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

Permittee Name: **Nevada Iron LLC**

Project Name: **Buena Vista Mine**

Permit Number: **NEV2014122**
Review Type/Year/Revision: **Renewal 2024, Fact Sheet Revision 00**

A. Location and General Description

Location: The Project, located at 53724 East County Road, Fallon, Nevada in Churchill County, entirely on privately-owned Sections 4, 5, 7, 8, 9, and 17, Township 24 North, Range 34 East, Mount Diablo Baseline and Meridian. The site is located at the northeast end of the Carson Desert, on a gently sloping fan at an elevation of approximately 4,300 feet above mean sea level (amsl) just west and south of the Buena Vista Hills.

Site Access: The Project can be accessed by driving 6 miles east on Interstate 80 from the town of Lovelock to the Coal Canyon Road exit and then 25 miles south on Coal Canyon Road. Coal Canyon Road (SR 396) is paved and extends for 19 miles until it becomes a graded County dirt road. The Project may also be accessed from Fallon by taking East County Road (SR 116) approximately 45 miles northeast of Fallon.

General Description: The Project will expand the existing Buena Vista Mine West Pit and include new mining in the Section 5 Pit. Traditional drill and blast methods will be used to mine magnetite iron ore, which will be processed via physical separation by which the magnetite will be concentrated prior to shipment for further processing. The Project facilities include a dry-stack tailings disposal facility (DSTDF) constructed in three (3) Phases and a waste rock disposal area (WRDA). Nevada Iron LLC (Permittee) is authorized to mine and process by physical separation up to 11,500,000 tons of iron ore per year. Projected mine life is 13 years. The original permit for 2014122 was issued in 2015. The Permittee requested renewal in 2020 with no changes which was processed in 2024.

B. Synopsis

History: Iron Ore was discovered in the 1880's, when the first claims were staked. Small-scale mining occurred intermittently until the 1950's when higher grade ore was mined. Exploration activities occurred during the 1950's, 1960's, and 1970's. Drilling was performed by Southern Pacific in 1958, Columbia Mines (subsidiary/ acquired by US Steel in 1963) in 1960, and US Steel in 1965. The Permittee has been conducting exploration activities since 2010.

Physiographic and Topographic Setting: The Project is located in the Carson Desert (a.k.a Carson Sink) within the Basin and Range physiographic province. The Basin and Range Province is characterized by a series of generally north-trending mountain ranges separated by basins, a result of normal faulting which began in Late Tertiary time period. The mountains represent the uplifted structural blocks and consist generally of Cambrian to Tertiary bedrock units. The basins are generally filled with Tertiary and Quaternary lacustrine and alluvial sediments, and are an expression of the intervening structural subsidence between the uplifted blocks. The Carson Desert is the largest intermountain basin in Nevada with elevations ranging from 3,930 to 4,420 feet amsl.

The Project is bounded to the north and northwest by the West Humboldt mountain range, to the east by the Stillwater Mountains and to the south and southwest by the Carson Desert.

The Project lies on a gently sloping alluvial fan at an approximate elevation of 4,300 feet amsl, west and south of the Buena Vista Hills. Drainages within the Carson Desert, including the Project site, are generally dry throughout the year. There are no permanent lakes, streams or rivers within five (5) miles of the Project. Groundwater from wells in the Carson Desert naturally exceeds drinking water standards due to high concentrations of boron, chloride, sulfate and total dissolved solids.

Geology: The Project is located in an area of historic open pit mining for iron ore along the Buena Vista Hills. The geology of the Buena Vista Hills is characterized by altered Jurassic volcanic rocks (basalt or andesite) underlain by altered intrusive gabbro and diorite (Humboldt Gabbro). Both formations are highly fractured by faults and dikes. Contact between volcanic rocks and the Humboldt Gabbro is characterized by scapolitic and magnetic alteration. Various thicknesses of Quaternary alluvium in the area overlie the volcanic rocks. The thinnest alluvial deposits occur in the Buena Vista Hills where bedrock outcroppings are common. There is very little overburden near the proposed pits.

Facility Design: The iron ore will be crushed and then separated by a series of magnets as described below. This is a physical separation process which only uses approved flocculants during the concentration process.

Mining: Ore will be mined from open pits using standard drill and blast techniques. Material will be loaded into 100-ton haul trucks and delivered to each of two (2) primary crushers. Primary Crusher 1 is associated with the Section 5 Pit while Primary Crusher 2 is associated with the West Pit.

