FACT SHEET

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

Permittee Name:	Nevada Rae Gold, Inc.
Project Name:	Black Rock Canyon Mine and Mill Project
Permit Number: Review Type/Year/Revision:	NEV2004102 Renewal 2015, Fact Sheet Revision 00

A. Location and General Description

Location: The facility, known as the Black Rock Canyon Mine and Mill **Project**, is located on a combination of public (unpatented mining claims) managed by the U.S. Bureau of Land Management Mt. Lewis Field Office, Battle Mountain and private land situated in east-central Lander County, within portions of Sections 4 and 10, Township 29 North (T29N), Range 47 East (R47E) (Mine site); and Section 19, T29N, R48E (Mill site), Mount Diablo Baseline and Meridian, approximately 24 air-miles southeast of the town of Battle Mountain and approximately 60 air-miles southwest of the town of Elko. Access to the Project area is possible by traveling approximately 30 miles east from Battle Mountain, or approximately 40 miles west from Elko, on Interstate Highway 80 to the Beowawe interchange exit #261. Proceed south on paved Nevada State Route 306 approximately 19 miles, through the communities of Beowawe and Crescent Valley, to the Project Mill site located along the west side of the highway. The Mine site is accessed from the Mill site by traveling approximately 5 miles west on an all-weather gravel haul road.

General Description: The Project is a dry screening placer mining operation using gravity separation methods, permitted in accordance with NAC 445A.414, to process a maximum of 810,000 tons of ore per year. Gold-bearing gravels are dry-screened at the Mine site in Black Rock Canyon and hauled by truck to the gravity separation Mill located approximately 5 miles to the southeast. The facility is designed to operate approximately 12 hours per day and process up to 150 cubic yards of feed material per hour. Water is used in the Mill circuit and, except for the approved flocculant, chemicals are not approved for use in the process. During the life of the Project, approximately 163 acres of public land and 60 acres of private land will be disturbed.

B. <u>Synopsis</u>

General: The Black Rock Canyon Mine and Mill Project is comprised of a placer gold mining operation located primarily within the Black Rock Canyon drainage and a gravity separation Mill located approximately 4 miles southeast of the mining area, adjacent to Nevada State Route 306. Black Rock Canyon drains a portion of the eastern flank of the Shoshone Mountain Range and reports only

ephemeral flows in response to major storm events and spring snow melt. The Project areas were previously operated by John Uhalde as the Uhalde Lease under Water Pollution Control Permit (WPCP) NEV0094103, which was permanently closed in 2003. In April of 2004 Nevada Rae Gold, Inc (Permittee) was issued the current WPCP NEV2004102.

Mining: The mining operation consists of a series of adjacent excavations approximately 200 feet long by 40 feet wide within the fluvial and alluvial gravels along the reach, and perpendicular to the axis, of Black Rock Canyon. The placer material is extracted with a 2.5 cubic yard excavator and transported by 20 cubic yard articulated trucks to a nearby raw ore stockpile. A front-end loader is used to feed raw ore into a mobile power screen (grizzly) where the plus 3-inch diameter fraction is removed. This screening activity reduces the volume of material to be processed through the Mill by approximately 60% without any substantial loss of gold values. The over-size material is used as excavation backfill during ongoing reclamation and the undersize ore material is loaded into haul trucks for transport from the Mine site to the Mill site. Approximately 750 to 1,000 cubic yards of material can be transported to the Mill site during a daily 12-hour shift. The Permit requires reject and sediment be returned to the Mine site within sixty (60) days of processing.

Storm runoff is diverted around the Mine and into natural drainages with perimeter stormwater diversion ditches. Culverts are installed at locations where the Mine access and haul road crosses watercourses that could carry flow in response to the 100-year, 24-hour storm event. The culvert inlets and outlets are armored with riprap.

