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

Permittee Name: **Nevada Gold Mines LLC**

Project Name: **Pipeline Infiltration Project**

Permit Number: **NEV0095111**
Review Type/Year/Revision: **Renewal 2021, Fact Sheet Revision 00**

A. Location and Description of Discharge

Location: The facility is located in Lander and Eureka Counties, Nevada, within Sections 13, 14, 23, 24, 26, and 27, Township 27 North (T27N), Range 46 East (R46E); Sections 2, 3, 5, 7, 8, 11, 13, 14, 17-19, 24, and 25, T27N, R47E; Sections 13-15, 21, 22, 24, 26-28, and 32-35, T28N, R47E; Sections 1, 8-10, and 12-18, T28N, R48E; Sections 2-4, 7-10, and 16-18, T28N, R49E; and Sections 11, 25-27, 29, 35, and 36, T29N, R49E, Mount Diablo Baseline and Meridian, approximately 35 miles southeast of the town of Battle Mountain, Nevada. The facility is located on both private land controlled by the Permittee and public land administered by the U.S. Bureau of Land Management (BLM), Mount Lewis Field Office in Battle Mountain, Nevada. The site may be accessed by traveling 40 miles west from Elko, or 30 miles east from Battle Mountain, on Interstate Highway 80, then 31 miles south on Nevada State Route 306.

General Description: The **Pipeline Infiltration Project** consists of infiltration of mine dewatering water at a maximum rate of 37,500 gallons per minute (gpm; equivalent to 54,000,000 gallons per day (gpd)) via rapid infiltration basins (RIBs) located in Crescent Valley. The individual RIBs are clustered together in groups that are referred to herein as "infiltration sites." As of 2021, 74 RIBs are approved at 16 infiltration sites, but some have been idled or not yet built. Additional RIBs have been permanently closed and reclaimed. The facilities must be designed, constructed, operated, and closed without any discharge or release in excess of those standards established in regulation, except as authorized in the Permit and for meteorological events which exceed the 24-hour, 25-year design storm event.

B. Synopsis

General: The Pipeline Infiltration Project was developed by the Cortez Joint Venture, which was comprised of Placer Dome Inc., the parent of Placer Dome U.S., Inc., and Kennecott Exploration (Australia), Ltd. The joint venture did business and operated the property as Cortez Gold Mines. In mid-2006, Placer Dome U.S., Inc. merged with Barrick Gold Corporation, which formed Barrick Cortez Inc. a subsidiary of Barrick Gold Corporation to act as Permittee and Operator of the Project. In July 2019, Barrick Gold Corporation and Newmont Mining Corporation entered into a joint venture transferring the Permit to Nevada Gold Mines LLC, the current Permittee.

The Permittee mines gold ore from the Pipeline Project (Water Pollution Control Permit (WPCP) NEV0093109) and Cortez Hills deposit (WPCP NEV2007106) by open pit extraction methods, and conducts underground mining of the Cortez Hills deposit, all from elevations below the pre-mining groundwater table in the southern portion of Crescent Valley. Therefore, the operations require a dewatering program to extract groundwater from within the excavations and from the periphery of the open pits and underground workings in advance of mining. The dewatering water is returned to the source hydrographic basin via the Pipeline Infiltration Project (PIP) RIBs.

Since the start-up of infiltration operations in August 1996, as many as 25 production dewatering wells have been utilized. Average annual discharge to the infiltration sites has gradually increased from 4,000 gpm to instantaneous rates of up to 29,000 gpm (Fall 2005) as more sites were constructed and the dewatering requirements increased. As originally designed, the permitted annual maximum pumping rate was 30,067 gpm, with a projected average annual flow rate ranging from 3,500 to 28,300 gpm during the life of the Project. To accommodate additional anticipated expansion of the Pipeline Mine, the permitted maximum infiltration rate was increased to 34,500 gpm (49,680,000 gpd) with a minor modification to the Permit, effective 26 April 2004. The increased maximum infiltration rate also accommodates anticipated average flows of approximately 4,000 gpm from the Cortez Hills Project (WPCP NEV2007106) located on the southeast side of Crescent Valley. An engineering design change (EDC), approved by the Nevada Division of Environmental Protection (NDEP or the Division) in June 2014, documented that combined dewatering flow rates from the Cortez Hills open pit and underground operations are anticipated to increase to 12,000 gpm, although the site-wide total infiltration rate will remain below the 34,500 gpm Permit limit. An EDC was approved by the Division in July 2019, that increased the infiltration for the site wide infiltration by 3,000 gpm specifically increasing the infiltration rate to the Cottonwood II, III, and IV RIBs.

The average maximum discharge rate to the infiltration system is anticipated to remain below 26,000 gpm through the mine life, although the maximum permitted discharge could be reached for brief periods when consumptive water use (e.g., irrigation, mill use, etc.) is reduced. Discharge to each infiltration site is monitored with daily totalizer flow meter recordings and, currently, eight shallow bedrock-dewatering wells and 13 deep bedrock-dewatering wells are monitored with a totalizer to obtain a total average monthly pumping rate.

***Pipeline Infiltration Project – NDEP Investigation Report, 21 December 2004* (Report):** The referenced Report was completed by the Division in response to a written submittal from Western Mining Action Project on behalf of Great Basin Mine Watch and the Western Shoshone Defense Project dated 13 July 2004, and titled "Complaint and Request for Investigation – Pipeline Infiltration Project" (Complaint). The conclusion of the Report follows in quotations:

> "In conclusion, the results of the Pipeline Infiltration Project Investigation did not substantiate the allegation that contaminants in groundwater are moving off site. Monitoring wells at the currently active infiltration sites with constituent levels, namely TDS and nitrate, above the NDEP Profile I water standards, are all located within the mounded infiltration water that temporarily resides above the pre-existing groundwater table. The NDEP has determined that such water does not constitute a source of usable water; and as such, compliance is focused upon potential degradation of the pre-established groundwater table. The investigation did identify that exceedances are present in the pre-established groundwater table at two infiltration sites, Filippini and Frome; however, these two sites are no longer in operation and the affected groundwater is localized by low transmissivity soils with no apparent potential for migration that could adversely impact reasonable use of groundwater in the area. It was evident from the investigative review of the Pipeline Infiltration Project files, that the PIP has evolved over its operating history as both the Permittee and the NDEP have gained experience from the system's performance. However, the investigation did identify that further improvements could be made in the existing permitting and monitoring systems, as resulting recommendations were made for respective actions both of the NDEP and of Cortez Gold Mines [Barrick Cortez Inc.] as the Permittee. The progressive implementation of the resulting investigation recommendations should provide additional measures to substantiate that neither current, nor future drinking water sources, are being degraded by the PIP operations."