At completion, the West Pit will occupy 161 acres, have a maximum depth of 455 feet with a pit bottom elevation of 3,870 feet amsl, while the Section 5 Pit will occupy 58 acres, and have a maximum depth of 570 feet with a pit bottom elevation of 3,565 feet amsl. Bench heights in each pit will be a nominal 50 feet.

Waste Rock Management: Total waste rock production for the projected 13-year mine life is estimated at 57 million tons from the West Pit and the Section 5 Pit combined. Based on geotechnical testing results, the waste rock has a dry density of 140 pounds per cubic foot requiring a volume of 30 million cubic yards of waste rock storage capacity. The waste rock disposal area (WRDA) will have an as-built and final reclaimed side slope of 2.5 (horizontal):1 (vertical), (2.5H:1V), a maximum vertical height of 424 feet, and a maximum crest elevation of 4,480 feet amsl. The unlined WRDA will occupy a footprint area of approximately 215 acres located along the north side of Section 5 Pit with a minimum offset of 200 feet. Slope stability analysis results indicate that the WRDA will have a minimum static factor of safety for slope stability of 1.58 and a pseudo-static minimum factor of safety for slope stability of 1.06.

Materials Characterization: The Material Characterization Testing Program (MCTP) included static and kinetic testing consisting of whole-rock multi-element (ME), meteoric water mobility procedure (MWMP), static acid-base accounting (ABA) analyses, and humidity cell tests (HCTs). Tests were conducted on ore, waste rock, and tailings material.

Material used for characterization is representative of the entire range expected to be encountered during mining. Candidate samples for testing were identified that represent the indicated spatial and geochemical variability of the waste rock and ore material relative to each of the two proposed pit volumes. The sample selection process was iterative and incorporated systematic evaluations of: 1) ultimate pit surface and waste rock lithology and mineralogy as described by the site geology and resource block models; 2) the exploration drill hole geochemical and lithology databases; 3) drill hole spatial coverage and drill core availability; and 4) direct field inspection of drill core samples.

Final samples were retrieved from exploration drill core storage following visual inspection and assessment relative to lithology and ore grade. A total of 212 samples (128 from the West pit and 85 from the Section 5 pit) reflecting a range of ore-grade, lithology, and proximity to the proposed pit shells were selected for whole rock analyses and static ABA analysis. Fourteen samples, five from the Section 5 pit and nine from the West pit, were identified for kinetic testing (HCT and MWMP). The samples selected for kinetic testing were evaluated relative to whole rock composition for selected indicator parameters (IPs) to confirm representativeness. Concentration distribution histograms demonstrate that the selected samples achieved the desired distributional coverage for both pits.

The 212 samples representing waste rock and ore grade material from the West and Section 5 pits were analyzed for static ABA tests following the Nevada

Modified Sobek Procedure (NDEP 2014c). The results demonstrate that these materials have a strong neutralizing potential and no acid generating potential across ore grades. The net neutralizing potential (NNP) values for the 212 samples ranged from 14 to 390 tons of calcium carbonate per kilo-ton (T/kT), with only six of the total data set less than 20 T/kT. The static ABA results reflect the calcite-dominant acid-neutralizing ore-host domain material across a range of ore grades (from ~1% to 36% calcite). No strong correlation was detected between ore grade and NNP or acid generating potential (AGP).

Static and kinetic test results all demonstrate a strong neutralizing potential with very low AGP across a range of ore grades (the ANP/AGP ratios ranged from 2.1 to 264 based on total sulfur). Total sulfur concentrations are low and are consistent with the geochemical block models developed by the Permittee for both pits.

The tailings material (as proposed for dry-stack disposal) is strongly net neutralizing. Metals concentrations reflect the waste and ore rock material following the beneficiation processes. The “bottle roll” effluent was consistent with the tailings material composition with only aluminum, arsenic, and antimony matching or slightly exceeding Profile I/II reference values.

Ore Processing and Beneficiation: A physical separation process will be utilized for the beneficiation of magnetite ore at the Buena Vista Mine. Processing of iron ore via physical (magnetic) separation:

1. The iron ore is initially sent through primary, secondary, and tertiary crushing followed by placement in the fine ore stockpile, and the first stage of tailings separation where the ore is sent through dry magnetic separators, in order to reject non-magnetic tailings which are then conveyed to the DSTDF.
2. Water from the Process Water Pond is added at a nominal rate of 3,400 gallons per minute to the magnetic concentrate from dry magnetic separators which is then conveyed to an open circuit primary ball mill which will reduce the nominal 3/8 inch material to a nominal P_{80} of 500 microns (i.e., 80% of the mill product will pass through a 500 micron opening). The primary mill product feeds the primary low intensity magnetic separation (LIMS) which is the second stage of separation of non-magnetic tailings from magnetic concentrate. The rejected non-magnetic tailings material is sent to a spiral classifier.
3. Magnetic concentrate from the primary LIMS is pumped to the secondary grinding circuit via the cyclone circuit to increase the pulp density of the secondary mill feed and to remove smaller particles in order to bypass secondary grinding (as a safeguard against over grinding).
4. The primary LIMS concentrate from the cyclone underflow, as well as oversize from the sizing screens, are subjected to a second stage of grinding in

the secondary ball mill followed by the third stage of separation of the non-magnetic tailings from magnetic concentrate at a secondary LIMS. The secondary LIMS magnetic concentrate is screened before going to concentrate thickening to capture oversize material for return to the secondary ball mill. The thickened concentrate will be filtered and trucked approximately 45 miles along Churchill County's East County and Pole Line Roads to the point where Pole Line Road intersects Highway 95A, where it will be loaded onto rail at the proposed Huxley Loading Facility near Huxley, Nevada.

5. The primary LIMS rejects will be classified by the spiral classifier to remove coarse dewatered material which is sent to the DSTDF. The finer fraction passes to the tailings thickener where it will join the rejects from the secondary LIMS. The thickened rejects will be pumped to tailings filters and dewatered to about 14% moisture. Tailings cake from the filters will report to the waste collection conveyor which is also transporting dry magnetic separator rejects (Stage 1) and coarse dewatered material from the spiral classifier (Stage 2) to the DSTDF located south of the concentrator. From the conveyor, the tailings will be transferred to a system of jump conveyors for placement via radial stacker at the DSTDF. A dozer will provide finish grading once the tailings have been placed.
6. As the process relies on physical separation of the magnetic concentrate from the nonmagnetic tailings, the only chemicals used in the process will be the flocculants used in the concentrate and tailings thickeners. The process buildings will include tanks, pipes, and vessels. Minimum 110% containment of the largest vessel is provided by sealed concrete floor slabs and walls with waterstop devices installed in all cold joints.

The following chemicals (flocculants) have been approved for use in the Magnetic Separation system at the Buena Vista Mine including: Hychem NF 301, MAGNAFLOC 155, and MAGNAFLOC 155 LT.

All other process chemicals must have prior Division approval before being used onsite.

The process facility is designed with secondary containment for 110 percent of the fluid capacity of the largest vessel in five (5) individual areas within the facility. Containment is provided with curb walls surrounding these areas that include bentonite waterstop devices at all cold joints and flexible sealant applied at the floor and wall joint. Each of these areas are sloped internally toward sumps where incidental fluids will be collected and directed to the Process Pond or the process fluid circuit.

Tails Management: Tailings will be transported via a series of permanent and jump-conveyor systems to the unlined DSTDF, then deposited from a radial stacker. The dry tails will then be spread in uniform lifts by a dozer. Precipitation runoff from the tailings surfaces will be intentionally routed off the tailings surface for evaporation or inclusion in the production circuit.

Approximately 9.2 million tons of tailings per year will be placed on the DSTDF up to a total capacity of about 147 million tons.

The DSTDF will be constructed in lifts (via radial stacker) set on a 4H:1V balance line such that the overall reclaimed slope angle will be at a minimum of 4H:1V. The DSTDF will occupy a final footprint area of approximately 400 acres. The facility will be constructed in three phases: Phase 1 will occupy 154 acres; Phases 2 and 3 will occupy the remaining 246 acres. The DSTDF will be constructed to a maximum height of 220 feet and a permitted maximum crest elevation of 4,500 feet amsl.

Diversion channels will be constructed on the south and east sides of the DSTDF to prevent run-on from affecting the facility. Additionally, containment berms and paddocks and sediment basins will be constructed around the DSTDF to collect and manage sediment and stormwater runoff from the DSTDF side slopes. During Phase 1, a temporary diversion berm will be constructed for stormwater management along the east side of the DSTDF. Stormwater collected in the sediment basins may be pumped to the process water pond at the concentrator for use in the process plant.

Stability analysis results indicate that the DSTDF will have a minimum static factor of safety for slope stability of 3.02 and a minimum pseudo-static factor of safety for slope stability of 1.78.

