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

Permittee Name: **Marigold Mining Company**

Project Name: **Marigold RIBs**

Permit Number: **NEV2022118**
Review Type/Year/Revision: **New Permit 2023, Fact Sheet Revision 00**

A. Location and General Description

Location: The Marigold RIBs Project (Project) is located in southeast Humboldt County, in northern Nevada. The mine site is approximately 30 miles southeast (by air) of the town of Winnemucca. The Project is located in the historic Buffalo Valley Mining District.

The Project is located on both public and private land within Sections 5, 7, 8, 17, 18, 19, 30, 31, and 32, North (T33N), Range 43 East (R43E); and Sections 19, 20, 28, 30, and 32, T34N, R43E; Mount Diablo Baseline and Meridian.

Access: The site may be accessed by travelling approximately 37 miles east from Winnemucca or 13 miles west from Battle Mountain on Interstate-80 to Exit-216 (Valmy). The Marigold Mine site is approximately 3.5 miles southwest of the interchange.

General Description: The Project consists of infiltration of mine dewatering water (non-contact, untreated groundwater) at a maximum rate of 10,718 gallons per minute (gpm); equivalent to 15,433,920 gallons per day via Rapid Infiltration Basins (RIBs). The Project will contain 14 RIBs, and three high-density polyethylene (HDPE) conveyance systems, or pipeline, to be constructed in phases. The Project 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 Permittee mines gold ore from the Marigold Mine Project (Water Pollution Control Permit (WPCP) NEV0088040) by open pit extraction methods and precious metal processing facilities. The newly authorized Mackay Optimization project will expand current surface mining operations below the static water level. In order to complete the project, groundwater levels need to be reduced by approximately 600 feet (ft) in the Mackay Pit area and 200 ft in the North Pit. Dewatering water from the Marigold mining operation is authorized for infiltration under this Permit. The Project will consist of 14 RIBs and 3 surface pipelines, that will be constructed in phases as needed, and associated infrastructure and apparatuses.

The Project is located in the northwestern foothills of the Battle Mountain Range at an approximate elevation of 4,600 ft above mean sea level (amsl) at RIB #3.

Complex tectonic and depositional history, including at least four major tectonic events, has produced the current stratigraphy, detailed below.

There are three bedrock units present within the Project area. The Ordovician Valmy Formation is composed of interbedded chert, quartzite, argillite, slate, and greenstone. The Pennsylvanian to Permian Antler, or Overlap, Sequence unconformably overlies the Valmy Formation and makes up part of the Golconda thrust. The sequence consists of the following three units varying in thickness when present: Battle Formation, Antler Peak Limestone Sequence, and Edna Mountain Formation. The Pennsylvanian Battle Formation is the basal unit consisting of conglomerates and sandstones with interbedded shale and limestone. Overlying the Battle Formation is the Pennsylvanian/Permian Antler Peak Limestone Sequence, a predominantly limestone unit. The Permian Edna Mountain Formation uncomfortably overlies the Antler Peak Limestone and consists of interbedded shale, shaley limestone, sandstone, and chert conglomerate. The third bedrock unit is the Mississippian to Permian Havallah Sequence that unconformably overlies the Antler Peak Sequence. Located on the upper plate of the Golconda thrust sheet this unit occurs in the western portion of the Project. The Havallah Sequence is composed of an upper unit consisting predominantly of quartzite, sandstone, chert, argillite, and limestone and a lower unit consisting of chert, argillite with some greenstone.

These bedrock units are overlain by Quaternary Valley-fill Alluvium that ranges from just a few feet thick in the southern reaches of the Marigold Mine site to thousands of feet thick in the Humboldt River flood plain. The alluvial unit consists of unconsolidated to semi-consolidated conglomerate, sandstone, siltstone, claystone, freshwater limestone, evaporites, and interbedded volcanic rocks. The alluvium unit was historically used for potable water supply prior to water level declines in the 1990s due to Lone Tree dewatering.

Infiltration System Design: The Project begins at the southernmost dewatering well (WW8) and continues north along the western perimeter of the existing Marigold open pit mine into an alluvial apron where the RIBs are located. The dewatering pipeline will be configured to allow water to be purposed for process and operation facilities with the balance terminating at the infiltration basins northwest of the Marigold mine site. The infiltration system will be constructed in phases to accommodate the expanding dewatering system, as needed. As new wells are constructed and brought online infiltration capacity and conveyance system infrastructure will be increased to accommodate the increase in dewatering volumes.