The recommendations of the Report have been implemented and are being followed, as applicable, by the Permittee and the Division. Full copies of the Complaint, Report, and supporting documentation may be found in Division public files.

Infiltration System Design and History: Dewatering water is pumped from the dewatering wells into a series of high-density polyethylene (HDPE) surface pipelines, typically 24- to 36-inch diameter, that distribute flow to the various infiltration sites and to the individual RIBs within each site. The dewatering wells on the north side of the mine pits are pumped to the North Pipeline (Permit monitoring point INF-DIS-N), and the dewatering wells on the south side of the mine pits are pumped to the South Pipeline 1 (Permit monitoring point INF-DIS-S1) or the South Pipeline 2 (Permit monitoring point INF-DIS-S2). The RIBs are all constructed on alluvial fans by excavating alluvial sediments, typically 20 feet below existing grade. The flow rate to each infiltration site is monitored using flow meters equipped with totalizers. The flow to individual RIBs is controlled by manually operated valves and the individual RIB flow rate values are then derived through a water balance calculation based on a combination of data from infiltration site flow meter readings, dewatering well totalizer readings, and RIB use records. Water infiltration is rotated among the RIBs at each infiltration site to reduce potential groundwater mounding and optimize RIB performance. As the infiltration is rotated, RIBs are cleared of vegetative growth and scarified as needed to improve infiltration when each RIB is next brought back on line.

Ten infiltration sites, with a total of 55 RIBs, were approved for use as of April 2004. These included: Highway I (12 RIBs); Highway North (four RIBs); Highway South (four RIBs); Rocky Pass (11 RIBs); Rocky Pass II (four RIBs); Frome (17 RIBs originally, 12 of which had already been decommissioned in 1999; the other five RIBs were decommissioned later, in 2005); Windmill I (four RIBs); Windmill II (four RIBs); Windmill IV (four inactive RIBs); and Windmill V (three RIBs). Due to poor percolation rates, the entire Filippini Infiltration Site, comprised of 18 RIBs, was previously closed and surface reclamation was completed in 1998. The infiltration mound continues to dissipate. RIB IB-113, located within the Highway infiltration site, functions as a surge pond to stabilize discharge rates for irrigation purposes.

A minor modification to the Permit approved by the Division in April 2004, authorized the construction of three additional infiltration sites: Rocky Pass III (four RIBs), West Highway I (two RIBs), and West Highway II (four RIBs). This brought the total number of approved RIBs to 65, at 13 infiltration sites. The minor modification also included the construction of hydraulic links between six existing Highway I RIBs located in the northwest half of that site. This latter construction created expanded surge storage capacity beyond the single IB-113 surge basin to provide more reliable and longer term flows to the Dean Ranch and other irrigation facilities if dewatering rates are reduced for operational reasons. The four West Highway II RIBs were constructed soon after approval. The Rocky Pass III construction was completed in late 2010 and initiation of infiltration was planned for late 2011. Only the West Highway I site remains approved but not constructed. A Permit schedule of compliance item requires the Permittee to notify the Division in writing at least 30 days prior to construction of the West Highway I infiltration site.

An EDC, based on the findings and recommendations of the *Pipeline Infiltration Project – NDEP Investigation Report*, dated 21 December 2004, was approved by the Division in December 2005. The approval authorized removal of dewatering water conveyance pipelines at the five remaining Frome RIBs to prevent any future infiltration at the site, which has a history of very poor percolation rates.

The 2011 Permit renewal included a major modification to construct four Cottonwood Canyon I RIBs, on the northeast side of Crescent Valley in Eureka County, in accordance with designs based on guidelines previously approved by the Division for post-2004 construction (described below). Construction of the

Cottonwood I site, which was completed in 2012, would help offset the loss of infiltration capacity from the later (2015) closure of two West Highway II RIBs.

The Cottonwood I major modification also included construction of the Cottonwood I Booster Pump Station on the Dean Ranch property. Two 250-horsepower in-line pumps are used to pump Infiltration Water to the Cottonwood RIBs and/or to the Dean Ranch East Pivots for irrigation. An EDC was approved by the Division in June 2014 to add a third 250-horsepower pump parallel to the two existing 250-horsepower pumps. This increased the pumping capacity of the Cottonwood I Booster Pump Station from 7,000 gpm to 10,300 gpm, which allows better pumping service during the irrigation season to the Dean Ranch pivots. The Dean Ranch pivots have a peak water demand of 7,000 gpm, simultaneously with continued pumping to the Cottonwood I RIBs, which have demonstrated an infiltration capacity of approximately 4,000 gpm. Another EDC was approved by the Division in June 2014 to increase the pipeline capacity to accommodate the increased flow from the upgraded Cottonwood I Booster Pump Station. A second HDPE dewatering pipeline, with 30-inch diameter and standard dimension ratio (SDR) 17, was authorized to parallel the existing 24-inch diameter dewatering pipeline for approximately 22,100 feet, entirely on private land controlled by the Permittee, from near the western boundary of the Dean Ranch (in Section 17, Township 28 North, Range 48 East where the existing pipeline reduces from 36-inch diameter to 24-inch diameter) to the Cottonwood I Booster Pump Station (in Section 13, Township 28 North, Range 48 East). The new pipeline is outfitted with butterfly isolation valves, combination air-vacuum valves, and drain valves as needed.

In 2015, the two southernmost RIBs at the West Highway II site were permanently closed during construction of the Area 28 Tailings Storage Facility (TSF) Cell 4 Phase II Expansion (WPCP NEV0093109), because the RIBs were located within the TSF expansion footprint. The permanent closure included removal of concrete sumps and complete backfill of the RIBs with compacted engineered fill placed in maximum 3-foot loose lifts. The backfill material was obtained partly from the alluvial reclamation stockpiles adjacent to the RIBs and partly from similar alluvial overburden located in the Pipeline waste rock facility (WPCP NEV0093109).

In 2016, the Division approved a major modification to construct three new infiltration sites on the northeastern side of Crescent Valley (northeast of the Cottonwood I infiltration site) in Eureka County: Cottonwood II (four RIBs), Cottonwood III (four RIBs), and Cottonwood IV (four RIBs). This brings the total number of approved PIP RIBs to 74, located at 16 infiltration sites; however, these figures include the four RIBs at the idled Windmill IV site, which must have prior Division approval to be reactivated, and two RIBs at the West Highway I site, which are approved but have never been built.

