pump sump, the perforated pipes boot to solid riser pipes to allow the inspection and removal of fluids from the sump. Each pump sump is equipped with its own leak detection system. This leak detect system is a riser pipe extending from the bottom of each sump to allow inspection and removal of the sump contents.

Barren solution leaving the last carbon column is forwarded to a Barren Solution sump where it is pumped, along with makeup solution, back to the South Dedicated HLP. The Barren Solution Sump is located within the South Dedicated CAP on a concrete pad and surrounded by a concrete curb for containment. The pond is connected to the process plant overflow channel to allow solution to be returned to either the Pregnant Pond or the Lean Pond in the event solution delivery to the pad is not possible. Solution returning from the South Dedicated HLP or overflowing from the Barren Solution Sump can flow into the Lean Pond which is in turn is directed to the Lean Solution Sump. Lean solution is then pumped from the lean solution sump back onto the South Dedicated HLP.

The 48-Hour Pond (Pond 5) is double-lined and consists of a primary liner (60-mil HDPE) and secondary liner (40-mil HDPE) with leak detection system (geonet, sump, evacuation pipe) between liners placed over a 12-inch layer of native soil compacted to maximum permeability of 1 x 10^{-6} cm/sec (95 percent compaction, ASTM Method D1557). The operating capacity (at two feet of freeboard) is 8.12 million gallons.

South Dedicated Event Ponds #1, #2, and #3 (Ponds 8, 9, and 10) are single lined with 40-mil HDPE over a 12-inch layer of native soil compacted to maximum permeability of 1 x 10^{-6} cm/sec (95 percent compaction, ASTM Method D1557). The operating capacity (with two feet of freeboard) for South Dedicated Event Ponds #1, #2, and #3 (Ponds 8, 9, and 10) is 5.65, 8.61, and 9.12 million gallons respectively.

South Dedicated Event Pond #4 (Pond 36) is single-lined 60-mil HDPE over a 12-inch layer of native soil compacted to maximum permeability of 1 x 10^{-6} cm/sec (95 percent compaction, ASTM Method D1557). The event pond is connected to the process ponds via an HDPE-lined open channel. The operating capacity (with two feet of freeboard) of the pond is 12.8 million gallons. A fifth pond (referred to as South Dedicated Event Pond #5 [no pond identification assigned]); similar in design and size to the South Dedicated Pond #4 (Pond 36), was initially proposed for construction in conjunction with the South Dedicated HLP pH Enhancement System (discussed below). Because of ongoing improvements to the SVCO process fluid and stormwater management systems, the

Permittee determined that a fifth event pond was not necessary. As of May 2022, the South Dedicated Pond #5 has not been constructed.

The event pond system is connected by a series of HDPE-lined overflow channels at the two-foot freeboard level. During normal operations, the event ponds are intended to remain empty, with the exception of accumulated precipitation, which will be pumped back to the Lean or Process Ponds as needed. The operators maintain normal operating ranges in the plant through control of make-up water addition and leach solution output. Solution levels are visually tracked by operators as they perform system inspections.

South Dedicated CAP: The South Dedicated CAP is similar in design to the ADR Facility, however unlike the ADR Process Facility, there is no carbon processing at the South Dedicated CAP. Loaded carbon is transported to the ADR Process Facility for stripping and regeneration. All processing facilities at the South Dedicated CAP have secondary containment of at least 110-percent of the largest tank volume.

South Dedicated pH Enhancement System: At the SVCO, hydrated lime [$Ca(OH)_2$] is added to the ore during active loading of the HLP cells. To obtain optimum gold recovery from oxide ores, cyanide leach solution pH is maintained between 10 and 11 standard units (SU). As HLP cells approach the end of design life ore loading capacity, cyanide consumption has increased while the amount of ore and hydrated lime added has decreased. The resulting decrease in leach solution pH has significantly affected gold recovery from the older HLP cells.

In an effort to increase Barren and Lean solution pH, the Permittee adds hydrated lime prior to the return of the Barren solution to the HLP. A Minor Modification, approved by the Division on 3 May 2012, authorized the design, construction, operation, and closure of a treatment system capable of treating up to 15,000 gpm of Barren and Lean solution with hydrated lime and raise the pH to a target of 10.5 SU, improve gold extraction and recoveries, and reduce cyanide consumption. Although the pH Enhancement System is intended to serve the South Dedicated HLP, it is also capable of accommodating the West Dedicated HLP.

The pH Enhancement System is designed to accommodate up to 15,000 gpm of flow, with up to 5,000 gpm conveyed via gravity from the South Dedicated HLP to the pH Enhancement System for pH adjustment, then pumped back to the South Dedicated HLP for leaching. Up to 10,000 gpm is pumped from the West Dedicated ADR Plant to the pH Enhancement System. Of this flow rate, up to 7,000 gpm of pH adjusted solution can be returned to the West Dedicated HLP from the 48-Hour Pond (Pond 5) with 3,000 gpm pumped from the Pregnant Pond (Pond 6) to the West Dedicated ADR Plant. All piping systems have secondary containment by placing the pipelines on existing heap leach pad lining systems, or utilizing pipe-in-pipe containment systems. Since volumetric flow rates and pH of the incoming solutions vary significantly, flow and pH are monitored by automatic in-line meters to control lime dosing rate. The solutions are gravity fed to a series of four mixing/agitation tanks, each providing a minimum of 3 minutes residence time for hydrated lime dissolution. The pH-adjusted solution is then gravity discharged from the fourth tank into the 48-Hour Pond (Pond 5), for additional settling and then pumped to either the South or West Dedicated HLP circuits.

For the South Dedicated HLP Circuit, the solution can be pumped to the South Dedicated

Barren Pump Station, or to the South Dedicated HLP Lean Pond (Pond 7). Solution from the 48-Hour Pond (Pond 5) is pumped to the West Dedicated HLP system via the West Dedicated 4/5 Pond (Pond 14).

Changes to the South Dedicated HLP pH Enhancement System: In an effort to optimize operations at the South Dedicated HLP Area, an EDC approved by the Division on 22 May 2013 authorized piping changes to the previously approved by the Division South Dedicated HLP pH Enhancement System. A Minor Modification approved by the Division 25 June 2013 authorized changes to specific process components associated with the South Dedicated HLP pH Enhancement System, which was originally approved by the Division as a Minor Modification on 3 May 2012, but not constructed.

The June 2013 Minor Modification included the construction of an additional Carbon-in-Column (CIC) circuit at the South Dedicated HLP Area. In addition to the existing 4-ton, 3,000 gpm CIC circuit, the new circuit added an 8-ton, 6-column cascading train designed for 8,000 gpm process flow rate. The new CIC circuit is located south of the existing CIC circuit in the existing permitted HLP boundary. Carbon is transferred via truck to the existing ADR for strip and regeneration.

Solution is supplied to the South Dedicated CIC from the South Dedicated HLP Lean Pond (Pond 7) using Process Pumps 1 and 2. Barren/lean solution is discharged, via gravity, from the proposed South Dedicated CIC Barren/Lean tank to the existing Confluence Tank.

The maximum design flow rate for the South Dedicated CIC feed and barren pipelines is 8,000 gpm. The pipelines are constructed at grade over existing liners. Where existing liner is not available, pipelines have been placed in containment trenches, lined with 60-mil HDPE liner, and drain into the existing South Dedicated HLP Lean Pond (Pond 7). The South Dedicated CIC Barren/Lean Pipeline operates as an inverted siphon and is constructed of solid-wall HDPE in place of solid–wall corrugated polypropylene (CPP-S).

The Pregnant Leach Solution (PLS) feed pipeline enters the CIC Building on the north end of the building. The pipeline extends across the building before discharging into the head tank located near the upper column of the new CIC. Under normal operation, the PLS is transferred via gravity through each of the six columns before discharging as barren solution at the carbon safety screens.

Barren solution gravity drains from the carbon safety screen to the barren tank where it then gravity drains to the South Dedicated HLP pH Enhancement System. The CIC has override controls and automated system shutdown controls if solution levels trigger emergency levels in the columns. During an upset condition, PLS can by-pass the columns from the head tank via the PLS bypass pipe into the barren discharge pipeline.

The CIC circuit is housed within containment in an enclosed building. A sump drains any spillage into the nearby South Dedicated-Lean Pond (Pond 7). The sump consists of a pipe within a pipe to provide dual containment. Carbon is transferred via truck to the existing ADR for strip and regeneration.

An EDC approved by the Division on 23 December 2014 a skid-mounted lime silo and lime delivery system to increase operational flexibility and movement throughout the South Dedicated HLP area. Lime capacity and discharge rate remained unchanged. The pH enhancement skid was approved for commission by the Division 26 September 2016.

Pond 7 Vertical Carbon-in-Column (VCIC): An EDC was approved 21 August 2017 (Record of Construction approved March 2019) to add VCICs to both the South Dedicated HLP and West Dedicated HLP to scavenge gold from the lean solution. The Permittee has better recovery rates by sending a barren solution to the leaching circuit instead of lean solution. VCICs are installed on both the South Dedicated HLP and West Dedicated HLP. The South Dedicated HLP VCIC is placed by Pond 7, refer to *Pond 11 Vertical Carbon-in-Column* for more information on the West Dedicated HLP VCICs.

The South Dedicated HLP VCICs are installed to the southeast of Pond 7. The Pond 7 VCICs are tied into the pumping and piping system as well as the liner of Pond 7. The VCICs are placed on (from bottom to top): prepared subgrade, 6 inches of liner bedding, 80-mil HDPE liner, 6-inches of liner bedding, 1.5 feet of compacted common fill, and a concrete containment. The concrete containment will hold 125% of the largest tank and all the joints contain water stops.

The VCIC is designed to process 3,000 gpm flow, and no change in the total solution to the pad is expected as the rest will be lean solution.

South Dedicated Interstage Leach: RMGC submitted an EDC in April 2023 to implement the interstage leaching technology to the South Dedicated HLP and was approved by the Division in June 2023.

With this EDC, RMGC is proposing an initial 7-acre area on Cell 1, with additional 17.5-acre area on Cell 2 and 8-acre area on Cell 3, depending on ore stacking needs. The first cell will be approximately 8-acres and future cells will be sized per production need. The sub-grade of the interstage leach pad will be graded a minimum of 2.8-percent grade towards the outlet sump. The existing ore and 1-foot of low permeable soil (recommended $1x10^{-5}$ cm/sec or less) will be compacted by wheel rolling or similar equipment to a firm and unyielding surface prior to placement of ore.

Solution from Cells 1 and 2 will drain to an outlet sump that is 6 feet deep and has a volume of 151,650 gallons. The outlet sump will be lined with 80-mil HDPE geomembrane. The outlet sump is approximately 125 feet by 25 feet wide at the base and has 2H:1V slopes. Two 24-inch-diameter HDPE pipes will convey solution from the Cell 1 and 2 sump to the existing sump.