Mill: The Mill is a conventional wash plant situated within a building with a poured concrete floor and stem walls. The Mill is designed to accommodate up to 150 cubic yards per hour (approximately 225 tons per hour). An engineering design change (EDC) was approved in August 2008, for modification of the Mill process circuit based on historic operating experience. The approved processing rate for the Mill was not affected by the approved change in the circuit design. The Mill uses an average of 1,300 gallons per minute (gpm) of combined recycle and make-up water.

A front-end loader is used to place the minus 3-inch diameter material delivered from the Mine site into a 30-ton-capacity feed hopper with a vibrating grizzly and high-pressure water sprays, which removes debris and material greater than two (2) inches in diameter. Undersize material reports to a pair of blind scrubber-and-trommel screens for washing and further size classification. A conveyor moves plus ¹/₄-inch material to the Reclamation Stockpile for subsequent transport by truck back to the Mine site for use as backfill or other approved use within sixty (60) days after processing. The minus ¹/₄-inch material from the trommels reports to a 48-inch diameter Knelson Bowl concentrator (Knelson 48).

Underflow from the Knelson 48 reports to a concentrate decantation sump and is pumped to a holding tank located in the Gold Room. Overflow from the Knelson 48 reports to a sump and is pumped to a 30-inch diameter Knelson Bowl concentrator (Knelson 30), which may be replaced with a Falcon SB5200 concentrator at a future date. Underflow from the Knelson 30 reports to the concentrate decantation sump and is also pumped to a holding tank located in the Gold Room. Overflow from the Knelson 30 reports to a Krebs model DB20 cyclone with "cyclostack" technology for the first stage of dewatering.

The Krebs Cyclone overflow is dosed with approved flocculant and pumped to the settling basins. The Krebs Cyclone underflow was originally conveyed to the Reclamation Stockpile for subsequent transport by truck back to the Mine site for use as backfill or other approved use. To reduce the water content of the Krebs Cyclone underflow slurry, a minor modification was approved by the Division in November 2011 for installation of a 36-inch diameter sand screw. The sand screw, located beneath the cyclone, is designed to increase the previous 40% solids content of the underflow material to about 70% to 90%. The sand screw reduces the amount of time the tails reject must be dried prior to use in reclamation activities and reduces the amount of fines material remaining in the tails liquid fraction.

A minor modification was approved by the Division in April 2012, to add two (2) in-line pre-settling tanks after the sand screw to provide additional sediment settling time for the sand screw underflow. The Primary ('Blue') Tank #1 measures 30 feet long, 10 feet wide, and four (4) feet deep; the Reserve ('Yellow') Tank #2 measures 20 feet long, 10 feet wide, and four (4) feet deep. Each steel tank is equipped with an access ramp to facilitate sediment removal with a loader. The additional sediment stripping achieved with the Primary Tank will further reduce the sediment load reporting to the settling basins and improve removal of silt for return to the mine site with other reject material for backfilling and reclamation activities. The Reserve Tank provides back-up capacity during Primary Tank clean-out activities.

The Knelson Bowls are computer-controlled batch recovery systems that are flushed of collected gold and heavy minerals after every two (2) hours of operation. The flushing cycle requires approximately two (2) minutes to complete and the collected gold and heavy mineral concentrate flows by gravity via an 8-inch diameter HDPE pipeline to the Gold Room.

A minor modification was approved by the Division in July 2011, for installation of a Hy-G Bowl gravity concentrator. The Hy-G Bowl is used to further process the Knelson Bowl concentrates, which are then run onto a SWECO vibrating screen and fed to a Goldtron separating table where the free gold is collected for transport to an off-site refinery. Heavy mineral solids, comprised primarily of magnetite, ilmenite, and barite, are combined with material in the Reclamation Stockpile for transport by truck back to the Mine site for use as backfill or other approved use.

Water Clarification: On 03 December 2013, an EDC was received to replace the dewatering screen in the process building. Due to inactivity at the site the EDC was not approved until the completion of the 2015 Permit renewal. To improve water clarification the EDC included the installation of an upgraded dewatering screen in the process building within the circuit after the stacking The cyclone underflow will be fed to the dewatering screen for cvclone. additional water clarification. The underflow from the dewatering screen will gravity flow to the concrete-lined settling basins. The oversize from the dewatering screen will travel to the sand screw area to be combined with the sand and tailings stockpile for back haul and disposal in the Mine workings. In accordance with the Permit, basin sediment must be returned to the Mine site for use as backfill or other approved use within sixty (60) days after removal from the basins.