In addition to the Cottonwood II, III, and IV infiltration sites, the 2016 major modification also included construction of a new double-lined Infiltration Surge Pond (Lander County), a Cottonwood II, III, IV Booster Pump Station (Lander County), and approximately 21.5 miles of dedicated pipeline (in both Lander and Eureka Counties) to supply dewatering water to the new infiltration sites. The 2016 major modification authorized the discharge of no more than 1.18 billion gallons of dewatering water per calendar quarter at the Cottonwood II, III, and IV sites combined, and the major modification did not change the Permit limit of 34,500 gpm for the total combined discharge rate to all PIP RIBs. All components of the 2016 major modification are located on private land controlled by the Permittee, although BLM land and private land not controlled by the Permittee are interspersed amongst the Permittee's land within the footprint of the resultant infiltration mound. In July 2019, the Division approved an EDC that increased the discharge rate from 9,000 gpm to 12,000 gpm to the Cottonwood II, III, and IV sites and increased the total combined discharge rate to all PIP RIBs to 37,500 gpm.

The Infiltration Surge Pond is located east of the Area 28 TSF (Cells 1 and 2) of the Pipeline Project (WPCP NEV0093109), on the northwest corner of the Pipeline waste rock facility. A platform for the Infiltration Surge Pond was created by excavating up to 100 vertical feet of waste rock, leaving approximately 50 vertical feet of waste rock below the pond and above the pre-mining ground surface. Analyses of waste rock near the pond indicate that it is not potentially acid generating (non-PAG), and that after contacting the waste rock, meteoric water will meet all Division Profile I reference values, except for arsenic (0.042 milligrams per liter (mg/L)). Although the water quality of the dewatering water is good, the Infiltration Surge Pond is double-lined to prevent any pond leakage from causing differential settlement of the underlying non-engineered waste rock.

The Infiltration Surge Pond capacity is approximately 5.87 million gallons at the 2-foot minimum freeboard level. From bottom up, the Infiltration Surge Pond containment system consists of subgrade (non-PAG waste rock), a minimum 5-foot thickness of engineered fill, a minimum 8-inch thick liner bedding layer, a 12-ounce per square yard (oz/yd^2) geotextile layer, a 60-mil HDPE secondary liner, a geonet leak detection layer, and an 80-mil HDPE primary liner. The engineered fill is placed in maximum 12-inch thick loose lifts, and both the engineered fill and the liner bedding layer are compacted to 95 percent of maximum dry density (American Society for Testing and Materials (ASTM) Method D1557). A pond leakage collection and recovery system (LCRS) is comprised of the geonet layer, a gravel-filled, geotextile-enclosed LCRS sump between the liners, and an LCRS port (Permit monitoring point ISP-LD), constructed of 12-inch diameter HDPE pipe with perforated lower end, which runs up the pond slope between the liners and daylights at the pond crest.

A 36-inch diameter HDPE Infiltration Surge Pond inlet pipeline, which branches off of the existing 36-inch diameter HDPE north dewatering main via a new steel wye, conveys dewatering water to the Infiltration Surge Pond. In March 2019, an additional 48-inch diameter HDPE dewatering pipe was tied into the 36-inch inlet pipeline. The inlet pipeline is contained within a 42-inch diameter polyethylene-wrapped steel secondary pipe where it is buried under a haul road. The inlet pipeline discharges to the pond via a 25-foot long, galvanized steel trough, which is installed on the pond liners at the pond crest with an intervening layer of conveyor belting used to protect liner integrity. The Infiltration Surge Pond is equipped with three piped outlets on the pond bottom. The outlets are for the Cottonwood I pipeline, the Cottonwood II, III, and IV pipeline, and an extra outlet pipeline, reserved for future use, which is blind-flanged where it daylights north of the pond. Each pond outlet is constructed with a reinforced concrete pad containing HDPE embed strips that both pond liners are field welded to in a circular configuration around a riser pipe. The 36-inch diameter HDPE riser pipe, which is capped with a galvanized steel screen, penetrates the concrete pad and is booted (upper boot) to the pond primary liner outboard of where the primary liner is welded to the embed strip. A waterstop is installed around the circumference of the riser pipe where it penetrates the concrete pad. Below the concrete pad, the buried 36-inch diameter HDPE outlet pipe makes a 90-degree bend (elbow) and then continues outward from the pond within a 42-inch diameter, HDPE or polyethylene-wrapped steel, secondary pipe for a specified distance until it daylights and continues as a single-walled pipe on the surface. The buried double-walled pipe has a minimum 0.5 percent downward gradient away from the pond to ensure visible gravity drainage of any leakage from the primary pipe. Under the pond, the secondary pipe terminates at the elbow; a 60-mil HDPE pipe boot (lower boot) provides secondary containment for the elbow, and is secured on either end using two stainless-steel bands.

The 36-inch diameter HDPE Cottonwood II, III, IV pipeline leads from the Infiltration Surge Pond to a new Cottonwood II, III, IV Booster Pump Station, located south of the cross-valley conveyor approximately 1.3 miles from the Infiltration Surge Pond. The Cottonwood II, III, IV Booster Pump Station consists of an 8-inch thick reinforced concrete slab housing three parallel 300 horsepower centrifugal pumps with 350 horsepower variable frequency drives. A short distance from the booster pump station, the 24-inch diameter steel booster pump station outlet pipe transitions to a 42-inch diameter HDPE pipe. At approximately 1.4 miles from the Infiltration Surge Pond, the Cottonwood II, III, IV pipeline transitions to 36-inch diameter steel. The pipeline continues with 36-inch diameter steel construction for most of its cross-valley alignment, until shortly before the Cottonwood II infiltration site, at approximately 15.7 pipeline miles from the Infiltration Surge Pond, where it transitions back to 42-inch diameter HDPE construction. The pipeline reduces to 30-inch diameter HDPE pipe after the Cottonwood III infiltration site, and reduces to 12-inch diameter HDPE pipe near its end at Cottonwood IV RIB D, approximately 21.5 pipeline miles from the Infiltration Surge Pond. The pipeline is buried wherever it crosses under roads and under agricultural fields on the Dean Ranch. Except for the double-walled sections near the Infiltration Surge Pond described above, all buried sections of the Cottonwood II, III, IV pipeline are single-wall pipe. Steel pipe is coated with polyethylene or epoxy where it is buried, but HDPE pipe is buried as is. Minimum burial depths are 4 feet under haul roads and 2 feet under other roads and agricultural fields. Pipe trench fill is compacted to 90 percent maximum dry density (ASTM Method D1557).

In October 2017, an EDC was submitted to address the Division's concern about the extra outlet pipeline in the southwest corner of the Infiltration Surge Pond potentially freezing causing a failure of the blind flange. Also due to the location of the outlet, failure at the blind flange could cause damage the ore conveyor that runs between Cortez Hills and Pipeline Projects.

To address the Division's concern and allow for operational flexibility by providing a redundant source of fresh water to Mill #2, BCI installed an additional section of pipe connecting the extra outlet pipeline from the Infiltration Surge Pond to the existing 36-inch dewatering Pipeline inlet at the Infiltration Surge Pond. The new pipeline is approximately 230 feet of HDPE pipe and ties into the north side of the conveyor belt. The existing inlet would be drained to prevent damage from water freezing in the pipe over winter, while it is not in use.