Solution from Cell 3 will drain to an outlet sump that is 6 feet deep and has a volume of 12,680 gallons. The outlet sump will be lined with 80-mil HDPE geomembrane. The outlet sump is approximately 50 feet by 50 feet wide at the crest and has 2H:1V slopes. An 18-inch-diameter HDPE pipe conveys solution from the sump to Cell 1 and 2 sump.

Existing solution infiltration wells on the North end of Phase 5 will be abandoned for construction of the interstage leach system and no additional solution wells are to be installed on the Interstage portion on the HLP.

West Dedicated HLP Circuit and Associated Process Components

The West Dedicated HLP Circuit is comprised of a single HLP constructed in several phases with an available leach area of 760 acres and a cumulative leach solution application rate of 29,350 gpm. In addition, there are four solution ponds and three storm event ponds associated with the West Dedicated HLP Circuit.

West Dedicated HLP: Phased construction of the West Dedicated HLP began in 1997. Phase 1 leach pad construction was completed in 1997, Phase 2 was completed in 1999, Phase 3 was completed in November 2001, and Phases 4 and 5 were completed in October 2002. The Phase 6A expansion (Minor Modification approved in January 2009) added an additional 66 acres of usable leach area and the Phase 6C expansion (Minor Modification approved by the Division on 22 April 2009) increased the usable leach area by 36 acres to a total of 862 acres of useable HLP surface. The Phase 7A Expansion (Minor Modification approved by the Division on 15 July 2015), added an additional 18 acres of leach area once constructed. Pregnant solution from the West Dedicated HLP is conveyed to the South ADR Facility for gold recovery. In an EDC approved by the Division in November 2016, the maximum height of the West Dedicated Pad was approved to be 500 feet above the HDPE liner.

Phase 1 of the West Dedicated HLP is lined with 80-mil HDPE while Phases 2 through 5 are lined with 60-mil HDPE. Underlying this synthetic geomembrane is a 1-foot-thick layer of leached ore residue material (stabilized pursuant to NAC 445A.430) compacted to achieve a permeability of 1 x 10^{-6} cm/sec (95 percent compaction, ASTM Method D1557). A minimum 18-inch-thick overliner blanket consisting of minus 2-inch gravel derived from the coarse spent ore stockpile is placed over the synthetic liner to facilitate placement of the heap leach ore and provide protection of the synthetic geomembrane from vehicular traffic. Maximum height of Phases 1 through 5 of the West Dedicated HLP is limited to 500 feet above the HDPE liner surface.

The Phase 6A expansion added an additional ore capacity of 34 million tons. The 6A HLP has overall side slopes of 2.5 horizontal (H):1 vertical (V) on the east and south slopes and 2.3H:1V on the north slope to tie into the existing West Dedicated HLP. The maximum height is 500 feet above the liner surface and the liner system consists of 60-mil HDPE overlying a 12-inch thick layer of low-permeability soil material, compacted to maximum permeability of 1 x 10^{-6} cm/sec (95 percent compaction, ASTM Method D1557). The maximum solution application rate to the Phase 6A Pad is 0.003 gallon per minute per square foot (gpm/sq ft).

The Phase 6C expansion is designed to accommodate up to 23 million tons of ore. The Phase 6C expansion covers an irregularly shaped area of approximately 1.6 million square feet, with nominal dimensions of 2,300 feet by 700 feet with overall side slopes of 2.5H:1V and transition slopes where necessary to tie into the adjacent Phase 6A HLP. The existing topography slopes to the west at grades between 2 and 4 percent. The 6C expansion is limited to a maximum height of 500 feet above the liner surface.

The Phase 6C HLP is lined with a 60-mil HDPE liner overlying a 12-inch-thick layer of leached ore residue material (stabilized pursuant to NAC 445A.430) or stockpiled material compacted to achieve a maximum permeability of 1 x 10^{-6} cm/sec (95 percent compaction, ASTM Method D1557). A minimum 36-inch thick overliner blanket consisting of minus 2-inch gravel derived from the coarse portion of the spent ore stockpile is placed over the synthetic liner to facilitate placement of the heap leach ore and provide protection of the synthetic geomembrane from vehicular traffic. The Phase 6C expansion will utilize the existing process facility for the West Dedicated HLP.

The Phase 7A Expansion is located to the north and northeast of the existing West Dedicated HLP and south of the ADR Phase 6A Event Pond (Pond 38), the area was previously occupied by the ADR Evaporation Pond (Pond 4) and Gravity Plant. The closure and removal of both the pond and gravity facility were completed before construction of the Phase 7 Expansion began in 2015.

The Phase 7A Expansion accommodates approximately 24.5 million tons of ore with an approximate maximum heap height of 500 feet above the lowest point of the liner surface. The ore will be stacked in approximate 50-foot lifts at the individual lift natural angle-of-repose of 1.4H:1.0V, and will have a nominal bench width of 55 feet to provide an overall heap slope of 2.5H:1V. A 6-foot-high perimeter berm will form the east and north boundaries of the HLP pad.

During the early stages of Phase 7A construction, the Permittee identified several design concerns that need to be rectified. Typically, these concerns would be addressed in the final "As-Built" report as "field fit" changes. However, after discussing this matter with the Division, the Permittee agreed to submit revised engineering designs as an EDC because of their complexity and the level of engineering review necessary.

A leach solution flow rate of 9,000 gpm was used for solution collection design purposes at a leach application rate of 0.003 gpm/sq ft. However, due to space constraints, the Phase 7A Event Pond (Pond 43) has been sized for a flow rate of 6,000 gpm. The HLP liner consists of a 60-mil double-texture HDPE overlying a 12-inch-thick layer of low-permeability soil. An independent solution collection system was installed on the graded pad and consists of a network of perforated dual-wall CPT solution collection piping, HDPE solid conveyance piping within a 36-inch-thick granular overliner drain layer. A reinforced concrete vault with an overflow weir was installed to direct any collected process solution into the Phase 7A Event Pond (Pond 43), located north of the Phase 7A HLP.

The West Dedicated HLP pregnant solution collection pipe network consists of 4-inch-diameter CPT-SP placed 30 feet on center, resulting in a hydrostatic head between pipes of less than 2 feet over the 60-mil HDPE liner. The 4-inch-diameter pipes are oriented at an angle to the fall line of the slope in order to facilitate interception and conveyance of the solution. The perforated 4-inch-diameter pipes direct solution to the larger "trunk" collection pipes which will transport the leach solution to the main header collection pipes all of which will be ultimately buried beneath the heap. The pipe network is configured to convey the design leaching rate at less than half-pipe-full capacity.

Perforated 15-inch-diameter CPT trunk collection pipes are installed at regular intervals spaced approximately 450 feet. The intervals are based on the collection pipe capacity to carry a maximum application rate of 0.003 gpm/sq ft to a given area. The collection pipes have been designed to flow approximately 65 percent full to allow for some deformation under the heap. The main header is 28-inch-diameter HDPE and parallels the pad expansion flow line near the west perimeter. A second header provides 100 percent system redundancy.

Two HDPE pipelines (12-inch and 14-inch-diameter) connect the South Dedicated HLP Circuit with the West Dedicated HLP Circuit. These pipelines are located within secondary containment (a trapezoidal ditch or leach pad) and help maximize use of production facilities and assist in the effective balance of process solution volumes and pH levels and to optimize spent ore rinsing on the R-Pad.

A PCMS is constructed beneath the buried solution channel and consists of a French drain underlain by a 60-mil HDPE liner and 12 inches of low permeability soil material compacted to maximum permeability of 1 x 10^{-6} cm/sec (95 percent compaction, ASTM Method D1557). The French drain is comprised of 4-inch-diameter perforated CPT-SP pipe surrounded by the French drain material. Eight-ounce non-woven geotextile is placed over the top of the French drain material from the overlying low permeability soil layer and to prevent the migration of fines into the PCMS drain. The outlet of the PCMS ties into a 4-inch-diameter solid HDPE discharge pipe. The 4-inch-diameter pipe discharges into a 12-inch-diameter sump from which any collected fluid is pumped back into the Pregnant Sump.

A pregnant solution tank is placed on concrete containment adjacent to the south perimeter of the ADR Barren Solution Pond (Pond 1), between the pond crest and the South ADR Building. The tank receives pregnant solution gravity drain from the Pregnant Sump (PCMS-1) at the Phase 6A pad and will feed continuously from the existing sump pumps located at the southwest corner of the Barren Solution Pond. Two 3,500 gpm turbine pumps convey solution back to the process circuit. A tank overflow pipe directs tank overflow to the existing process solution launder for return to the Barren Solution Pond.

In an effort to reduce energy and maintenance costs, optimize operations and water management, an EDC approved by the Division 16 February 2010, authorized piping changes to the Mill Circuit and West Dedicated Heap Leach Circuit.

The changes included 1) a bypass to the Gravity Plant Tailings Thickener Overflow to allow for the thickener overflow to gravity discharge directly to the Process Water Tank via a 24-inch-diameter steel pipe, eliminating the need for a transfer pump and the Overflow Tank; 2) a bypass of the Regrind Circuit Thickener Overflow to allow for the Leach Thickener overflow to gravity discharge directly to the Gravity Plant Tailings Thickener via 10-inch-diameter steel pipe, eliminating the need for transfer pumps; and 3) a bypass of the West Dedicated HLP Pregnant Solution Exchange to re-establish a connection between the existing West Dedicated Pad circuit and the existing Pregnant and Barren Solution Exchange pipelines, which was removed during the Phase 6A HLP expansion. A 12-inch-diameter steel pipe is utilized for the bypass with solution flow managed by valves and pressure regulators.

In order to optimize operations and increase efficiency, an EDC approved by the Division on 7 November 2016 authorized the addition of Carbon tanks to the ADR. The new tanks enable the transfer of an entire CIC volume stripped carbon to the CIC circuits. With the EDC, the Permittee added a 10-ton barren steel tank, 10-ton loaded steel tank, 3-ton attrition steel tank, two new carbon transfer pumps, and a new carbon measuring pump.

The 10-ton carbon tanks are 9 feet in diameter, 17 feet tall, and have with an operating volume of 5,200 gallons. Concrete slab foundations for these tanks have the dimensions of 14 feet by 13 feet with a thickness of 1-foot. The foundation does not affect the integrity of the existing containment.

The new attrition tank replaced the existing attrition tank and is constructed in the containment. The new 3-ton attrition tank is approximately 6 feet in diameter by 9 feet tall and has an operating volume of 1,000 gallons.

The carbon transfer pump for the loaded system transfers carbon from the Loaded Tank to the existing Carbon sizing screen "B" at the rate of 125 gpm and is installed in close proximity to the Loaded Tank on a new foundation. The carbon transfer pump for the barren system pumps from the Barren Tank to the two existing pipe lines at a rate of 125 gpm and is installed in close proximity to the Barren Tank on a new foundation. Both of these foundations do not affect the integrity of the existing containment.

The new Carbon Measuring Tank Pump pumps from the existing Carbon Sizing Tank "B" to the existing carbon stripping and acid wash systems at a rate of 125 gpm. This pump is placed near the Barren Tank as well.