Geotextile Tubes (GeoTubes): The GeoTube Clarification System was used during 2011 and 2012 and later removed. While the GeoTubes performed adequately in clarifying process water, they also created a number of problems, including difficulty with timely removal of full bags. Consequently, a Final Plan for Permanent Closure (FPPC) of the GeoTube System was approved by the Division in May 2013. The GeoTubes remaining on the liner apron were cut open and the sediment was dried and returned to the Mine site as backfill. The GeoTube bags and the apron liners were properly disposed offsite. Soil samples from under the apron liners were analyzed to determine if process contaminants or petroleum were present in sufficient concentrations to warrant remedial action.

The GeoTubes were located along the north and east sides of the Mill building, west of Pond #3, in the area of the closed Pond #1 and Pond #2 footprint. Installation of the two (2) original GeoTubes was approved by the Division in May 2011, as an EDC modification approved with 'as-constructed' information provided by the Permittee. Based on favorable operational experience, an EDC was submitted and approved by the Division in August 2011, for construction of GeoTubes 3 through 10.

Each constructed GeoTube measured approximately 98 feet long by 27 feet wide, with a height of up to 6 feet when filled with sediment. Once filled with sediment, the GeoTubes were allowed to dry and the sediment was removed and returned to the Mine site with other process reject material for use in reclamation activities.

GeoTubes 1 and 2 were located within a soil pad area measuring approximately 100 feet square. GeoTubes 3 through 7 formed a block (Block 1) footprint

measuring approximately 125 feet by 175 feet adjacent to the east side of GeoTube 2, and GeoTubes 8 through 10, which comprised Block 2, were located along the south side of Block 1 and measured approximately 110 feet by 125 feet in plan.

Settling Ponds: The dewatered slurry from all Mill operations originally reported to a series of four (4) settling ponds numbered 1 through 4. Prior to installation of GeoTubes in the process (described above), the majority of the remaining clay fraction was separated from the liquid in Pond #1 and was periodically removed and used in reclamation activities at the Mine site or other approved activities. With construction of the first two (2) GeoTubes, Pond #1 and Pond #2 were permanently closed as approved by the Division in July 2011, leaving only Pond #3 and Pond #4. Dewatered slurry was then pumped directly to the GeoTubes from the process circuit through 8-inch diameter pipelines and the resulting clarified solution was conveyed directly to Pond #3 with the half-pipe channels.

Each of the settling ponds consisted of an excavated basin approximately 200 feet long, 40 feet wide, with side slopes of 1Horizontal:1Vertical (1H:1V). Pond #3 measured approximately eight (8) feet deep and Pond #4 was approximately 14 feet deep. Flow was conveyed from pond to pond via a 12-inch diameter culvert placed through the pond divider berm below the 2-foot freeboard level. Although the ponds were not lined, fine-grained reject material settled in the ponds reduced the rate of infiltration. Each pond had a capacity of approximately 350,000 gallons with a 2-foot freeboard. Clarified process water was returned to the Mill process circuit with a reclaim pump located at the #4 pond.

Settling Basin and Water Clarification: On 03 December 2013, an EDC was received to replace the remaining two (2) earthen settling ponds with a concretelined settling basin system. Due to inactivity at the site the EDC was not approved until the completion of the 2015 Permit renewal. The new concretelined settling basin will be divided into 4 cells labeled Cell 1 through 4. The Cells will cover a total area of 182 feet by 166 feet and will be within the footprint of the previous earthen settling ponds. The new basin cells will be lined up in a north south direction with access ramps on the south side to allow for rubber tired equipment to remove sludge and sediment. The cells will be separated by weirs to control fluid levels. Sumps are located at the north end of each of the four (4) cells and are separated from the cells by weirs to allow for fluid level control and solids settling. The access ramps are sloped at 11.7 % and the basin bottoms are sloped at 0.75% with the basins being the deepest in the north end at approximately seven (7) feet from the end wall crest to the bottom of the basin. The cells were designed to operate with 0.5 feet of freeboard with a working volume of 1,003,600 gallons. The 0.5 foot freeboard allows for an additional 108,200 gallons.