Operations is planning to continue use of the pipeline to deliver water to the Infiltration Surge Pond through the outlet at the bottom of the Infiltration Surge Pond, and once operations is ready to begin relocating the existing Mill water supply pipeline in the future pit expansions, the flow would be reversed and water would be delivered to Mill #2 from the Infiltration Surge Pond.

RIB Construction and Water Management: RIBs constructed prior to 2004 typically measure 100 to 200 feet wide and 400 to 500 feet long. To enhance operational efficiency, the general plan dimensions of 2004 and later RIBs were modified to 800 to 1,000 feet long by 200 feet wide. Pre-2004 RIB construction averaged 10 feet in depth, but operating experience and field and laboratory testing of the alluvium indicated much lower potential to mobilize soluble salts if the RIBs are excavated deeper. Therefore, beginning in 2004, RIBs have been constructed approximately 20 feet deep. A Permit limitation was added with the 2016 major modification requiring minimum 20-foot deep excavation for all Cottonwood II, III, and IV RIBs. The 2016 Permit limitation also required management of Cottonwood II, III, and IV RIBs to prevent water levels in the RIBS from rising to less than 17 feet below the surrounding native ground surface in an effort to further minimize the mobilization of soluble constituents from the RIB walls. Material excavated from a RIB is stockpiled immediately adjacent to the RIB to facilitate reclamation. For the 2004 and later RIBs, the stockpile footprints average 950 feet long by 200 feet wide with the material stacked approximately 30 feet high. The RIBs are designed and operated to contain the 100-year, 24-hour precipitation event.

In general, from the dewatering well collection manifold, water is conveyed to the various infiltration sites through HDPE and steel pipelines that typically decrease in size as the system branches to the individual sites. Except as noted, the pipelines run along the ground surface and through culverts where they pass beneath roads. The infiltration water pipelines do not share any process component containment. Near the entrance to an infiltration site, unless already reduced in diameter, the main conveyance pipeline is reduced to 24-inch diameter HDPE pipeline, or if the main conveyance pipeline continues on past that infiltration site, a 12- to 16-inch diameter HDPE distribution pipeline tees off from the main conveyance pipeline. The main or distribution pipeline feeding each infiltration site is fitted with a totalizing flow meter.

Within an infiltration site, the dewatering water is distributed to each RIB through dedicated 12-inch diameter HDPE RIB inlet pipes equipped with butterfly valves, which are used to manage flow amongst two or more RIBs. The RIB inlet pipe runs down the RIB sideslope to the bottom of the basin, typically near one end of the RIB. The inlet pipeline terminates with an elbow and a 3-foot high riser pipe encased in a 3-foot thick by 10-foot square layer of riprap having a mass median diameter (D_{50}) of 9 inches. There are no totalizers or flow meters at individual RIBs; as described above, individual RIB flow rates are calculated from other data.

The RIBs are commonly constructed in pairs, one upgradient and one downgradient, typically 100 to 600 feet apart. The upgradient RIB has a 5-foot diameter basin overflow manhole located within the lower sideslope of the RIB. The manhole is constructed of precast concrete rings to a height of about 7 feet above a concrete base set into the floor of the RIB (maximum 3 feet above the concrete base for Cottonwood II, III, and IV RIBs to comply with the maximum water level limit noted above). If water in the RIB reaches the top of the manhole, it will overflow through a trash screen and flow by gravity through a 16-inch diameter HDPE overflow pipeline that discharges into the downgradient RIB. Each downgradient RIB, therefore, includes two inlet pipelines: the overflow pipeline from the upgradient RIB, and the normal RIB inlet distribution pipeline. Both inlets are constructed to the same design as the RIB inlet pipe termination structure described above. Each downgradient RIB includes an emergency overflow spillway constructed into the downgradient crest in the unlikely event the RIB overtops. The spillway connects to a surface riprap apron downgradient of the RIB. The spillway is a minimum of 10 feet wide and 2 feet deep, with a 12-inch thick layer of riprap over a base layer of geotextile. The Permit prohibits surface discharges from RIBs; spillways are constructed for emergency use only.

Water Quality Monitoring: Under current operating conditions, approximately 70 percent of the pumped dewatering water is returned to the source Crescent Valley hydrographic basin (State of Nevada Hydrographic Area N$^{o.}$54 - Crescent Valley) by infiltration. The balance of the dewatering water goes to consumptive uses such as mill and leach processes, dust suppression, and irrigation, or is lost to evaporation. Irrigation currently receives an allocation of approximately 6,000 gpm, although that allocation is not regulated by this Permit.

Dewatering water baseline water quality is generally good with analyses reporting naturally elevated constituent values for fluoride (1.3 to 3.3 mg/L from 2011 to 2015) and total dissolved solids (TDS) (360 to 580 mg/L from 2011 to 2015). Although elevated, these concentrations do not exceed the Division Profile I groundwater reference values of 4.0 mg/L for fluoride and 1,000 mg/L for TDS.

The infiltration discharge is monitored daily for flow rate, weekly for pH and specific conductivity, and quarterly for Division Profile I chemical parameters. The Permit prohibits the facility from degrading waters of the State to the extent that applicable water quality standards (e.g., the Division Profile I reference values for groundwater) and background concentrations are exceeded. Groundwater monitoring wells are installed both upgradient and downgradient of the RIBs, and are monitored quarterly for water quality to ensure compliance with this requirement.

Until 2004 (see below), depth to water was monitored on a monthly basis at 76 monitoring well locations surrounding the infiltration sites and 72 of those wells were also monitored for water quality. Of those water quality wells, a primary group of 65 wells are located immediately peripheral to the infiltration sites and were sampled quarterly for Profile I chemical parameters. The remaining seven wells served as sentinel groundwater-monitoring wells to monitor Crescent Valley groundwater quality between the upgradient infiltration sites and the downgradient water rights, prior to the infiltrated groundwater reaching the valley aquifer.

Of the original seven-well sentinel well group identified above, wells IZ-18, IZ-19, and IZ-20 were existing wells already identified in the Permit. The Wintle, Dean Ranch, FMW-06S, and FMW-07S wells were added to the Permit as sentinel wells as an EDC modification approved by the Division in August 2003. This original group of seven sentinel wells is situated in a generally south-to-north trending line, parallel to the axis of the valley floor, between the Shoshone Range on the west and the Cortez Mountains on the east.

As discussed above, an EDC modification, based on the findings and recommendations of the *Pipeline Infiltration Project – NDEP Investigation Report*, dated 21 December 2004, authorized a reduction in the total number of wells used for water quality monitoring from 72 to 31. The number of primary group wells was reduced from 65 to 19 wells in order to monitor more representatively the actual groundwater quality and to eliminate water quality monitoring of wells screened within infiltration mounds, except where the infiltration mound water may be used by an existing domestic, stock, or irrigation well. The number of sentinel groundwater-monitoring wells was increased from seven to 12 with the installation of five new wells.