An EDC approved November 2017 by the Division, approved the addition of a pumping booster station and additional header pipe to provide the pressure needed to reach the final design height of the HLP. The installation of the changes was completed July 2019 and the record of construction was approved September 2019.

West Dedicated Gravity Solution Wells: In October 2016, the Permittee submitted an EDC proposing to inject barren and/or low pregnant solution into wells on the West Dedicated HLP once the final lift is finished. The design calls for injection by gravity only, and the overall application rate by all methods to both heap leach pads will not exceed the present Permit limits. Analyses of each leach pad under worst case conditions of the injection system confirmed that the stability will not be compromised by the operation. The 4-inch perforated solution wells will be installed at an approximate spacing of 80 feet and will extend from the top of the HLP to approximately 50 feet above the composite liner system. No solution wells will be installed in Phase 7A of the HLP. The EDC was approved by the Division in December 2016.

An As-Built Report was approved by the Division in October 2017 for the first twenty gravity solution wells. Twenty gravity wells were constructed approximately 80 feet apart. Half of the wells were drilled to a depth of 100 feet and the other half were drilled to a depth of 200 feet.

In October 2018, the Permittee submitted an EDC proposing to expand the solution wells to the side slopes of the HLP. The EDC also expanded the solution wells to the South Dedicated HLP which will have the same design limitations.

West Dedicated Solution Ponds: There are three process ponds: Phase 6A Feed Pond (Pond 11, formerly the Phase 2/3 Feed Pond), Phase 4/5 Feed Pond (Pond 14), and the West Dedicated Return Process Pond (Pond 13); and four event ponds: Phase 2/3 Event Pond (Pond 12), Phase 4/5 Event Pond (Pond 29), Phase 4 Event Pond (Pond 31), and the Phase 7A Event Pond (Pond 43) associated with the West Dedicated HLP. The event ponds are designed and constructed for the containment of excess fluids generated by power outages and volumes generated by a 100-year, 24-hour storm in addition to the leach solution application rate.

The Phase 6A Feed Pond (Pond 11), the Phase 4/5 Feed Pond (Pond 14), and the West Dedicated Return Process Pond (Pond 13), are all double-lined with leak detection systems.

The Phase 6A Feed Pond (Pond 11) has 40-mil HDPE as the primary liner with 30-mil PVC as a secondary liner. Geonet provides drainage between liners to a sump which is evacuated via a 4-inch-diameter pipe to the solution collection channel.

The Phase 6A Feed Pond (Pond 11) has a total storage capacity of approximately 15.6 million gallons. The capacity of the pond is de-rated to approximately 13.6 million gallons at the 2-foot freeboard level. A minimum operating solution level of 13 to 15 feet (approx. 2,770,174 total gallons) is maintained in the pond to prevent pump cavitation. Solution is maintained in the pond until it can be returned to the leaching circuit.

Bypassing capabilities are available via a bypass valve located on the north side of the pond, so that solution may be diverted from the West Dedicated HLP Phase I Feed and added to the Phase 6A Feed Pond (Pond 11).

Barren Solution is applied to the West Dedicated HLP Phase 1 from the West Dedicated Phase 1 Feed Sump located at the ADR Plant. The Phase 6A Feed Pond (Pond 11) is used to capture effluent solution from the West Dedicated HLP Phases 1 and 2 and returns the solution to the Phase 6A West Dedicated HLP. The pond also serves as an addition point for make-up water. The pond is equipped with three feed pumps to pump solution from the pond to the next phase of leaching. The operators maintain normal operating ranges through control of make-up water addition, bypassing capability and leach solution output.

The Phase 4/5 Feed Pond (Pond 14) and West Dedicated Return Process Pond (Pond 13) have 60-mil HDPE primary and secondary liners overlying a layer of soil compacted to maximum permeability of 1×10^{-6} cm/sec (95 percent compaction, ASTM Method D1557). A layer of geonet is placed between the liners drains to a sump which is evacuated via a 4-inch-diameter pipe to the solution collection channel.

The Phase 4/5 Feed Pond (Pond 14) and West Dedicated Return Pond (Pond 13) each have a storage capacity of approximately 28 million gallons at three feet of freeboard. The Phase 4/5 Feed Pond (Pond 13) is used to capture effluent solution from the West Dedicated HLP Phases 2, 3, 4, and 5. Process solution from the West Dedicated HLP Phases 2, 3, 4, and 5, ice melt and storm events combine with HLP effluent as it returns to the Phase 4/5 Feed Pond (Pond 13).

The Phase 4/5 Feed Pond (Pond 14) is equipped with four feed pumps to pump solution from the Feed Sump to the Phase 4 and 5 West Dedicated HLP. A target operating solution level of 3 to 10 feet is maintained in the pond through the control of freshwater addition and leach solution output. Solution levels are visually tracked by operators as they perform system inspections, and as-well as being monitored through computer-based output readings. Bypassing capabilities are available via a bypass valve (located on the southwest side of the Barren Pond) so that solution may be taken from the West Dedicated Phase 1 Feed and added directly to the West Dedicated HLP Phases 4 and 5. The Phase 4/5 Feed Pond (Pond 14) also serves as an addition point for make-up water.

The West Dedicated Return Pond (Pond 13) is used to capture effluent solution from the Phases 2, 3, 4, and 5 Pad and returns the solution to the ADR Plant. A target operating solution level of 3 to 5 feet is maintained in the pond. A reclaim pump provides make-up solution from the pond to the Return Sump. This reclaim solution is combined with returning solution from Phases 2, 3, 4, and 5 and supplies solution to the West Dedicated Return Sump.

The process ponds are connected to each other and the event ponds via a buried 18-inch-diameter HDPE pipe-in-pipe with leak detection systems. Perforated pipes trace each solution line from the pond to the corresponding pump sump. Within the pump sumps, the perforated pipes boot to solid riser pipes to allow the inspection and removal of fluids from the sump. In addition, each pump sump is equipped with its own leak detection system. This leak detection system consists of a riser pipe extending from the bottom of each sump to allow inspection and removal of the sump contents.

The Phase 2/3 Event Pond (Pond 12), Phase 4/5 Event Pond (Pond 29), Phase 4 Event Pond (Pond 31), and the Phase 7A Event Pond (Pond 43) are all associated with the West Dedicated HLP. All of the ponds are double lined with leak detection systems.

The Phase 2/3 Event Pond (Pond 12) has 40-mil HDPE as the primary liner with 30-mil PVC as a secondary liner overlying a layer of soil compacted to maximum permeability of 1×10^{-6} cm/sec (95 percent compaction, ASTM Method D1557). Geonet provides drainage between liners to a sump which is evacuated via a 4-inch-diameter pipe to the solution collection channel. The Phase 2/3 Event Pond (Pond 12) has a storage capacity of 10.3 million gallons at two feet of freeboard.

The Phase 4/5 Event Pond (Pond 29) has both primary and secondary liners comprised of 60-mil HDPE overlying a layer of soil compacted to maximum permeability of 1×10^{-6} cm/sec (95 percent compaction, ASTM Method D1557). A layer of geonet is placed between the liners drains to a sump which is evacuated via a 4-inch-diameter pipe to the solution collection channel. The Phase 4/5 Event Pond (Pond 29) has a total storage capacity of 21.69 million gallons with a storage capacity of approximately 20 million gallons within a 3-foot freeboard level. Event Pond #31 has a total storage capacity of 15.7 million gallons with a storage capacity of 14.96 million gallons at a 3-foot freeboard level. An HDPE-lined overflow channel within the 3-foot freeboard zone connects the Phase 4/5 Feed Pond (Pond 14) to the West Dedicated Return Pond, the West Dedicated Return Pond to Phase 4/5 Event Pond (Pond 29)

The Phase 4 Event Pond (Pond 31) was constructed to add pond capacity necessary to accommodate the maximum operating volume, volume generated by the 24-hour heap leach pad draindown and the volume of run-off generated from a 100-year, 24-hour storm event. The pond is located immediately west of the Phase 4/5 Feed Pond (Pond 14) and is approximately 495 feet by 150 feet by 22 feet deep with a capacity of 5.64 million gallons to accommodate the necessary volumes needed for Phase 6A and Phase 6C expansions.

Phase 4 Event Pond (Pond 31) is double-lined with 60-mil HDPE primary and secondary liners and a layer of geonet between liners to convey any leakage to lined leak detection sump (PCMS-2) located in the northeast corner of the pond. The secondary liner overlays a 12-inch layer of native soil compacted to maximum permeability of 1×10^{-6} cm/sec (95 percent compaction, ASTM Method D1557). The sump is backfilled with pea gravel and has an available volume of 1,250 gallons. Any solution collected in the sump is evacuated via a 4-inch-diameter pipe and returned to the pond.

The Phase 7A Event Pond (Pond 43) has an estimated volume requirement of 14.99 million gallons. This volume includes capacity for 24 hours of solution draindown at the solution flow rate of 6,000 gpm and runoff from 100-year, 24-hour storm event on the total Phase 7A HLP and pond area.

The pond is located north of the Phase 7A HLP Expansion and west of the South ADR. The Phase 7A Event Pond (Pond 43) incorporate a double liner system comprised of a 60-mil double-textured HDPE with a geonet drainage layer in between, overlying a prepared subgrade of 12-inch-thick low-permeability soil layer with a permeability of $1x10^{-6}$ cm/sec or less and compacted to a minimum 90 percent dry density (ASTM Method D 1557).

The pond leak detection system is comprised of two 2,000-gallon collection sumps located in the southwest and southeast corners of the pond. The event pond as shown has a depth of 38 feet and interior side slopes are 1.9H:1V. As configured, the pond is designed with 2-foot of freeboard, measured from the maximum design water surface level to the overflow channel inlet. The overflow channel is constructed at the northwest corner of the Phase 7A Event Pond (Pond 43) and will flow onto the West Dedicated HLP Phase 5 collection channel.

Changes to the Existing West Dedicated HLP: In an effort to optimize operations at the West Dedicated HLP Area, an EDC approved by the Division 22 May 2013 authorized changes to the West Dedicated HLP to allow full utilization of the existing CIC circuit and to provide additional flexibility in current fluid management at the West Dedicated HLP. The Minor Modification approved by the Division 25 June 2013 authorized changes to specific process components associated with the West Dedicated HLP.

The existing pipeline network has been modified so solution collected from the West Dedicated HLP can be managed to maintain separation between the PLS Circuit and the Lean Circuit. PLS collected from the West Dedicated HLP can be collected from any phase of the HLP and separated from lean solution. The modifications allow PLS to be conveyed into either the proposed West Dedicated CIC or the West Dedicated Return Pond (Pond 13) where it can be pumped to the ADR Facility. The maximum design flow rate for the West Dedicated CIC feed pipelines is 8,000 gpm. The lean circuit pipeline connects the West Dedicated CIC barren tank; therefore, the barren discharge line has a maximum design flow rate of 15,000 gpm.