Stormwater Diversions: The Mill site is bordered on all sides by stormwater runoff diversions that report to natural drainages. Meteoric fluid within the immediate process plant site is captured and conveyed via diversions to a stormwater runoff basin internal to the process plant site area and sized to contain runoff resulting from the 100-year, 24-hour storm event. The stormwater retention basin has a capacity of 441,300 gallons and is located at the process facility low point in the northeast corner within the perimeter fence. Any collected stormwater will be used as make-up water in the mill.

Approved Flocculants: After approximately one-year of initial operation, gold recovery problems in the process circuit were identified as being related to greater than anticipated amounts of clay material in the ore and the very fine grain size of the contained free gold. A minor modification to the Permit was approved by the Division in December 2006, allowing certain Mill equipment to be exchanged with different components to improve gold recoveries. The minor modification also authorized use of a flocculant produced by the NALCO Company and marketed as Optimer® 83906 Plus to address problems associated with the clay content of the ore. To enhance coagulation of solids in the GeoTube system, an additional flocculant, AQ 109, manufactured by Aquamark, Inc., was approved by the Division with the EDC modification to the Permit in January 2011.

The Optimer® 83906 Plus flocculant reduces settling times and provides a more clarified discharge wash water for recirculation to the Mill process circuit. Safety data sheet (SDS) information indicates that the product is benign and poses no environmental threat when properly handled and used in accordance with the approved NALCO Company pilot testing routine. The flocculant is supplied to the facility site in 55-gallon drums or totes. The concentrate is diluted with water at a mixture ratio of approximately 70:30. The recommended and approved maximum dosage rate is approximately 2.5 gallons per hour (gph) of diluted product added to the 500 to 600 gph process water stream. When in use, a consumption rate of 300 gallons per month is anticipated.

The AQ 109 flocculant was also approved for use in the GeoTube system to reduce settling times and improve clarification of discharge water prior to recycle to the process circuit. Based on SDS information, the product is benign and poses no environmental threat when properly handled and used in accordance with the approved pilot test results. This flocculant is also supplied in 55-gallon drums and the approved maximum concentration rate for use is 250 milligrams per liter (mg/L).

Make-up Water: Make-up water can be supplied by two (2) wells located near the Mill. The water from both wells is of good quality and meets all Division Profile I reference values. Historic water quality data is available in reporting provided by the previous operator (John Uhalde as the Uhalde Lease under WPCP

NEV0094103, which was permanently closed in 2003). Both wells are monitored annually in any year of operation for Profile I constituents. Data collected at the time the wells were drilled indicates the depth to the static water table was approximately 190 to 200 feet below ground surface (bgs).

The primary make-up water well WM-1 (Nevada Division of Water Resources Application [DWR App] #60072) is located approximately 1,000 feet westsouthwest of the Mill. This well was drilled in 1975 to a total depth of 522 feet and is screened over a 500-foot interval with a 12-inch diameter slotted screen. Water is pumped from this well to the Mill via an 8-inch diameter pipeline.

The secondary or supplemental make-up water well WM-2 (DWR App #41141) is located approximately 400 feet southeast of WM-1. This well was drilled in 1979 to a depth of 420 feet and is screened with 12-inch diameter slotted casing between 200 feet and 395 feet in the hole. A 2-inch diameter pipeline can be used to convey water pumped from this well to a 600-gallon water storage tank located in the Gold Room.

The Mill design requires a maximum 2,000 gallons per minute (gpm) of water during peak operation. Most of the make-up water is recirculated from the settling basins. Approximately 300,000 gallons of make-up water is added each day to offset evaporative and other losses.