In addition to a modification of the total number, location, and purpose of monitoring wells, enhanced parameters for commissioning and managing new RIBs were implemented as a result of the investigation. New requirements include installation of at least one upgradient groundwater monitoring well and at least two downgradient groundwater monitoring wells for each infiltration site, preferably located laterally outside of the maximum extent of the modeled infiltration mound; screening of the groundwater monitoring wells within the upper 20-30 feet of the ambient (pre-dewatering/pre-infiltration) groundwater level; baseline sampling of the wells prior to commencement of new RIB operation; and placement of piezometer wells within the predicted infiltration mound adjacent to the RIBs that will be used only for infiltration mound management and not for water quality analysis.

Careful management of infiltration rates and infiltration mound limits is critical to minimize the potential to mobilize locally occurring constituents in the alluvium and for maintaining alluvial groundwater quality at the compliance monitoring wells. In response to continued sporadic exceedances of nitrate concentrations in water quality samples for sentinel groundwater monitoring well FMW-07S, the Permittee submitted an action plan in September 2011, based on an investigation of potential sources and designed to mitigate the potential for future exceedances. The Division accepted the action plan and incorporated it as a Permit schedule of compliance item by reference in the 2011 Permit renewal. The 2016 major modification included a new schedule of compliance item requiring submittal of an updated corrective action plan to reduce nitrate concentrations in the vicinity of sentinel monitoring well FMW-07S.

Due to elevated constituents and nitrates, EDCs were submitted and approved in July 2016 by the Division in accordance to the submitted Corrective Action Plans. The EDCs added three new monitoring wells to the sentinel well group, IZM-19S, IMZ-19D and FMW-07S2. IZM-19s and IZM-19D are down gradient of IZ-19. FMW-07S2 is next to FMW-07S for sampling the mound water. The as-builts were approved 7 November 2016.

In 1993, prior to initiation of dewatering activities, 68 seeps and springs were surveyed in the southern portion of Crescent Valley below an elevation of 6,000 feet above mean sea level (AMSL). As part of BLM reporting requirements, quarterly monitoring at 24 of these sites is performed to identify and mitigate potential water quantity impacts of the dewatering and infiltration operations. Analyses include flow rate, specific conductivity, pH, temperature, and dissolved oxygen content. An annual summary report is provided to the Division.

Cottonwood Infiltration Sites Groundwater Monitoring: Construction of the Cottonwood I infiltration site in 2012 included three new piezometer wells and five new primary group monitoring wells. The new primary group wells include one upgradient (IM-63S) and four downgradient wells (IM-64S, IM-64D, IM-65S, and IM-65D). These additional primary group wells increased the total number of basin primary groundwater monitoring wells in the Permit to 24, and the total number of water quality wells in the Permit (including the 12 sentinel wells) to 36.

An EDC was approved by the Division in January 2015 to add nine new piezometers and 18 new monitoring wells (three upgradient and 15 downgradient) in anticipation of the future major modification proposal to construct the Cottonwood II, Cottonwood III, and Cottonwood IV infiltration sites. November 2016, the nine piezometer wells were constructed and the wells were approved.

Seven of the 15 new Cottonwood downgradient monitoring wells added to the Permit (DRMW-01S, DRMW-01S2, DRMW-01D, DRMW-02S, DRMW-03S, DRMW-03S2, and DRMW-03D) were installed in the middle of the predicted footprint of the infiltration mound, because the privately owned Dann Ranch is located within the predicted mound footprint west of the Cottonwood III infiltration site, and the infiltration is predicted to cause a significant increase in water elevation in existing domestic, irrigation, and stock wells on the Dann Ranch property. Therefore, these seven monitoring wells were installed immediately upgradient of existing Dann Ranch wells with the purpose of monitoring the groundwater underneath, and within, the anticipated infiltration mound to verify that no groundwater degradation occurs as a result of the new RIBs. There are 16 additional private land owners (other than the Permittee and the owners of the Dann Ranch) with property located both within a 5-mile radius of the Cottonwood II, III, and IV infiltration sites, and within or near the predicted 5-foot infiltration water elevation increase contour; however, there are no known wells or springs on those properties. The other eight new downgradient monitoring wells added to the Permit (IM-66S, IM-66D, IM-67S, IM-67D, IM-68S, IM-68D, IM-69S, and IM-69D) are located near the predicted downgradient limit of the infiltration mound. There are no known users of groundwater located downgradient of these wells, and the wells are screened entirely within the pre-infiltration groundwater (not within the anticipated infiltration mound).

The three new upgradient monitoring wells added to the Permit (IM-70S, IM-71S, and IM-72S) are located upgradient of the Cottonwood II, III, and IV infiltration sites, respectively. Because of limited space between the new infiltration sites and the Cortez Mountains range front, the upgradient monitoring wells could not be located outside of the anticipated footprint of the infiltration mound while still being situated to monitor groundwater in the alluvial fan system that will host the new infiltration sites. The upgradient monitoring wells are screened entirely within the pre-infiltration groundwater. There are no known upgradient users of groundwater that will be impacted by the new infiltration mound.

Two additional monitoring wells were added to the Permit with the 2016 major modification, bringing the total number of water quality monitoring wells in the Permit to 56. Both are preexisting ranch wells controlled by the Permittee and located within the modeled footprint of the Cottonwood infiltration mound north of the Cottonwood IV infiltration site. Well 18318 is an irrigation well (Nevada Division of Water Resources (DWR) water rights application 29778) located approximately 2 miles north of the Cottonwood IV site. Well 2112 is a stock well (DWR water rights application 14726) located approximately 1.5 miles northwest of well 18318 and approximately 0.5 mile southwest of monitoring wells IM-68S and IM-68D.