The maximum amount of PLS flowing into the existing sump (SU202) is 19,300 gpm which is conveyed via 36-inch-diameter CPT-S pipe. At this maximum flow rate, calculations indicate approximately 1.3 feet of freeboard on the upstream manhole (MH202). The PLS Pumping Station vault is constructed below grade and has dimensions of approximately 10.5-feet x 40-feet x 12.5-feet deep. The water storage volume of the vault is based on a 3-minute residence time for the design flow of 8,000 gpm, resulting in a 24,000-gallon volume below the operating depth of 8 feet. The pumping station contains three vertical turbine pumps (4,000 gpm/91.5 horsepower/72 feet total dynamic head), two of which are operational and one to serve as standby.

The pipelines have been constructed in containment trenches, lined with 60-mil HDPE and designed to drain into the existing lined ponds. An access roadway to the West Dedicated CIC crosses the West Dedicated CIC Pressure Feed Line, which consists of a prefabricated pipe-in-pipe for dual containment with 5 feet of cover.

The system is designed to operate at a maximum capacity of approximately 8,000 gpm. The inflow to the CIC could be collected from any of the six phases of the West Dedicated HLP. The PLS gold concentration collected from each phase of the West Dedicated HLP varies, with factors influencing gold concentration including mine scheduling, ore grades, locations of fresh ore stacking, leachate solution application rates, etc. The system changes allow operators the flexibility to separate lean solution from PLS at the flumes located at each phase of the West Dedicated HLP.

PLS gravity drains to the existing SU202 sump where it can be directed to either the proposed West Dedicated CIC or ADR circuits. From the SU202 sump, gravity flows can be diverted to the CIC Pumping Station where flow is pumped to the head tank located near the upper column of the proposed CIC. Under normal operation, the PLS is transferred via gravity through each of the six columns before discharging as barren solution at the carbon safety screens. Barren solution gravity drains from the carbon safety screen into a barren tank and then to the West Dedicated pH Enhancement System.

The CIC has override controls and automated system shutdown controls if solution levels trigger emergency levels in the columns. During an upset condition, PLS can by-pass the columns from the head tank via the PLS bypass pipe into the barren discharge pipeline. The CIC is housed in a contained building, with a floor sump to gravity drain any potential spills into the nearby Phase 4/5 Feed Pond (Pond 14). The sump consists of a pipe within a pipe to provide dual containment. The CIC building including concrete containment is located on a graded pad of engineered fill. Carbon is transferred via truck to the ADR Facility for strip and regeneration.

ADR Reusable Pad Pump Reassignment and West Dedicated Return Pond Pipeline Relocation: In an effort to optimize performance of the existing CIC circuit at the ADR, and provide additional flexibility in current fluid management at the West Dedicated HLP, an EDC approved by the Division on 13 March 2013, authorized the relocation of the West Dedicated HLP process solution return pipelines to the ADR from the Phase 6A Feed Pond (Pond 11) and West Dedicated HLP Return Pond (Pond 13).

Prior to reaching the ADR, a portion of both pipelines intersect the Phase 6 HLP. Relocating these pipelines to the outer edge (eastern side) of the Phase 6 pad provided more flexibility for operations and easier accessibility for maintenance since these two pipelines were combined into a single pipeline.

To further optimize operation of the CIC circuits at the ADR, the Permittee utilizes the existing R-PAD barren pumps to supply barren solution to the West Dedicated HLP. A gravity drain line installed from the R-PAD barren tank to the Phase 4/5 Feed Pond (Pond 14), periodically transfers barren solution to this pond on an as-needed basis. For continued operation of the R-PAD and to accommodate this change, the Phase 6A Feed Pond (Pond 11) barren feed line was extended to the current R-PAD barren lines to supply solution back onto the R-PAD. No changes to the existing permitted process solution flow rates were proposed or necessary.

West Dedicated HLP pH Enhancement System: The West Dedicated HLP pH Enhancement System is located on the west end of the West Dedicated HLP within containment of the HLP and is designed to service the West Dedicated HLP operations. The 25 June 2013 Minor Modification upgrades also include new pipelines and a pumping station for conveyance into and out of the pH Enhancement System, as well as piping modification to separate the PLS and lean solutions.

PLS from the West Dedicated HLP is collected in three separate areas each with its own dedicated drainage basin. West Dedicated HLP Phases 2 through 5 drains to the west and solution is collected in the West Dedicated HLP Return Pond (Pond 13) and the Phase 4/5 Feed Pond (Pond 14). Two event ponds, Phase 4/5 Event Pond and Phase 4 Event Pond (Ponds 29 and 31) and four process solution ponds (Reclaim Event Pond [Pond 15], #2 Reclaim Pond [Pond 16], #1 Reclaim Pond [Pond 17], and Sediment Pond [Pond 18]) are also located in this area and are hydraulically connected to the West Dedicated Return Pond for utilization during a system upset.

In addition to the mixing tanks, the existing pipeline network has been modified so that solution collected can be managed to maintain separation between a PLS circuit and a Lean circuit. Lean solution collected from the West Dedicated HLP can be collected from any phase of the pad and separated from the PLS. The modifications allow lean solution to be conveyed into either the proposed West Dedicated HLP pH Enhancement System, directly to the Phases 4/5 Feed Vault for recirculation on the West Dedicated HLP or to the West Dedicated HLP Return Pond (Pond 13) where it can be pumped to the ADR Facility.

The maximum design flow rate for the proposed West Dedicated Lean pH Gravity Feed and Pressure Feed pipelines is 7,000 gpm. The Lean Circuit pipeline connects to the West Dedicated CIC Barren Tank resulting in a maximum flow rate for the pH Enhancement System discharge line of 15,000 gpm. A pipeline has been installed so that barren solution from the CIC can bypass the proposed mixing tanks and discharge directly into the Phase 4/5 Feed Pond (Pond 14). An additional pipeline runs from the existing sump (SU203) to the West Dedicated HLP Return Pond (Pond 13) at a maximum discharge rate of 11,300 gpm.

The pipelines are constructed in containment trenches, lined with 40 or 60-mil HDPE and will drain into the existing lined ponds. An access roadway to the West Dedicated HLP CIC Circuit crosses the West Dedicated HLP pH Pressure Feed Line. This pipeline consists of a pipe-in-pipe containment with 5 feet of cover.

The Lean Station Vault is constructed below grade with dimensions of approximately 10.5 feet x 40 feet x 12.5 feet deep (39,270 gallons). The water storage volume of the vault is based on a 3-minute detention time for the design flow of 7,000 gpm, resulting in a 21,000-gallon volume below the operating depth of 8 feet; however, during the design phase, the vault was slightly increased in size to match the PLS Vault. The pumping station contains three vertical turbine pumps, two operational and one standby.

The pH Enhancement System is designed to accommodate barren and/or lean solutions of up to 15,000 gpm from the West Dedicated HLP. Since flow rates and pH of the incoming solutions vary significantly, flow and pH are monitored by automatic in-line meters to control lime dosing rate. These flows are gravity fed to three agitated tanks in series, each providing a minimum of 3 minutes residence time for hydrated lime dissolution.

Dry, hydrated lime is automatically metered from the lime silo into the first mixing tank, where it is aggressively mixed with the solution. From the first tank, the lime-enhanced solution would flow into the second and then into the third and fourth tanks, where mixing and lime dissolution would continue. Finally, the pH-adjusted solution gravity feeds out of the fourth tank and into the Phase 4/5 Feed Pond (Pond 14), which provides time for minimal settling to occur. The solution is then recycled to the West Dedicated HLP.

The pH Enhancement system has override controls as well as system shutdown capabilities in the event of a system upset. The system has the ability to manually redirect flows into the Phase 4/5 Feed Pond (Pond 14) or the West Dedicated Return Pond (Pond 13) and away from the pH Enhancement System for cleaning and maintenance. The three mixing tanks connect to a cleanout sump with independent valves to facilitate individual tank cleaning. A drainage sump and pump are also installed within the tank's secondary containment area.

The West Dedicated pH Enhancement System site has been excavated to tank elevations, allowing gravity flow through the system without any need for additional pumping. Earthwork in the area immediately around the system provides access for operators and maintenance personnel. Access is also provided for hydrated lime trucks for delivery to the lime silo. The pH Enhancement System is within lined secondary containment comprised of 80-mil HDPE liner. Anti-scalant is currently added into the Lean and Barren pond sumps and cyanide is currently added into the Barren Sump.

Pond 11 Vertical Carbon-in-Column (VCIC): The West Dedicated HLP had the VCIC installed to the east of Pond 11. The Pond 11 VCIC ties into the local pond pumping, piping, and liner systems. The containment is the same as the Pond 7 VCIC. The flow rate is designed to be 4,000 gpm, and no change in the total solution to the pad is planned. Addition of cyanide by a 1-inch carbon steel line to the Pond 11 VCIC which is located on containment. An additional pipeline to deliver solution to the HLP is located at Pond 11 VCIC. The pipeline is 16-inch carbon steel for approximately 1,200 feet then 16-inch HDPE SDR11 for approximately 650 feet, and finally 16-inch HDPE SDR17 for approximately 2,300 feet. The cumulative solution to the West Dedicated HLP will remain at 29,350 gpm and the additional pipeline keeps the barren and lean process solutions separate for use on the HLP.

An EDC approved 17 February 2021, reconfigured the existing heap leach solution management system at the West Dedicated HLP near the Pond 11 VCIC. The new column (VCIC 12), is nearly identical in design to that of the existing VCIC 11 and includes a 5-stage VCIC with 5-tons of carbon per stage; however, the flow capacity for VCIC 12 is 4,500 gpm. The existing Pond 13 piping immediately adjacent to the VCIC 11 building was modified to direct 4,500 gpm of flow into VCIC 12 instead of Pond 11; however, the ability to send solution directly into Pond 11 will be retained. Barren solution gravity flows from VCIC 12 through a carbon safety screen and into Pond 11. Existing vertical turbine pumps in Pond 11 will be used to direct barren solution back to the West Dedicated HLP. The secondary containment concrete stem wall and pad system contains a sump, and pump to reduce carbon migration into Pond 11. The sump design includes overflow weir and channel, that discharges into Pond 11, which has capacity to the meet 110% volume requirement. The VCIC 12 system is located to the south of the existing VCIC 11.

VCIC 12 will be supplied with lean solution from Pond 13 through an existing 24-in carbon steel pipeline, reduced to a 16-in HDPE SDR 11 pipeline. The existing lean solution pumps in Pond 13 will convey solution to both the existing VCIC 11 (nominal rate = 4,000 gpm) and the new VCIC 12 (nominal rate of approximately 4,500 gpm). The 4,500-gpm flow intended to be directed to VCIC 12 was previously circulated back to the WDED heap as lean solution via Pond 11. With the proposed modifications, lean solution would enter the bottom of the 5-stage VCIC 12 through a 16-in tank nozzle. The tie-in and lean pipeline extension to VCIC 12 will be routed along existing geomembrane liner at the crest of Pond 11 for secondary containment. Each stage of the VCIC would have approximately 5 tons of carbon. Solution will pass upward through distribution plates separating the successive carbon beds (stages) before exiting the VCIC at the top.