The potential for migration of process waters from the DSTDF was evaluated in the report entitled Tailings Draindown Analysis for the Buena Vista Mine (Geomega, 2014b). The report describes unsaturated infiltration modeling of the tailings dry-stack and underlying alluvium using the computer program HYDRUS-1D. A detailed discussion of evaluation methods and results is included in the full report. The draindown analysis predicts more than 500 years to drive interstitial fluids to groundwater based on: the low precipitation in combination with high evaporation rates; the low initial moisture content of the tailings (14 percent); the hydraulic properties of the tailings and unsaturated alluvium; and the depth and location of the underlying groundwater aquifer at the site.

In addition, the predicted chemistry of the process water from the DSTDF does not have the potential to degrade the underlying alluvial aquifer and any seepage from the DSTDF will have a better water quality than the naturally occurring background water quality. Background groundwater quality generally exceeds drinking water standards for boron, chloride, sulfate, and total dissolved solids (TDS).

Based on this and geotechnical testing of the near surface soils, preparation of the foundation of the DSTDF will consist only of clearing and grubbing, growth media salvage, and general grading. The DSTDF does not utilize an engineered liner system.

Ponds: Make-up water will be supplied from wells completed in underlying groundwater, and from the lined Raw Water Pond, which will receive water from the wells and in-pit sumps. The composite liner of the 6.0 million gallon Raw Water Pond consists of a 12-inch minimum thickness subgrade compacted to 95 percent of the maximum dry density within 2 percent of optimum moisture content as determined by American Society for Testing and Materials (ASTM) Method D1557 overlain by a single layer of 80-mil high density polyethylene (HDPE) liner. The operating volume of the Raw Water Pond is approximately 3.0 million gallons.

The composite liner of the 2.3 million gallon Process Water Pond consists of a 12-inch minimum thick subgrade compacted to 95 percent of the maximum dry density within 2 percent of optimum moisture content as determined by ASTM Method D1557 overlain by a 60-mil HDPE secondary liner and an 80-mil HDPE primary liner with leak detection and recovery system between the liners draining to a sump with an effective capacity of 2,975 gallons. Within the sump area, the soil beneath the secondary liner will be amended and compacted to create a 2-foot thick low permeability soil layer with a maximum permeability of 10^{-7} centimeters per second (cm/sec). The operating volume of the Process Water Pond is approximately 1.02 million gallons.

Both ponds will maintain a minimum of 2 feet of freeboard to contain at least the additional volume from the 100-year, 24-hour storm event.

Pit Lake: A small historic pit lake currently exists within the West Pit fed by seeps in the pit wall. The size varies seasonally and annually based on regional precipitation. However, based upon testing and modeling prepared for the Permit application, groundwater in-flows into the pit during mining are anticipated to be low and manageable via in-pit sumps. Pit lakes are not predicted due to low predicted inflow rates and high annual evaporation rates. There is no alluvial groundwater in any of the wells in the pit areas.

Stormwater Controls: The drainage design for the Project includes controls to manage stormwater around the DSTDF, process facilities, and WRDA. The design criteria for stormwater controls for process components are:

- Divert potential run-on from upstream watersheds to the DSTDF and WRDA for the 100-year, 24- hour storm precipitation (2.35 inches).

- Minimize channel flow velocities to the extent practical, while maintaining "self-cleaning" velocities under lesser precipitation conditions.

- Protect against channel erosion using rock armoring or similar protection.

- Contain the volume of stormwater runoff from the DSTDF, and upstream watersheds to the DSTDF, for the 10-year, 24-hour storm event in the downstream sediment basins and withstand the run-off from the 100-year, 24-hour storm event.

The proposed DSTDF, WRDA, and process facilities are in the path of natural drainages that generally flow from east to west, from the Buena Vista Hills to the playa. Stormwater controls are designed upstream of project facilities to divert west-directed runoff to the north or south around the proposed facilities, through sedimentation basins, and into natural drainages west of the site.

To protect the channels from erosion, riprap channel armoring was designed for Diversion Channel 1, Diversion Channel 2, and the WRDA Diversion Channel. Because the DSTDF Phase 2 Diversion Channel will only operate for five (5) years prior to the construction of Phase 2, no channel armoring was considered necessary. Riprap sizing, as average rock diameter (D_{50}), and layer thickness were determined using standard practice and industry accepted methodologies.

Three sediment basins are designed to minimize sediment transport downstream of project facilities. All three basins are designed to contain the volume of upstream runoff from a l0-year, 24-hour storm event and include a spillway to pass the 100-year, 24-hour storm event. Sediment Basin 1 is located downstream of Diversion Channel 2 and is sized for the volume of upstream runoff for the DSTDF Phase-1 build out. Sediment Basin 2 is located northwest of the DTSDF and will collect runoff and sediment from the surface of the DSTDF. Sediment Basin 3 is located downstream of the Diversion Channel 1 and will only collect water and sediment from upstream watersheds.