Cottonwood Infiltration Sites Hydrogeochemical Evaluation: Hydrologic modeling indicates that the combined Cottonwood I, II, III, and IV infiltration mound will increase water elevations at least 5 feet in wells located up to 3.3 miles northwest (downgradient) of the Cottonwood infiltration sites. The modeled 5-foot water elevation increase contour also extends approximately 6.4 miles northeast of the Cottonwood IV infiltration site, and approximately 2.6 miles southwest of the Cottonwood I site. Existing wells on the Dann Ranch, which are located approximately 0.25 to 2.5 miles west of the Cottonwood III infiltration site, are predicted to experience maximum water elevation increases of 14 to 38 feet, but the water quality is not expected to be degraded above Division Profile I reference values and pre-infiltration background concentrations (see below). The actual timing and magnitude of the maximum water elevation increase depends on the distance and direction from the infiltration sites, and on the actual timing and rate of discharge to the RIBs. The hydrologic model indicates that for most downgradient and cross-gradient wells located within the predicted 5-foot water elevation increase contour, the maximum water elevation increase is expected to occur eight to 15 years after infiltration begins at the Cottonwood II, III, and IV infiltration sites; however, those predictions may change depending on the actual rates of infiltration. The hydrologic model predicts that water elevations in the same wells will take from seven years to more than 45 years to return to pre-infiltration values after infiltration ceases. The shallowest predicted depth to the Cottonwood infiltration mound is 4 feet below ground surface (bgs), located in Section 32, T29N, R49E, approximately 0.5 mile west of the Dann Ranch and approximately 2.1 miles northwest (downgradient) of the Cottonwood II infiltration site. The shallowest predicted depth to the infiltration mound in monitoring wells immediately upgradient of the Dann Ranch is 16 feet bgs in DRMW-01S2. The Permit requires that the infiltration system be managed to prevent the formation of surface seeps, artificial springs, or other surface water bodies.

Meteoric Water Mobility Procedure (MWMP)-Profile I analyses performed on successive column test flushes of alluvial drill samples from the Cottonwood II, III, and IV infiltration sites suggest that there would be a potential to mobilize aluminum, arsenic, fluoride, nitrate, and TDS and degrade groundwater under the

RIBs if the uppermost alluvium was not removed first. Therefore, as is customary at the Project, and in accordance with the 2016 Permit limitation noted above, the Cottonwood II, III, and IV RIBs will be excavated to at least 20 feet bgs to remove the uppermost alluvium. Also as noted above, the Cottonwood II, III, and IV RIBs will be managed to prevent water levels in the RIBs from rising to less than 17 feet bgs.

MWMP-Profile I column flush tests were also performed on alluvial drill samples collected during installation of three monitoring wells on property controlled by the Permittee immediately upgradient of Dann Ranch wells. The test results indicate no potential for degradation of groundwater in the vicinity of monitoring wells DRMW-02S and DRMW-03S, when considered in conjunction with available groundwater monitoring data from those wells and the predicted depths to the infiltration mound. But in the uppermost portion of the infiltration mound, in the vicinity of monitoring well DRMW-01S2 only, the column flush test results suggest the possibility of temporary (first flush only) degradation of groundwater with respect to arsenic (0.022 mg/L) and nitrate (13 mg/L). Upon further evaluation, however, these Dann Ranch column flush results appear to be overestimates of future groundwater concentrations and no groundwater degradation is expected as a result of the Cottonwood infiltration. The Dann Ranch column flush results are considered overestimates because: 1) the column flush samples used to predict the chemistry of the uppermost infiltration mound included relatively salt-enriched alluvium collected from shallower depths than the infiltration mound is predicted to occur at in this area; 2) comparison of actual groundwater concentrations (pre-infiltration) from monitoring wells (e.g., DRMW-01S and DRMW-01D) with column flush test results from the same depths in the same monitoring wells indicates that the groundwater meets all Division Profile I reference values and is significantly lower in metals concentrations (e.g., aluminum, arsenic, and iron) than the column test results from the same sample interval; and 3) concentrations in the infiltration mound are expected to be lower than the concentrations in the column tests due to greater attenuation by alluvium and greater dilution in the natural environment. Nonetheless, the column test results underscore the need for routine groundwater quality monitoring concurrent with infiltration activities, and prompt mitigating action if any degradation is detected, as stipulated in the Permit.

Comparative studies indicate that the character of the alluvium and the hydrogeochemical conditions present near the Cottonwood II, III, and IV sites are similar to those near the Cottonwood I site. As of 2021, no groundwater exceedances of Division Profile I reference values and pre-infiltration background concentrations have been observed in Cottonwood I monitoring wells since the Cottonwood I infiltration began in November 2012, except for slight exceedances of naturally elevated background fluoride concentrations in monitoring wells IM-65S and IM-65D (pre-infiltration background 3.0-4.5 mg/L; post-infiltration 4.0-5.1 mg/L). Cottonwood II, III, and IV monitoring wells do not exhibit pre-infiltration fluoride exceedances, so fluoride is not expected to be a problem there.

Therefore, the Cottonwood II, III, and IV RIBs are not expected to degrade groundwater quality.

Pipeline Fissure Zone: In November 2002, the main dewatering conveyance pipeline experienced a broken weld resulting in a release of approximately two million gallons of dewatering water to the ground surface. The released water encountered subsidence-induced cracks located east of the mine facilities, which were caused by previous dewatering of the underlying formations and resulted in erosional formation of fissure gullies referred to as the Windmill Fissures.

The Windmill Fissure zone was mapped and evaluated with aerial photography, remote sensing techniques, and ground-truthing survey methods by AMEC Earth and Environmental Consulting (AMEC). At the recommendation of AMEC and with the concurrence of the Division and the BLM, the fissure gullies were backfilled and overdumped with alluvium and non-PAG waste rock. Based on the completed study, it was determined that little potential exists for substantial offset across the subsidence cracks or fissure gullies. However, if allowed to form and propagate, fissure gullies could potentially disrupt roads and compromise constructed facilities. Therefore, dewatering water conveyance pipelines passing over the zone with the greatest potential for the formation of subsidence cracks were placed within an HDPE-lined channel to minimize the potential of a future release eroding the cracks and creating additional fissure gullies. Based on AMEC recommendations, a surveyed network of subsidence and ground strain monitoring points was established and monitoring results are collected and reported quarterly.

Cortez Underground Exploration Project Water Handling System: In July 2005, construction was initiated on a decline within the F-Canyon Pit, one of the three original pits from which material was historically mined for processing at the Cortez Gold Mine Mill #1 (WPCP NEV0000023), to provide access for underground exploration of the Cortez Hills gold deposit as part of the Cortez Underground Exploration Project. An EDC, approved by the Division in May 2006, authorized construction of temporary Water Supply and Event pipelines to support decline construction activities as part of WPCP NEV0000023 and was subsequently transferred to the new Cortez Hills Project WPCP NEV2007106 in May 2009. The decline intercepted the water table approximately 350 feet below the elevation of the decline portal (approximately 4,950 feet AMSL). Dewatering requirements can increase to as much as 5,000 gpm for peak flows when water-bearing fractures are first intercepted. Dewatering flow from all sources, which include underground sumps, drill holes, and surface dewatering wells located along the trace of the decline, is anticipated to average about 2,500 gpm or less for the life of the Project.