Once the solution overflows the VCIC, the now barren solution would be directed through a carbon safety screen. The barren solution exiting the safety screen would be conveyed via a 16-inch carbon steel pipeline into Pond 11, within secondary containment. Carbon would move countercurrent to the solution flow with the barren carbon entering the VCIC in stage 5. Interstage carbon transfer will be accomplished by a new carbon transfer pump until it reaches the first stage where it will be loaded with precious metals. The loaded carbon in VCIC 12 will periodically be transferred to the existing carbon handling circuit for further processing using carbon trucks. Regenerated carbon will be returned via truck and reintroduced into the VCIC. The barren solution from the VCIC would flow by gravity to Pond 11 where it will be returned to the WDED leach pad using the existing Pond 11 pumps.

VCIC 12 components of most significance include the VCIC 12 tank, carbon advance pump, carbon safety screen, and sump pump. The VCIC tank will be 14 feet in diameter and 27.7 feet in height, with a volume of 31,896 gallons, a launder adds an additional 920 gallons. The VCIC tank is of steel construction with a thickness of 3/8-inch. The carbon advance pump will be of a screw flow impeller type having a 10 hp motor and be capable of handling 220 gpm of a 10% solids slurry. The 10-hp vertical centrifugal sump pump will be capable of handling 100 gpm of slurry up to 10% solids. The carbon safety screen will be a vibratory screen having two 2.5-hp motors and a 200-mesh aperture size polyurethane screen.

Currently, 4,500 gpm of lean solution from Pond 13 is pumped directly into Pond 11. This flow stream will now be conveyed from Pond 13 directly into VCIC 12 for additional gold recovery before it is conveyed to Pond 11 as barren solution. No additional flow will report to Pond 11 under the new configuration. The existing Pond 11 pumps are also adequately sized to recirculate 4,500 gpm back to the top of the WDED pad; therefore, no pumping capacity modifications are necessary.

In and EDC approved in October 2023, fluids from Pond 11 would be transferred on an as-needed basis to the Mill Reclaim ponds by use of existing pipe systems. The 16-inch diameter pipe from Pond 11 was tied into the 12-inch pipe to the Mill reclaim ponds using a 12-inch reducer. All pipes were originally installed on secondary containment and the pipe reducer tie-in was installed over an existing liner.

WDED Interstage Leach: RMGC completed a pilot Interstage Leaching Test approved by the Division on 5 November 2020 and the test was successful. The test consisted of stacking ore on a compacted layer of ore at the top of the heap leach pad with a collection sump constructed with HDPE liner and conveyed solution to the collection system and ultimately to the process ponds. The Test showed that the project would return solution rates faster and there were no environmental concerns. The original pilot was approved for 10 acres.

Based on the construction used, approximately 60 percent of the solution was recovered by the pilot pad underdrain system (compacted layer of ore) and the remaining 40 percent flowed through the existing ore. An EDC was submitted in September 2021 and was approved by the Division in November 2021.

With this EDC, RMGC is proposing a 75-acre area on the WDED. The first cell will be approximately 8-acres and future cells will be sized per production need. The sub-grade of the interstage leach pad will be graded a minimum of 0.5-percent grade towards the outlet sump. The existing ore and 1-foot of low permeable soil (recommended $1x10^{-5}$ cm/sec or less) will be compacted by wheel rolling or similar equipment to a firm and unyielding surface prior to placement of ore.

The solution will drain to an outlet sump that is 4.5 feet deep and has a volume of 34,700 gallons. The outlet sump will be lined with 80-mil HDPE geomembrane. The outlet sump is approximately 14 feet by 35 feet wide at the base and has 2H:1V slopes. A 12-inch-diameter HDPE pipe conveys solution from the sump to an existing header pipe.

In November 2022, the Division approved a Cell 2 for the interstage leaching project on WDED. The cell is 8 acres and brings the total area for the interstage leaching to 92 acres.

North Dedicated HLP Circuit and Associated Process Components

The North Dedicated HLP Circuit is comprised of a single HLP constructed in three phases with an available leach area of 450 acres and a cumulative leach solution application rate of 11,000 gpm at a leach application rate of 0.003 gpm/sq ft. The cumulative solution application rate was increased from 9,000 gpm to 11,000 gpm by an EDC approved by the Division on 7 November 2019.

North Dedicated HLP: The North Dedicated HLP is designed to be constructed in three phases. Phase 1A will be approximately 220 acres, have the capacity of 83 million tons, and have 6 cells. Phase 1B will be approximately 61 acres and Phase 2 will be approximately 160 acres. Conceptual designs of the ponds were included with the 2017 Major Modification. Phase 1A will consist of the Phase 1A HLP, Process Pond, and Event Pond (constructed in February 2019). Phase 1B will consist of the Phase 1B HLP, Process and event ponds. Phase 2 will consist of the Phase 2 HLP, process and event ponds, and a carbon plant. The designs for the Phase 1B and Phase 2 components have a Schedule of Compliance in the Permit requiring that the designs receive written Division approval prior to construction.

The North Dedicated HLP will be constructed from bottom to top of: 12-inch-thick prepared subgrade placed in two 6-inch lifts with a maximum permeability of $1x10^{-6}$ cm/sec (95 percent compaction, ASTM Method D1557), 80-mil HDPE liner, and a minimum of 24 inches of overliner consisting of minus 2-inch gravel. The maximum height of the North Dedicated HLP is 450 feet above the liner.

The North Dedicated pregnant solution collection pipe network consists of 4-inch-diameter CPT-SP placed 52 feet on center. The size and location of the lateral collection pipes are located to provide for a maximum hydraulic head of 1-foot during leaching to minimize the hydraulic head on the liner. The 4-inch collection pipes feed into 18-, 24- and then finally 30-inch pipes which drain to the North Dedicated vault and ponds.

For Phase 1A and 1B the header pipes exit the pad area through a lined sandbag berm. The berm is constructed lower than the adjacent berm and will act as a spillway to allow solution to exit the pad area into the PLS Pond outlet channel if a design storm event exceedance occurs.

North Dedicated Solution Ponds: Process solution from the HLP will directly report to the PLS vault and then to the process facilities plant. Any overflow from the PLS vault will report to the Phase 1A PLS Pond (Pond 47).

The Phase 1A PLS Pond (Pond 47) is designed to remain empty during normal operating conditions, the pond capacity is designed to be approximately 7.5 million gallons of water at 2 feet of freeboard. The PLS Pond (Pond 47) will be graded for solution to collect in the southeast corner of the pond in a recessed sump. Any fluid within the pond will be pumped and placed within the PLS vault. The PLS Pond (Pond 47) is a double-lined system comprised of from bottom to top: 12-inch prepared subgrade (maximum permeability of $1x10^{-6}$ cm/sec, 95 percent compaction, ASTM Method D1557), 60-mil HDPE geomembrane liner, drainage layer (geonet or drain layer), and a primary 60-mil HDPE geomembrane liner. The PLS Pond (Pond 47) is designed to overflow into the Event Pond (Pond 48) through a spillway.

The Phase 1A Event Pond (Pond 48) is a single-lined system comprised of a 12-inch low permeable soil layer (maximum permeability of $1x10^{-6}$ cm/sec, 95 percent compaction, ASTM Method D1557), and 80-mil HDPE geomembrane. This pond is designed to hold 31.8 million gallons with a 3-foot freeboard. Process solution is required to be excavated from single-lined ponds within 20 days.

The Phase 1B and 2 Ponds will be designed and permitted before construction begins on the additional Phase 1B and 2 of the North Dedicated HLP.

North Dedicated Heap Leach Pad- Solution Wells: In October 2024, an EDC was approved for RMGC to implement an infiltration well program on the NDED HLP to enhance gold recovery for ore previously placed on the heap, similar to current permitted infiltration at the South Dedicated, West Dedicated, and Gold Hills HLPs. This program involves the installation of infiltration wells spaced at a minimum of 80 feet on center across the targeted area and the application of leach solution into the wells, with piezometers down gradient of the wells for monitoring.

North Dedicated CAP Vertical Carbon-in-Column Facility: The North Dedicated CAP was constructed south of the Phase 1A PLS Pond. The facility consists of three VCICs. Carbon will not be processed at the North Dedicated CAP. Loaded carbon is transported to the ADR Process Facility for stripping and regeneration. All processing facilities at the North Dedicated CAP have secondary containment of at least 110-percent of the largest tank volume. The North Dedicated CAP is underlain with HDPE liner which will convey solution to the Phase 1A PLS Pond.

North Dedicated Interstage Leach: RMGC submitted an EDC in April 2023 to implement the interstage leaching technology to the North Dedicated HLP and was approved by the Division in June 2023.

With this EDC, RMGC is proposing a 43-acre area on Cell 1 and a 46-acre area on Cell 2. The sub-grade of the interstage leach pad will be graded a minimum of 2.5-percent grade towards the outlet sump. The existing ore and 1-foot of low permeable soil (recommended $1x10^{-5}$ cm/sec or less) will be compacted by wheel rolling or similar equipment to a firm and unyielding surface prior to placement of ore.

The solution from Cell 1 and Cell 2 will drain to an outlet sump that is 11.5 feet deep and has a volume of 353,540 gallons. The outlet sump will be lined with 80-mil HDPE geomembrane. The outlet sump is approximately 40 feet by 45.5 feet wide at the base and has 2H:1V slopes. Two 24-inch-diameter HDPE pipes will convey solution from the sump to an existing header pipe.

Gravity Separation Circuit

The Gravity Separation Circuit (also referred to as the Placer or Gravity Plant) is part of the original SVCO Permit. This physical separation facility consisted of a grizzly, trommel, sluices, dewatering cyclones, jigs, classifiers, and settling ponds. This facility has been dismantled since the construction of the West Dedicated Phase 7A Expansion. If the plant should be viable, it will be reassembled and continue operation at that time.

Operation of the gravity plant was seasonal, with typical operation occurring March through November with an ore throughput of approximately 100 tons per hour (tph). Ore was fed through a grizzly for separation and removal of undersize and oversize material. As the material moved into and through the rotating trommel, a series of nozzles continually spray water onto the ore. Undersize trommel material discharged is screened further with the finer material continuing through a series of jigs to accommodate further gold recovery. Tailings generated from this process are stockpiled for future processing.

Water and suspended solids from the facility flowed into a 90-foot diameter thickener, where primary settling of fines occurs. Thickener underflow was pumped to the mill and enters the system at the trash screen for the leach circuit. Make-up water was added as needed to maintain the necessary operating level. Periodic cleaning of the thickener was required and material cleaned from the thickener was stockpiled for future processing. A small crusher was available to crush previously stockpiled oversize material on an as-needed basis. The crushed material would be fed back to the gravity plant to accommodate further gold recovery.

Ore Milling and Gold Recovery Circuit

The Ore Milling and Gold Recovery Circuit and associated tailings impoundment is constructed west and southwest of the South Dedicated HLP. The circuit was originally designed to accommodate 8,000 tpd but has since been increased to 11,000 tpd. The mill circuit consists of a semi-autogenous (SAG) mill, screen, spiral concentrators, cleaning tables, a regrind mill, cyanide leach and carbon-in-leach (CIL) agitated leaching tanks, reagent handling and cyanide neutralization circuit. All of the process components are placed within secondary containment, where leak detection/collection sumps return any collected solution back into the circuit.