Ore Characterization: A sample of "Don Morris Property" ore from Black Rock Canyon was analyzed with the Meteoric Water Mobility Procedure (MWMP) for Profile I constituents and for its potential to generate acid. The MWMP results indicate the ore is stable and the analytical results meet all Profile I reference values except for slight exceedances in aluminum (0.22 mg/L reported versus the 0.2 mg/L reference value) and arsenic (0.055 mg/L reported versus the 0.01 mg/L reference value). Acid-base accounting results indicate that any effluent remains in the alkaline pH range and there is excess neutralization potential. The Permit requires Profile I analysis of settling basin reclaim water on a quarterly basis to confirm there are no changes in the ore that is being processed.

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

Water quality analyses for both make-up water wells located near the Mill indicate groundwater is of good quality and meets all Profile I reference values. Based on the well completion logs, depth to groundwater at the Mill site is approximately 190 to 200 feet below ground surface. Information from exploration drill holes indicates depth to groundwater at the Mine site is approximately 250 feet bgs in bedrock.

The Mine site and Mill site lie within the Crescent Valley hydro geographic area, Basin N° 54, a semi-enclosed basin, located within the Humboldt River Basin. Crescent Valley is bounded on the west by the Shoshone Range, on the east by the Cortez Mountains, on the south by the Toiyabe Range, and on the north by the Dry Hills and the Humboldt River. Crescent Valley contains a large dry lake playa and is separated from the Humboldt River by a low topographic divide at the north end of the valley; however, hydrogeologic modeling performed for the Pipeline and Cortez Hills Projects (WPCPs NEV0093109 and NEV2007105, respectively) indicates that some groundwater flows north from Crescent Valley to the Humboldt River. Water enters the basin as direct precipitation, runoff from major storm events, and as minor surface and underground flow from Carico Lake Valley via Cooks Creek from the southwest. Water received is discharged primarily through evaporation and transpiration.

Surface water does not exist within one (1) mile of the Mine or Mill sites. Mud Spring Gulch and Tub Spring Gulch are located across the east-northeast range front flow gradient direction and more than one (1) mile south of the Black Rock Canyon Mine site. Spring Gulch and Tub Spring Gulch host perennial springs and seeps within their upper reaches. Surface flow in these creeks is ephemeral in response to major storm events and melting snow pack. Standing water does occur in the Crescent Valley Playa, located approximately four (4) miles downgradient of the Mill site, but the water is generally of very poor quality.

The only wells within five (5) miles downgradient of the Mine site are the two (2) make-up water wells located at the Mill site. These wells have been sampled routinely during past mining activity at the site (John Uhalde as the Uhalde Lease under WPCP NEV0094103, which was permanently closed in 2003) and show no evidence of groundwater degradation.

Based on groundwater potentiometric data, one (1) well is located approximately 1.5 miles northeast of the Mill site but appears to be across the regional flow gradient. Two (2) wells are situated approximately three (3) miles downgradient from the Mill site, adjacent to the Crescent Valley Playa. Depth to groundwater in these wells ranges from 6 to 14 feet bgs and the water quality is likely influenced by the highly alkaline soils associated with the playa.

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

The Notice of the Division's intent to issue a renewal Permit authorizing the facility to construct, operate and close, subject to the conditions within the Permit, is being sent to the **Battle Mountain Bugle** newspaper for publication. The Notice is being mailed to interested persons on the Division mailing list. Anyone wishing to comment on the proposed Permit can do so in writing within a period of 30 days following the date of public notice. 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, any affected 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, Special</u> <u>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 containment for the facility components and conveyance systems. Specific monitoring requirements can be found in the WPCP.

H. Federal Migratory Bird Treaty Act

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

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

Prepared by: Joe Sawyer Date: Day Month 2015

Revision 00: Renewal 2015, effective Day Month 2015 Including the 03 December 2013 EDC installation of dewatering screen and replacement of earthen ponds with concrete-lined basins.