To handle the anticipated flow volumes and to plan for potential future deposit development, the Cortez Underground Exploration Project Water Handling System proposal was submitted as a group of three EDC modifications, approved October

2006. The modifications, each of which is tied to the project where the dewatering water is discharged or consumed, affected the Cortez Mine Project (WPCP NEV0000023) (transferred to WPCP NEV2007106 in May 2009), the Pipeline Project (WPCP NEV0093109), and the Pipeline Infiltration Project (WPCP NEV0095111). All three projects are located within the same hydrogeologic region (State of Nevada Hydrographic Area N$^{o.}$ 54 – Crescent Valley) as the dewatering water source.

For the purposes of dewatering water handling and management, the water removed is identified as either "Contact Water" or "Infiltration Water" and each is directed to a separate and dedicated portion of the approved system. Contact Water is water collected from either underground mining sources or dewatering wells that, due to either "contact" with mining products or mined materials, or due to naturally occurring contained constituents, exceeds one or more of the Division Profile I water quality reference values. Contact Water may only be consumptively used in process components unless the quality is modified to meet the criteria required for infiltration. Dewatering water that meets all the Division Profile I reference values, or water quality criteria that may be specific to a particular WPCP, is termed Infiltration Water and may be either discharged to RIBs or used for other approved consumptive uses outside containment, such as dust control.

It should be noted that the most common constituent exceedances, especially for water extracted through the dewatering wells, are for iron and manganese, which are usually the product of the oxygen-depleted reducing condition of the groundwater. Studies demonstrate that aeration alone will often bring this water within the Profile I reference values and make the water suitable as Infiltration Water. Therefore, this natural chemical process, combined with physical methods of segregating better quality water in the underground workings to prevent contamination, results in a much smaller proportion of the total volume of dewatering water being classified as Contact Water.

The Pipeline Infiltration Project (WPCP NEV0095111) portion of the Cortez Underground Exploration Project Water Handling System, now more accurately designated the Cortez Hills Project Water Handling System, is generally comprised of: the steel F-Canyon Portal Surge Tank; the 24-inch diameter HDPE Cross-Valley Infiltration Water ('I-1') Pipeline; the single-layer HDPE-lined Infiltration Water Containment Pond; associated knife and butterfly valves; air-, vacuum-, and combination air-vacuum-release valves; pond uptake and discharge structures; and road-crossing pipeline containment with leak detection ports. The Pipeline Infiltration Project portion of the system allows Infiltration Water to be stored briefly in the F-Canyon Portal Surge Pond, bled through a one-way check valve into the 6-inch diameter portion of the Contact Water Pipeline to provide flow or volume adjustment, discharged into the Cortez Mine Water Storage Reservoir Pond (WSR) South Cell, or to be directly conveyed to the main Pipeline Infiltration Project dewatering water trunk pipeline for discharge to the permitted RIBs.

Infiltration Water from sources along the F-Canyon Portal decline is conveyed through three 12-inch diameter HDPE inlet pipelines to the F-Canyon Portal Surge Tank. As surface dewatering wells are developed for the Cortez Hills open pit (CHOP) and/or the Cortez Hills underground (CHUG) operations, they are connected into the system using 6-inch to 12-inch diameter HDPE pipelines, depending on well production rates. The F-Canyon Portal Surge Tank is a cylindrical, open-topped, steel tank measuring 32 feet in diameter and 23 feet tall. The tank has a minimum 2-foot freeboard (21-foot tank elevation) dictated by an overflow pipe tied to the inlet to the 24-inch diameter HDPE Cross-Valley Infiltration Water ('I-1') Pipeline. Excluding the freeboard, the tank has a capacity of approximately 126,000 gallons. Inlet pipelines from the portal are plumbed to discharge into the tank from the top. An internal tank weir allows for stilling of flow to the inlet to the 'I-1' Pipeline.

Small amounts of Infiltration Water can also be bled into the Contact Water Pipeline near the F-Canyon portal. A section of 6-inch diameter HDPE pipeline, equipped with a gate valve and directional check valve, is designed to convey Infiltration Water from the 24-inch diameter Infiltration Water Pipeline at a location downgradient from the F-Canyon Portal Surge Tank into the 'C-2' Pipeline in the event flow or volume adjustments are required. The gate valve and check valve are designed to prevent back-flow of Contact Water into the 'I-1' Pipeline.

The 'I-1' Pipeline parallels the smaller diameter Contact Water Pipeline ('C-2' Pipeline, permitted under WPCP NEV0093109) along a westerly surface route from the WSR. Approximately 2,000 feet west of the WSR, the pipelines intersect the power line easement, cross over to place the 'I-1' Pipeline on the north-northeast side of the 'C-2' Pipeline, and follow the corridor in a northwesterly direction across Crescent Valley to the eastern edge of the Pipeline Project site where the 'I-1' Pipeline connects to the existing Pipeline Infiltration Project, 36-inch diameter HDPE, main dewatering water trunk pipeline. The connection is made through a steel wye equipped with a butterfly valve and a check valve to ensure Infiltration Water in the 'I-1' Pipeline flows only into the main trunk line.

An EDC was approved by the Division in June 2014 for construction of a second 24-inch diameter HDPE Cross-Valley Infiltration Water Pipeline, designated herein as the 'I-2' pipeline to distinguish it from the existing 'I-1' pipeline. The new 'I-2' pipeline extends approximately 38,000 lineal feet from the F-Canyon Portal Surge Tank to the tie-in to the 36-inch diameter Pipeline Project main dewatering water trunk pipeline near the Area 28 Cell 4 TSF. The 'I-2' pipeline parallels the 'I-1' pipeline within the existing pipeline corridor. The 'I-2' pipeline ties into the 'I-1' pipeline via a steel wye adjacent to the F-Canyon Portal Surge Tank. Like the 'I-1' pipeline, the 'I-2' pipeline is equipped with butterfly isolation valves, air release valves, and air-vacuum valves at appropriate locations, drain valves at the Infiltration Water Containment Pond, and a check valve at its tie-in to the Pipeline Project main dewatering trunk pipeline to prevent backflow from the trunk pipeline into the 'I-2' pipeline. The addition of the 'I-2' pipeline increases the Cross-Valley Infiltration Water distribution capacity from approximately 6,400 gpm to approximately 13,000 gpm.

Both the 'I-1' and 'I-2' pipelines are located on the surface with a parallel down-gradient control berm and will drain, if repair or shut-down is necessary, to the Infiltration Water Containment Pond. The Infiltration Water Containment Pond is located at the lowest point in Crescent Valley along the pipeline corridor between the F-Canyon Portal and the main dewatering water trunk pipeline. The Infiltration Water Containment Pond is located across from the Contact Water Containment Pond (WPCP NEV0093109).