The gravity circuit used to separate the gold-bearing concentrates from the bulk of the ore preventing a majority of the coarse gold from reaching the cyanide leach tanks. Free gold separated from the concentrate by the cleaning tables is sent to the refinery for further processing. The reground gravity recleaner spiral middlings and table concentrate are agitated and leached with sodium cyanide solution to extract the gold and silver.

Activated carbon in the CIL circuit adsorbs the precious metals as they are liberated from the leach slurry. The carbon is screened from the slurry and sent to the refinery for further processing. An INCO cyanide neutralization circuit using ammonium bisulfite and copper sulfate ensures that any cyanide is neutralized to a point where it is non-lethal to wildlife. The leach circuit tailings are combined with the gravity circuit tailings and then pumped to the tailings impoundment for disposal.

Flotation Circuit

The Flotation Circuit (Minor Modification approved by the Division in October 2006) is divided between the existing mill building (pulp conditioning circuit) and a new 4,800 square foot steel structure addition (flotation and concentrate recovery circuit), constructed along the west side of the mill building, near the gravity concentration circuit. The flotation circuit utilizes the existing fluid management system.

The pulp conditioning circuit is located within the existing gravity circuit area and next to the mill grinding area. Available containment capacity for the gravity/grinding area is 28,400 gallons, which is in excess of the 110 percent minimum containment volume (20,939 gallons) required.

The flotation and concentrate recovery circuit is located on a concrete pad within the steel structure addition. The addition has been designed to provide sufficient floor space and containment capacity for up to four flotation cells, storage tanks, and pump boxes. Available secondary containment capacity for the flotation and concentrate recovery circuit is 14,840 gallons, which is in excess of the 110 percent minimum containment volume (11,111 gallons) required. A 12-inch-high concrete stem wall serves as secondary containment for the entire structure and ensures that storm water does not enter the building. The floor of the building is also graded to drain into a centrally located concrete-lined/epoxy coated sump. Any solution collected in the sump is returned to the flotation circuit via pumping. In addition, an outside bermed reagent off-loading area (1,375 square feet) and piping containment area (approximately 275 square feet) has been constructed.

The flotation circuit consists of an agitation/conditioning tank (located in the existing mill building), flotation cells, process pumps and sumps, and flotation reagent mixing, storage and handling equipment. Rougher spiral tailings report to the conditioning tank, where a flotation collector (e.g. potassium amyl xanthate) is added to the pulp/slurry to selectively alter the surface chemistry of the small gold, silver, and pyrite particles present in the tailings.

The “conditioned” tailings report to a pump box where a frothing agent (e.g. Methyl isobutyl Carbamate or MIBC) is added followed by the flotation cells where compressed air is injected to generate the froth. The gold, silver, and pyrite particles attach to the froth and float to the surface, where they collect and are mechanically removed as a “flotation concentrate”. Depending on the performance of the flotation circuit, sufficient space is available within the building for the installation and operation of additional flotation cells for further scavenging of the flotation tailings.

The flotation concentrate is combined with the existing gravity concentrate and conveyed to the mill facility for precious metal recovery. The tailings report to the mill tailings thickener for dewatering and eventual discharge to the Tailings Impoundment Facility

(TIF).

The Division approved an EDC for an expansion to the flotation circuit on 7 April 2022, the as-built was approved February 2023. The EDC added three 200-cubic-meter flotation cells to increase retention times in the flotation circuit. The current flotation circuit were modified and expanded to include three new mechanical flotation cells as rougher flotation and convert the existing scavenger cell into the fourth rougher cell in the train. The two exiting contact flotation cells were repurposed into cleaner cells, processing the concentrate from the new rougher cell train. The tailings from the cleaner cells will be recirculated back to the gravity tails pump box. The concentrate from the cleaner cells will be sent to the grit screen prior to leaching. With the cleaner tailings being sent back to the feed of the circuit, the rougher tailings will be the only tailings stream and will be sent to the tailings thickener.

Process piping and the rougher cell tanks provide primary containment for the process solution. Where process piping crosses between the existing Mill Flotation Building and the expansion concrete containment, the pipes will be constructed in a casing-carrier arrangement with the casing pipe draining to the concrete containment slabs for either facility. Any leakage will flow to the sumps and will be pumped back into the process. The new concrete containment for the tanks will be approximately 92 feet by 34 feet, located to the north side of the existing mill building. The concrete containment is cast-in-place with PVC water stops in joints. The containment was designed to contain 110% of the volume of the largest tank plus the 25-year, 24-hour storm even.

Coal Spirals to Recover Carbon

An EDC was approved by the Division in November 2016 for the addition of coal spirals in the flotation area to separate the bags of carbon and grit currently stored on site. The existing carbon/grit mixture is mixed with water in an existing mixing tank and pumped to a new holding tank and pump. The mixture then will report to the two LD7 four-turn spirals. One spiral is a single start spiral, and the other is a twin start spiral. The spirals will separate out the grit, fine carbon, and coarse carbon. The coarse carbon will be put back into the plant for further processing, the fine carbon will be sent to a third party for refining, and the grit will be analyzed and either re-grinded or sent to the tailings impoundment.

Tailings Impoundment Facility (TIF)-A

TIF-A is a square-shaped impoundment with "upstream" raises and utilizing the "leaky dam" concept for the drainage of fluid which has collected in the tailings mass. TIF-A was initially proposed for construction as a series of "centerline" raises, with the starter embankment crest elevation of 5,970 feet amsl to a final "closure raise" elevations of 6,050 feet amsl in the southeast corner and 6,025 feet amsl in the northwest corner. Since each successive raise (approximately 20 feet in height) would result in progressively narrower crests, the construction design was later revised to incorporate "upstream" raises in place of "centerline raises".

TIF-A consists of a starter embankment and three operational raises. The maximum crest elevation was originally 6,030 feet amsl (nominally) with a crest width of 110 feet. The overall downstream slope of the tailings embankment is 2.5H:1V, and the slope of the each raise is approximately 1.4H:1V. The overall downstream slope of 2.5H:1V is maintained by constructing set-backs at each vertical raise. The TIF design allows for an operating decant pond freeboard of 5 feet.

The entire TIF is underlain by a continuous composite liner (approximately 17.5 million square feet of lined area), comprised of 60-mil HDPE synthetic liner placed on a 1-foot-thick layer of compacted leached ore residue (stabilized pursuant to NAC 445A.430). The tailings that are placed in the basin are separated from the random fill mine waste embankments by a filter zone. Water is recovered from the tailings via a decant pond in the middle of the facility and through a gravel underdrain located above the liner that includes perforated collection pipes. The underdrain flows to a seepage collection ditch at the downgradient toe of the facility.

The underdrain pipeline system is encapsulated within the underdrainage blanket material consisting of an 18-inch layer of spent leached ore. The underdrainage system consists of a series of perforated polyethylene piping (PEP) placed on top of the liner system and covered by the underdrainage media. The pipes discharge into a lined ditch system at the downgradient edge of the tailings impoundment. Solution is transported to either Reclaim Pond #1 (Pond 16) or Reclaim Pond #2 (Pond 17) by a trapezoidal channel constructed with dual 80-mil HDPE liners, an intermediate layer of geonet material and an underlying native soil layer, compacted to maximum permeability of 1×10^{-6} cm/sec (95 percent compaction, ASTM Method D1557).

Leak detection consists of a gravel filled sump which leads into a non-perforated collection pipe. The collection pipe discharges to a vertical riser sump to allow for the monitoring and removal of collected fluids. Fluid reporting to the sump is pumped to the solution channel or tailings reclaim solution ponds depending on their location. The solution reclaim ponds are constructed with dual synthetic liners and incorporate a leak detection/collection system.

A Minor Modification (approved by the Division on 14 December 2007) authorized the design, construction, operation, and closure of three additional "upstream" vertical raises (two operational and a final closure raise) to TIF-A. The Minor Modification expanded the TIF-A capacity by an additional 24 million tons and increased the final crest elevation to 6,090 feet amsl at closure on the north, west, and south sides.

Each operational raise (or lift) is authorized for construction to a maximum of 20 feet in height to a final operational height of 6,070 feet amsl. The final closure raise lift height is limited to 20 feet on the north, west, and south embankments to a final closure height of 6,090 feet amsl; the raise will pinch out on the east embankment at a lower elevation between the 6,070 feet amsl raise crest and operating elevation required to maintain 3 feet of freeboard. This configuration facilitates the eventual construction of a spillway for closure of the facility.

The overall downstream slope embankment is to be maintained at 2.5H:1V, with slope faces of the raise embankments at 1.4H:1V on the upstream and downstream faces. The 2.5H:1V overall slope on the downstream slope will be accomplished by a series of set-backs at each vertical raise.

The TIF-A vertical expansion uses the existing tailings management system. Tailings distribution lines are moved and expanded as necessary to allow continued operation of the rotating spigotting method of tailings deposition. A geotechnical assessment of the existing TIF was performed in 2007 (and revised in 2012) by Knight Piésold Consulting (KP) in an effort to gain a better understanding of the conditions beneath TIF-A (including settlement) as a result of constructing additional raises, including phreatic conditions, slope stability, and the propensity for liquefaction of TIF-A under pseudostatic (earthquake) loading scenarios.

The Division accepted KP's conclusion that TIF-A can be raised to a final closure crest elevation of 6,090 feet amsl safely, assuming there is no change in the tailings and embankment material engineering characteristics, tailings in-place dry density, frictional behavior, liquefaction resistance and distribution of pore pressures within the tailings mass. A review and evaluation of the previously mentioned assumptions and geotechnical characteristics must be performed prior to construction of the embankment to an operational elevation of 6,070 feet amsl.

A Minor Modification (approved by the Division on 11 March 2013) authorized the design, construction, operation, and closure of two additional "upstream" vertical raises (one operational and a final closure raise) to TIF-A. The proposed Minor Modification expanded TIF-A capacity by an additional 20 million tons and increased the final crest elevation to 6,110 feet amsl on the north, west, and south embankment sides.

Each operational raise (or lift) is authorized for construction to a maximum of 20 feet in height to a final operational height of 6,090 feet amsl. The final closure raise lift height is limited to 20 feet on the north, west and south embankments to a final closure height of 6,110 feet amsl; the raise will pinch out on the east embankment at a lower elevation between the 6,090 feet amsl raise crest and operating elevation required to maintain 5 feet of freeboard. This configuration facilitates the eventual construction of a spillway for closure of the facility. The overall downstream slope embankment is to be maintained at 2.5H:1V, with slope faces of the raise embankments at 1.4H:1V on the upstream and downstream faces. The 2.5H:1V overall slope on the downstream slope will be accomplished by a series of set-backs at each vertical raise.

The TIF-A vertical expansion uses the existing tailings management system. Tailings distribution lines are moved and expanded as necessary to allow continued operation of the spigots for tailings deposition.