Huxley Siding: Iron ore concentrate may be shipped offsite by two (2) options. It may be hauled by truck along Churchill County's East County and Pole Line Roads to the point where Pole Line Road intersects Highway 95A, where the iron ore concentrate will be loaded onto rail cars at the proposed Huxley Loading Facility near Huxley, Nevada. It may also be hauled by truck along the same route to Highway 95A then on to out-of-state facilities for processing or additional transport overseas.

Ancillary Facilities: In addition to the facilities described previously, the operation will include the following ancillary facilities; truck shop, fueling area, lube and oil storage, ready line, mine office, and warehouse located centrally within the site. Along the north side of the DSTDF there will be an administration facility, an electrical substation, truck scales, and load out area.

C. Receiving Water Characteristics

The Project is located in the upper portion of Hydrographic Basin 101 on the northeastern edge of the Carson Desert; the topographic divide is just northeast of the Project Site. Precipitation in the area averages 5.35 inches per year. Average pan evaporation is 60 inches per year.

Groundwater hydraulic testing of the bedrock units underlying the proposed pits defined hydrogeology dominated by relatively low-permeability igneous rocks. Hydraulic conductivity of the bedrock in the pit areas is estimated at approximately 10^{-5}cm/sec. Groundwater flow in the bedrock is primarily through fractures. Based upon testing and modeling prepared for the Permit application, groundwater in-flows into the pit during mining are anticipated to be low and manageable via in-pit sumps. Pit lakes are not predicted due to low predicted inflow rates and high annual evaporation rates. There is no alluvial groundwater in any of the wells in the pit areas.

Depth to bedrock in the vicinity of the proposed processing facilities, including physical separation and DSTDF, ranges from ground surface on the east to more than 287 feet on the west. Alluvial groundwater occurs in wells west of the DSTDF. Bedrock groundwater occurs in all wells in the vicinity of the DSTDF.

Depth to the alluvial groundwater along the western edge of the proposed DSTDF ranges between 136 feet and 178 feet below ground surface (bgs), while the depth to bedrock groundwater in the vicinity of the West Pit and Section 5 Pit ranges between 43 feet and 216 feet bgs. Alluvial groundwater was not present beneath the central and eastern portions of the proposed DSTDF and at the central tailings facility, depth to first encountered bedrock groundwater at well BH-08 is at 360 feet bgs.

Two monitoring wells, MW-2 and MW-3, are located downgradient from the DSTDF will provide quarterly samples to verify that the operation is not degrading waters of the State. MW-2 is directly west of the DSTDF where MW-3 is north west of the DSTDF and directly west of the administrative building. There are no monitoring wells upgradient of the DSTDF because alluvial groundwater was not found in this area. Drilling encountered bedrock at a depth of 360 feet bgs.

Samples from the alluvial aquifer have reported exceedances of drinking water standards for arsenic (maximum 0.12 milligrams per liter (mg/L)), chloride (maximum 8,050 mg/L), iron (maximum 3.90 mg/L), pH (maximum 9.70 Standard Units), sulfate (maximum 1,660 mg/L), and TDS (maximum 16,940 mg/L).

Samples from the bedrock aquifer have reported maximum exceedances of drinking water standards for aluminum (0.068 mg/L), antimony (0.007 mg/L), arsenic (0.033 mg/L), chloride (5,700 mg/L), magnesium (400 mg/L), manganese (1.30 mg/L), mercury (0.0035 mg/L), nitrate plus nitrite as nitrogen (41.0 mg/L), sulfate (850 mg/L), and TDS (12,000 mg/L).

There are no surface water bodies within the project area other than ephemeral drainages and the small pit lake in the in the West Pit. Therefore, the receiving water is deemed to be the alluvial or bedrock groundwater, whichever represents the uppermost saturated zone in each area. This water is typically not suitable for use as drinking water, municipal, industrial, domestic, or agricultural use due to high concentrations of boron, chloride, sulfate, and TDS.

D. Procedures for Public Comment

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

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

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

E. Proposed Determination

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

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

See Section I of the Permit.

G. Rationale for Permit Requirements

The facility is located in an area where annual evaporation is greater 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 a leak detection system as well as routinely sampling downgradient monitoring well(s). Specific monitoring requirements can be found in Part I.D. of 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 2800 Cottage Way, Room W-2606, Sacramento, California 95825, (916) 414-6464, for additional information.

Prepared by: Eric Scheetz, P.E.
Date: day month year
Revision 00: Renewal