The Infiltration Water Containment Pond measures approximately 155 feet on a side, is approximately 10 feet deep, and has a capacity of approximately 867,000 gallons with a 2-foot freeboard. The pond has been sized to contain 110 percent of the maximum volume that could drain, due either to maintenance or emergency requirements, from the east and the west limits of either the 'I-1' or 'I-2' pipelines. The pond is lined with a single layer of 60-mil HDPE placed on a 1-foot-thick layer of native soil compacted to 90 percent maximum dry density as determined by ASTM Method D1557 (modified Proctor). The pond perimeter is graded to maintain a 5 percent drainage slope for at least 12 feet away from the pond crest and the liner anchor trench. The pond is equipped with a standard outlet diffuser pipe and an uptake riser pipe and uptake sump, of the same design as that used in the WSR, for pond evacuation.

Pipeline road crossings are constructed beneath the roads with pipe-in-pipe secondary containment, and include leak detection and evacuation ports at one crossing where the secondary containment is not free draining. The secondary containment for both the 'I-1' and 'I-2' pipelines consists of 30-inch diameter corrugated steel pipe (CSP) placed at least 2 feet below the road surface and surrounded with pipe bedding material compacted to at least 95 percent maximum dry density as determined by ASTM Method D1557. Vertical leak detection and evacuation ports (I1-84/14 and I2-84/14) are constructed of 8-inch diameter CSP located directly above the low point of the non-freely-draining secondary containment CSP.

Between the WSR and the point where the 'I-1' and 'C-2' pipelines diverge at the eastern edge of the Pipeline Project boundary, the pipelines are placed approximately 10 feet apart. Pipeline anchor berms are located at 1,000-foot intervals where the gradient is less than 4 percent, at 500-foot intervals where the gradient is greater than 4 percent, and upgradient and downgradient from all pipe fittings, tees, and valves to minimize lateral pipeline movement.

All pipeline bends, angles, tees, and valve connections are constructed of standard steel with 150-pound flange connections to the HDPE pipeline. Air-release, vacuum-release, combination valves, and drain valves are placed at locations along the pipeline to ensure proper flow and drainage as necessary. Pipeline connections are equipped with check-valves, where necessary, to prevent mixing of Contact Water and Infiltration Water, to prevent inundation of the system from other sources, and to ensure the required flow direction, from east to west, is maintained. The HDPE pipeline thicknesses used in construction are based on requirements calculated for specific sections of the pipeline relative to potential hydraulic head pressure and topography considerations.

Weekly flow monitoring is conducted at all pipeline inlets and outlets and Division Profile I water quality analyses are reported quarterly for samples collected from the same locations. Road crossing leak detection ports are inspected weekly.

An EDC approved November 2016 by the Division, proposed a pipeline and booster pump station to connect the Cross Valley Infiltration Water pipelines to the new Cottonwood II, III, and IV RIBs through the surge pond.

The proposal adds wyes to the existing 24-inch Cross Valley mains at the closest location to the surge pond; a valve was installed on the downstream side to direct water to the existing mains or the surge pond. The 24-inch wyes connect to a 30-inch HDPE pipe which runs to the surge pond. A booster pump station was constructed near the middle of the 30-inch HDPE main. The 30-inch HDPE main is about 3,200 feet long manufactured with 4710 polyethylene resin with a pipe standard dimension ratio of 21.

Three booster pumps are proposed with two operating in parallel at any time and a third on standby. The booster pumps are needed to supply the surge pond with up to 12,800 gpm, the head pressure of the Cross Valley mains could only deliver 10,500 gpm. An emergency pump by-pass line was installed between the pump station and surge pond connected to the surge pond by-pass line back to the Highway RIBs.

The proposed operating life is approximately 10 to 15 years. The pumps will require occasional maintenance but should remain operational throughout the life of the project.

Petroleum-Contaminated Soil Management: An EDC for a Petroleum-Contaminated Soil (PCS) Management Plan was approved by the Division in August 2021. No PCS storage or disposal is approved for the facility. The Permittee is required to remove all PCS from the facility for provisional storage and disposal at the approved Pipeline Project waste rock dump (WPCP NEV0093109) in accordance with the approved PCS Management Plan and the Division Guidance for Mine-Site PCS Management Plans.

C. Receiving Water Characteristics

The receiving water is the alluvial groundwater in southern Crescent Valley. Pre-infiltration depths to groundwater ranged from 60 to 135 feet bgs at most infiltration sites in the Project; however, the pre-infiltration groundwater depths at Cottonwood II, III, and IV infiltration sites range from 170 to greater than 380 feet bgs. Pre-infiltration groundwater depths in Cottonwood II, III, and IV downgradient monitoring wells range from 10 to 158 feet bgs.

The baseline quality of the alluvial groundwater generally meets the Division Profile I water quality reference values, with localized, slightly elevated natural baseline levels for arsenic, manganese, iron, cadmium, fluoride, and/or thallium. There are no widespread exceedances of Division Profile I reference values, although arsenic commonly occurs naturally at levels at or slightly above the 0.01 mg/L Division reference value. The alluvium has also been shown to effectively attenuate most chemical constituents, including arsenic, which further protects against groundwater degradation. The pre-infiltration baseline groundwater quality in Cottonwood II, III, and IV monitoring wells meets all Division Profile I reference values, except for naturally elevated manganese up to 0.44 mg/L in some wells.

In June 2019, the Division approved an attenuation evaluation titled 'Crescent Valley Groundwater Analysis,' the submittal evaluated the attenuation capacity of the alluvial material for arsenic and antimony left in Crescent Valley since infiltration began at the site. The report indicated there are approximately 29 years of active infiltration at Windmill/Rocky Pass Infiltration Basins before the attenuation capacity is reached, 48 years at the Highway Infiltration Basins, and 78 years at the Cottonwood Infiltration Basin. These approximations are based on the existing mound water elevations under each of the corresponding infiltration basins and confined by the 10-foot contour interval increase from the existing groundwater elevation.

Most surface drainages in the Project area are ephemeral; however, Duff Creek, which runs between the RIBs of the Cottonwood IV infiltration site, flows perennially in its upper reaches. Duff Spring is located in the Duff Creek drainage approximately 0.9 mile upgradient of the Cottonwood IV site. Upgradient stormwater diversions are installed at all infiltration sites, as warranted, to divert surface water drainages away from the RIBs. Because of locally shallow groundwater downgradient of the Cottonwood infiltration sites, Cottonwood infiltration rates must be adjusted as warranted to prevent the formation of surface seeps or significant increases in water level or flow rate of existing surface water bodies.

D. Procedures for Public Comment

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

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

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

E. Proposed Determination

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

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

See Section I of the Permit.

G. Rationale for Permit Requirements

The discharge must not degrade waters of the State. Monitoring wells will be used to detect any changes in receiving groundwater quality. The system is required to withstand flows from the 100-year, 24-hour storm event, and contain the 25-year, 24-hour storm event.

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 (covering with netting), and 2) chemical detoxification. These approaches may be facilitated by minimizing the extent of 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, (775) 784-5227, for additional information.

Prepared by: Natasha Zittel
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