TIF-A East Containment Improvements: The existing containment channel on the east side of TIF-A is underlain by a layer of low permeability material, overlain by a layer of 80-mil HDPE liner. The south, east, and west faces of TIF-A feature an enclosed drainage channel, with the liner being anchored at the top, outside edge of the channel.

In an effort for TIF-A to adequately handle solution from the tailings dam to the containment ponds, an EDC (approved by the Division on 18 August 2008) authorized the construction of a new containment system along the east face, consisting of a lined berm and sump. A large portion of the fluid entering the new system is diverted toward the west side of the facility where it then enters the existing solution channel. Flows developing toward the north end of the TIF-A enters a new drainage channel where it is then conveyed to a new sump. Fluid collected in the sump is pumped back to TIF-A.

The new containment system consists of a berm and sump constructed along the east face of TIF-A. The system includes a 6-inch-thick layer of low permeability material compacted to a minimum of 95 percent of the maximum dry density (ASTM Method D1557), overlain by 60-mil HDPE liner. Existing soil material was exposed, scarified, and recompacted, creating a continuous layer. The existing 80-mil HDPE liner was repaired where damaged and new 60-mil HDPE was wedge welded to the existing liner to form a continuous liner.

The 2-foot (minimum) high containment berm is designed to meet the 25-year, 24-hour storm event criteria and is constructed from select fill material and covered with a 6-inch layer of low-permeability material. The containment berm side slopes are graded to 2.5H:1V and compacted. Containment will be provided by a layer of 60-mil HDPE liner placed over the low permeability material. A majority of the solution entering the new containment system is diverted toward the west side of the TIF, where it then joins the existing solution channel. Flows developing at the north end of TIF-A enters a drainage channel and are conveyed down a slight grade to a sump.

The trapezoidal-shaped channel has a floor width of 2 feet with a minimum depth of 2 feet. The channel walls are sloped 2.5H:1V and the channel is lined with a 6-inch layer of low-permeability material, overlain with 60-mil HDPE liner. The single HDPE-lined trapezoidal-shaped sump is approximately 90 feet by 80 feet with depth of about 10 feet. Approximate volume is 696,000 gallons. The sump walls are sloped 2.5H:1V and the channel is lined with a 6-inch layer of low-permeability material, overlain with 60-mil HDPE liner. Since the containment is an external feature of TIF-A, there is no impact to the slope stability.

In an effort to optimize operations at the South and West Dedicated HLP Areas, an EDC approved by the Division on 22 May 2013 authorized changes to the Tailings Discharge Pipeline to provide additional tailings pipeline capacity in consideration of an increase in the existing tailings facility lift height.

The tailings pipeline that originally ran from the mill to the spigot feeder line at the crest of the TSF was composed of several HDPE pipe sizes ranging from 13 to 16 inches in diameter (nominal). To achieve more efficient pumping, the HDPE pipe was replaced with new 16-inch-diameter SDR-11 HDPE pipe, with a pressure rating of 200 psi.

A fluid release in the east area of TIF-A was reported on 23 September 2013. It was later determined that the HDPE liner at the base of the TIF is higher than the channel, thus preventing some fluids from draining into the channel. Fluid is forced to flow to the north end of the channel before the fluid can enter the spillway and flow back southward to TIF-A. The channel was designed to terminate in a berm constructed against the pipe ramp, however during construction the channel was terminated at the TIF-A liner edge, without a berm.

As a permanent repair, an EDC approved by the Division on 12 December 2013 authorized the construction of an auxiliary containment pond (TIF-A ACP) north of the current TIF-A ACP and other design improvements including 1) the excavation of a slot between the TIF-A perimeter channel and pond crest to allow fluid to drain directly into the existing containment pond, and 2) the construction/installation of stormwater controls north and east of the auxiliary pond, including water bars on the uphill slope to the east of the pond, a stormwater diversion berm, and stormwater depression area next to TIF-A ACP.

TIF-A ACP is excavated with slopes of 2H:1V. The pond is approximately 10 feet deep from the low point of the existing HDPE liner. The pond floor slopes to the northeast corner at 1 percent. A 3-foot-square by 2-foot-deep sump is located in the northeast corner. The pond is constructed with 12-inches of compacted low permeability soil covered by 60-mil HDPE liner. The new HDPE liner overlaps and is extrusion welded to the existing HDPE liner.

A stormwater diversion berm was also constructed on the north side of TIF-A ACP to minimize the potential of stormwater flowing into the pond. Other stormwater control measures include the construction of water bars on the slope to the east of the auxiliary pond and a stormwater depression area.

In anticipation of the future TIF-B construction and to provide access to TIF-A for embankment repairs, an EDC approved by the Division on 18 February 2014, authorized the construction of a haul road to deliver embankment material to the area south of TSF-A. This road referred to as the South Access or "Moose Haul" Road, crosses several conveyance pipelines and an overflow channel from the South Dedicated Pad.

Tailings Impoundment Facility (TIF)-B

In March 2014, the Permittee submitted a Major Modification for the design, construction, operation, and closure of a second tailings impoundment, TIF-B, to be located adjacent to the southwest embankment of TIF-A. The Major Modification also included the deepening of the Event Pond and reconfiguring of the Sediment Pond to contain the 100-year, 24-hour storm event, 24 hours of underdrain flow from the TIF-A and TIF-B, and drainage from the reclaim pipeline from the reclaim ponds to the mill. The Division approved and authorized the phased construction of TIF-B on 20 October 2014. An EDC approved by the Division on 16 April 2015, revised the construction schedule to allow TIF-B to be constructed in stages beginning with Stage I, to coincide with phased bonding. Each additional stage will require submittal of an EDC for review and approval prior to construction.

Assuming a maximum design tailings discharge rate of 12,500 tpd, TIF-B is expected to have a 12-year operational life, accommodate approximately 60 million tons of tailings, and will be constructed to a maximum height of 175 feet above the lowest point of the liner surface. TIF-B will utilize "leaky dam" design similar to that of TIF-A in addition to both downstream and modified centerline embankment construction methods.

A geotechnical assessment of TIF-B was included with the Major Modification submittal. The assessment was performed by KP in an effort to gain a better understanding of the conditions beneath TIF-B (including settlement) as a result of constructing additional raises, including phreatic conditions, slope stability, and the propensity for liquefaction of TIF-B under pseudo-static (earthquake) loading scenarios.

The Division accepted KP's conclusions regarding the design of TIF-B, assuming there is no change in the tailings and embankment material engineering characteristics, tailings in-place dry density, frictional behavior, liquefaction resistance and distribution of pore pressures within the tailings mass. Any additional height increase above the Ultimate Embankment Elevation (UEE) will require a complete review and evaluation of the previously mentioned assumptions and geotechnical characteristics must be performed prior to any future construction.

The construction of TIF-B consisted of the following:

1. Soil layer and geo-synthetic clay layer (GCL) lined basin providing a total lined area of approximately 19,500,000 square feet (sq ft).
2. Underdrain collection system consisting of a 3-foot-thick granular underdrain layer and a network of corrugated, perforated CPT underdrain pipes. Solution is conveyed, via the perimeter collection channel, to the existing TIF sediment pond, and then to the reclaim ponds.
3. The existing Event Pond was expanded to provide the needed capacity for TIF-B. The Event Pond was redesigned to provide a passive capacity to contain expected underdrain volumes plus 100-year, 24-hour storm event from TIF-B. The Event Pond is lined with GCL overlain by a single sided 60- or 80-mil textured HDPE.
4. Upgrades to the sediment pond to include modified inlet structures and a riprap-lined outlet channel.

The TIF-B site was prepared for construction by first clearing, grubbing, and stripping of topsoil. Grading involved minimal local cuts of native alluvial materials. The liner system for TIF-B consists of the following:

1. A compacted subgrade with a minimum of 1-foot-thick fine-grained low-permeability soil layer, compacted in two lifts of 6-inches each and comprised of clayey soils from the Stebbins Hill stockpile, moisture-conditioned and compacted to provide a hydraulic conductivity of 1×10^{-6} cm/sec or less (95 percent compaction, ASTM Method D1557), with the option to utilize a high strength GCL outside of the TIF embankment footprint and within limited areas of the basin approved by the Division.
2. A 60-mil or 80-mil double-sided textured HDPE geomembrane liner beneath the TIF embankment and to the outer crest of the perimeter channels, as well as at least 20 feet beyond the upstream toe of the TIF-B embankment.
3. A minimum of 3-foot-thick underdrain fill (i.e., crushed rock fill from the pit or waste dump, or spent leach ore and filter material)

The TIF-B embankment was developed around the west, south, and east sides of the facility with containment on the north side provided by the existing TIF-A embankment. The embankment construction was sequenced to maintain adequate freeboard above the tailings and or supernatant pond level. The embankment for TIF-B is currently planned to be constructed in five stages, beginning with the Starter Embankment, Stages 1 through 3, and ultimate configuration.

The embankment footprint will be expanded during each raise until the embankment forms a continuous crest around the west, south, and east with the northern end, being confined by the existing TIF-A embankment. The embankment is nearly continuous at the completion of Stage 3 and is fully continuous at the completion of the Ultimate Embankment.

The staged embankment crest elevations and construction methods are the following:

- Starter Embankment, Elevation 6,025 feet amsl (Approval June 2016 for tailings deposition)
- Stage 1, Elevation 6,050 feet amsl (Downstream Raise approved November 2018 for tailings deposition)
- Stage 2, Elevation 6,070 feet amsl (Modified Centerline Raise approved February 2020)
- Stage 3, Elevation 6,090 feet amsl (Modified Centerline Raise approved February 2020)
- Ultimate Embankment, Elevation 6,110 feet amsl (Modified Centerline Raise)

The Stage 1 embankment elevation was set by evaluating the tailings rate-of-rise (tailings elevation vs. time) and determining the tailings elevation corresponding to a rate of rise of 12 feet per year or less. The subsequent stage raises will be 20 feet, or approximately one raise every two years.

Tailings are deposited into TIF-B from a series of drop bar pipes located along the crest of the embankment. The points of active deposition will be rotated regularly around the west, south, and east sides of TIF-B with a goal of producing a stiff, drained beach sloping to the north. With the exception of initial deposition, this will also cause the supernatant pond to be located away from exterior embankments, and ponded against the North Impoundment Filter to be placed on the southern embankment of TIF-A. The rotational sequence of the tailings spigot system will allow for a high level of control in managing the tailings deposition while also providing a simple means of controlling the location of the supernatant pond.

An EDC approved by the Division on 12 February 2016, authorized the extension of the reclaim and discharge pipelines around the perimeter of TIF Cell B. The EDC involved three necessary construction changes to accommodate TIF Cell B construction. The changes included the addition of a new slurry deposition pipeline loop around TIF Cell B, which required splicing into the TIF Cell A pipe in two locations, the relocation of a small section of the existing tailings reclaim water pipeline, and the addition of a new pipeline mirroring the existing one. These three changes provide RMGC with the additional flexibility to manage slurry and reclaim water more effectively as TIF Cell B is brought online.

The tailings line addition only affected the existing TIF Cell A loop that discharges tailings into the TIF. Two splitter boxes (East and West Ramp splitter boxes) were installed within the TIF Cell A loop. The East Ramp Splitter box allows tailings slurry to travel around the TIF Cell A loop or to travel around the TIF Cell B loop. The West Ramp Splitter Box is similar to the east ramp box except it will allow tailings slurry to be fed from the west or east leg of TIF Cell A.

Starting at the East Splitter Box, a new pipeline has been extended down the east ramp that connects TIF Cell A and Cell B. The pipeline extends around TIF Cell B and continues up the west ramp, terminating at the West Splitter Box on top of TIF Cell A. The hydraulic design envelope for the system is 2,650 to 3,240 gpm (10,000 to 14,000 short tons per day at 50 to 55 percent solids content).

Because of the anticipated increased water inflows from the startup of TIF Cell B and the current mill production, the system requires a maximum outflow of 2,800 gpm to keep the pond levels down in the reclaim ponds. In order to meet this flow, the design consultant recommended twinning the Reclaim Pipeline.

The new Reclaim Pipeline ties in at the pump manifold at the reclaim ponds and terminates at the mill. This configuration reduces the overall friction loss in the initial portion of the reclaim pipeline and provides suitable operating pressures while meeting the target flow rates with the existing pumps. It also reutilizes existing and available piping on site as much as possible. The new Reclaim Pipeline mirrors the same route as the existing Reclaim Pipeline and follows the exiting Slurry Pipeline back to the mill. On top of the TIF Cell A and in the northeast corner, the two pipelines are tied into the slurry line to provide reclaim water to flush the slurry pipes to TIF Cell A and Cell B.

Tailings Freeboard Modification: The Division approved an EDC in June 2019 for the modification of the TIF-A and TIF-B freeboard limitations to 1-foot to tails, 3-foot to the supernatant pool, and 100-foot minimum setback to the pool from any embankment. The original limitations were 5-foot freeboard and 1-foot beach from the supernatant pond for TIF-A and 3-foot freeboard for both the pond and supernatant pond for TIF-B.

Use of Stebbins Hill Clay for Construction Purposes: The Permittee anticipates that the amount of soil suitable for future construction and closure activities at the SVCO and Gold Hill Project (GHP) sites will far exceed availability. A significant amount of Stebbins Hill Clay (SHC) is available and the amount is more than adequate to meet the projected needs at both the SVCO and GHP sites.

The SHC exhibits a wide range in geochemical behavior due to variable sulfide and carbonate content. The un-oxidized SHC contains sulfide sulfur, and is classified and managed as designated waste (i.e., potentially acid generating), pursuant to the current WRMP. In order to approve the use of SHC as TIF-B underliner material, the Division required the Permittee to demonstrate that the use of SHC as underliner will not degrade groundwater. The Division required a similar demonstration prior to the use of SHC at the GHP and the clay was later authorized for use on a restricted basis by the Division in 2011.

Geochemical testing and predictive geochemical modeling was undertaken for the proposed TIF-B to determine if the use of the SHC as an underliner has the potential to degrade groundwater. The geochemical testing including multi-element analysis, paste pH, and ABA were conducted to characterize the stockpiled clay material. In addition, a specialized laboratory leach test was undertaken to generate realistic source term inputs for geochemical prediction models, which quantitatively assess the potential for the clay underliner to degrade groundwater.

The results of the study predict there will be no potential to degrade groundwater by the placement of SHC material as an underliner for TIF-B construction. Predicted groundwater chemistry under these conditions is very similar to existing groundwater and no parameters are predicted to exceed Profile I reference values. This reflects the design of the facility with low hydraulic head above the geomembrane, resulting in low seepage through the synthetic liner and therefore low seepage through the clay layer. The low permeability of the clay will further reduce seepage from the facility. Furthermore, the placement of the

SHC material below a synthetic liner limits the exposure of the clay to both air and water, thus reducing the potential for oxidation of any sulfides within the clay. Based on the results of this study, the use of SHC as underliner does not indicate potential to degrade groundwater.

Confirmation sampling and testing of the stockpiled SHC material is performed as the clay material is transferred to TIF-B. This is accomplished by collecting samples from the advancing dig face within the stockpile and conducting paste pH testing in the field. Paste pH provides an indication of the immediate reactivity of the stockpiled clay material (i.e., from prior weathering and oxidation). Samples collected and characterized from the SHC stockpile indicate paste pH values less than 5 SU for a small percentage of the samples, indicating the short-term reactivity is low for the bulk of the stockpiled clay material. Therefore, paste pH values less than 5 SU can be used to identity clay material with a higher potential to generate acid and leach metals that may not be suitable for use as an underliner.

In addition, a Standard Operating Procedure (SOP) has been developed to describe the procedures for collecting and testing samples of SHC during construction activities. The WRMP has been updated to include provisions for using SHC as underliner material for the HDPE liner and incorporates the SOP for confirmation sampling and testing.

Event Pond Modification: As stated previously, the floor of the existing single-lined Event Pond (Pond 39) was deepened by an additional 20 feet to accommodate the 100-year, 24-hour storm event, 24 hours of underdrain flow from both TIF-A and TIF-B, and drainage from the reclaim pipeline from the reclaim ponds to the mill. This results in an increase in pond capacity (at freeboard) of approximately 17.5 million gallons. The deepening required the removal of approximately 90,000 cubic yards of soil and the placement of approximately 235,000 sq ft of 60- or 80-mil HDPE liner over a 12-inch layer of native soil compacted to maximum permeability of 1 x 10^{-6} cm/sec (95- percent compaction, ASTM Method D1557.

Sediment Pond Modification: Improvements to the existing stormwater Sediment Pond located at the north end of the TIF-A included the cleaning-out of the pond and the reshaping/re-contouring of the existing slopes. A riprap rundown inlet structure and outlet channel will be added to the Sediment Pond.

Stormwater Diversion Channel Modifications: An existing stormwater diversion channel collects surface runoff from the drainage basins upstream (east) of TIF-A and TIF-B. The water will be diverted around the southern side of the impoundments and discharge to an existing drainage. The existing stormwater diversion channel was initially designed and constructed in conjunction with the *"Smoky Valley Common Operation—South RIB Complex"* (WPCP NEV2012102) to accommodate a 100-year, 24-hour storm event with a peak flow of about 635 cubic feet per second.

Runoff generated by the area between the existing stormwater diversion channel and TIF-A and TIF-B will be diverted around the facilities by an elevated road and perimeter ditch. The road will be constructed from fill for the majority of its length, and will provide a grade separation to deter runoff from entering the TIF-B perimeter collection channel. In areas where the perimeter ditch will collect run-on from upstream areas it will be riprap-lined. In areas where the road is below existing grade, a riprap lined v-ditch will be constructed.

Piezometer Installation: Piezometers are installed in the embankment and other critical locations to monitor embankment performance throughout the life of the facility. Settlement and deformation monuments have also been installed on the downstream embankment face and behind the tailings deposition pipelines along the crest during each phase of construction.

The piezometers will be monitored regularly to establish and maintain an understanding of the performance of the embankment and underdrain collection system over the life of the facility. Pore pressure data is used to monitor the tailings behavior and rate of consolidation as the facility is filled, and to monitor for the potential development of saturated zones in the embankment. Operations personnel routinely obtain flow rate measurements at the perimeter solution channel and on the tailings pipeline from the mill.

Diversion Channels/Ditches

A series of diversion channels and ditches have been constructed upgradient of the SVCO facilities to divert stormwater run-off generated by a 100-year, 24-hour storm event.

Other Activities

Other activities at the SVCO mine include, but are not limited to maintenance, fuel and chemical reagent storage, used oil blending, and explosive emulsion manufacture. These activities are performed on containment of at least 110-percent at specific locations throughout the SVCO mine site.

With the Phase W expansion the wash bay, fuel islands, truck shop, and warehouse were relocated to the west of the expansion. The Division approved an EDC for the infrastructure relocation in September 2017. The as-built for the infrastructure was approved by the Division in June 2019.

PCS Management

On 22 September 2010, the Permittee submitted a revised Petroleum-Contaminated Soil Management Plan (PCS Plan) as an EDC for review and approval by the Division. With the approval of the PCS Plan, hydrocarbon permits GNV041995-HGP04 and GNV041995-HGP32 were terminated and all reporting and fees associated with those permits cancelled. The EDC was approved on 1 December 2010. Pursuant to the PCS Plan, new hazardous waste determinations (TCLP analyses) must be performed to determine whether those materials are actually hazardous waste. Hazardous waste must be managed and disposed pursuant to applicable regulations and cannot be managed under the approved PCS Plan. The approved PCS management plan has the final destination of the PCS that meets the approved management plan will be placed on the North Waste Rock Dump.

C. Site Hydrology and Background Water Quality

The RMGC-SVCO mine facility is located in the southern portion of the Big Smoky Valley hydrologic basin on the western slope of the Toquima Range. Surface drainage is ephemeral and, in general, is a result of precipitation events. There is no surface water identified within one mile of the SVCO mine facility.

Depth to static groundwater varies from approximately 160 feet at the western margin of the facility to greater than 400 feet near the range front. Regional groundwater in the vicinity of the SVCO occurs in four distinct geologic environments (Paleozoic metasedimentary rocks, Tertiary volcanic rocks, geothermal deposits, and alluvial sediments) and movement is generally east to west. In bedrock, the recharge, storage, flow and discharge of groundwater is controlled by the porosity, permeability, and structure of the geologic materials. In the alluvium, the groundwater is stored and transmitted through interconnected pores within the unconsolidated sediments.

Background groundwater quality at the SVCO site is characterized by occasional exceedances of the pH, iron, cadmium, nitrate, manganese and Total Dissolved Solids (TDS) Profile I reference values in a few localized areas, and routine exceedances of the fluoride and arsenic Profile I reference values in several areas. Samples from alluvial and geothermal waters in the mine area have observed fluoride concentrations as high as 27.5 mg/L. Arsenic concentrations in groundwater samples collected from all water types in the vicinity of the SVCO project site, range from less than 0.001 mg/L to 0.188 mg/L. The Profile I reference values for fluoride and arsenic are 4.0 and 0.01 mg/L, respectively.

A series of groundwater monitoring wells have been installed around the perimeter of the SVCO project site to monitor changes in groundwater chemistry and elevation. All wells with the exception of the single geothermal well are installed to intercept the first 20 feet of the upper groundwater surface. The wells are constructed with a 20-foot screen and are completed pursuant to Nevada State well regulatory requirements.

D. <u>Procedures for Public Comment</u>

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 on 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. <u>Proposed Determination</u>

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

F. <u>Proposed Limitations, Schedule of Compliance, Monitoring, and Special Conditions</u>

See Section I of the Permit.

G. <u>Rationale for Permit Requirements</u>

The facility is located in an area where annual evaporation is greater than 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, groundwater monitoring wells, and routine visual inspections for possible surface releases. 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 (the 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.

Prepared by: TJ Mohammed
Date: April 2, 2025

Revision 00: 2025 Renewal and Boiler Plate Updated, underground bulk samples.