The dewatering pipeline will convey dewatering water from the 14 dewatering wells (WW4, WW5, WW6, WW7, WW8, WW9, WW10, WW11, WW12, WW13, WW14, WW15, WW16, and WW17) to the RIBs (RIB #3, RIB #4, RIB #5, RIB #6, RIB #7, RIB #8, RIB #9, RIB #10, RIB #11, RIB #12, RIB #13, RIB #14, RIB#15, and RIB#16) The pipeline will be approximately 37,980 ft in total length and will consist of three pipelines constructed with 8-, 12-, and 18-inch (in)

diameter HDPE pipes (standard dimension ratio (SDR) 9 and 11). The pipelines will be constructed in three phases with the first phase accommodating flows up to 3,000 gpm. The second phase will add an additional line and will accommodate flows up to approximately 7,000 gpm. Lastly the third phase will add the final line and accommodate flows up to 10,718 gpm. Dewatering wells and RIBs will be connected to the main trunk line by use of peripheral lines, and in-pit lines will connect wells within the pit crest and sumps. A majority of the conveyance system will be constructed directly on the ground surface using an earth ballast in key locations. When crossing powerline rightsofway and light vehicle public access roads the lines will be installed in a shallow trench measuring approximately 3 ft wide and 4 ft deep that is buried a minimum of 2.5 ft below ground surface (bgs). Roadway crossings will be installed with a minimum 18-in diameter corrugated HDPE pipe as a conduit pipe/culvert that is buried at a minimum of 2 ft bgs. The pipeline will be constructed with various air/vacuum valves, expansion joints, butterfly joints, and pipe drains. Manifolds are included at regular intervals to equalize pressure and distribute flow through the parallel trunk lines.

A pipeline pressure relief system is designed upstream of the discharge pipe at RIB #3 to eliminate the risk of pipeline overpressures due to upset conditions caused by the closing of RIB control valves or pipeline transient overpressures. The system connects trunk line pipes to two raised steel pipe goosenecks that will force water to flow up and over the gooseneck into RIB #3 in the case of an overpressure event. Air vacuum release valves installed at the crest of the gooseneck will allow air into the line and break vacuum suction after pipeline pressure is reduced.

Samples are collected by means of a sample port upstream of RIB #3. As additional conveyance lines are constructed, they will terminate into a manifold that will be constructed in the same location as the sample port. From the manifold the conveyance lines will separate into separate lines again to feed designated RIBs. A sample port installed in the manifold will provide samples representative of the water entering the Project.

RIB Construction and Water Management: The RIBs will be constructed on an alluvial apron approximately 3 miles (by air) north of the entrance facilities. Each RIB is 290 ft wide and 490 ft long at the crest and oriented east/west direction on the longitudinal axis. RIBs will be spaced 300 ft apart and maintain 3 ft of freeboard below the basin crest. Basins are designed 15 ft below grade, to minimize potential for surface salts to leach from the unsaturated alluvium, with 3 horizontal to 1 vertical inside slopes, and a 24-ft access road for maintenance. A fence will be constructed around each RIB to prevent livestock and wildlife from accessing the RIBs.

Within the infiltration site, the dewatering water is distributed to each RIB through dedicated 12-in diameter HDPE RIB inlet pipe equipped with control valves to manage flow. The RIB inlet pipe runs down the RIB side slope to the bottom of the basin terminating into an energy dissipation structure and erosion resistant splash pad. The splash pad consists of a 12.5 ft square layer of riprap having a mass median

diameter (D_{50}) of 9 inches that is 2 ft thick. Incremental pond levels referencing depth of the basin will be marked on the HDPE discharge pipe or by use of a staff gauge for a visual indication of pond levels. There are no totalizers or flow meters on individual RIBs, as the flow is metered at the Marigold dewatering well connection and near the manifold before RIB#3.

C. Receiving Water Characteristics

In the Project area groundwater primarily occurs within two sequences, the overlying valley-fill and alluvial fan deposits, and the deeper regional bedrock. Within the Plan of Operations, the alluvial deposits consist of a thin veneer, thickening to the north and to the east. Hydraulic conductivity near the Facility is estimated to range from 0.02 ft/day to 140 ft/day, with horizontal conductivity estimated at 1 ft/day. In the Mackay Pit groundwater predominantly occurs in the bedrock Valmy Formation by means of a fracture flow system made up of highly fractured interconnected faults and shear zones. These fractures can transmit large quantities of water across many miles and occasionally act as barriers to local flow. Bedrock hydraulic conductivity near the Mackay Pit is estimated at 1 ft/day. Monitoring data has demonstrated the bedrock and the alluvial aquifer local to the Project is hydraulically connected.

Groundwater generally flows from south to north across the mine property, towards the Humboldt River and the recovering Lone Tree Mine pit lake. Groundwater depths range from 5,900 amsl, on the southern end of the property to 4,330 ft amsl on the northern end. Modeled drawdown does not extend to the Humboldt River due to the poorly conductive near-surface lithology. Therefore, no induced river losses due to Marigold dewatering are expected to occur. Modeled drawdown for water users in the nearby town of Valmy indicate that drawdown from the Marigold dewatering will not affect existing groundwater users' ability to access groundwater.

Receiving waters are located in the western boundary of the Clovers Area sub-basin (State of Nevada Hydrographic Basin #064) with small portions located in the northeastern portion of Buffalo Valley (State of Nevada Hydrographic Basin #131). Through hydraulic studies the Permittee determined that dewatering activities for the Marigold mine project is drawing water from the bedrock formations below the alluvial cover. Baseline characteristics of several analyses periodically exceed Division Profile I reference values in one location for arsenic and nitrate/nitrite. Site specific attenuation testing results show that alluvial materials throughout the Project have sufficient capacity to attenuate arsenic and dewatering waters can be re-infiltrated without degrading Waters of the State. Furthermore, arsenic in monitoring wells surrounding the RIBs have decreased significantly since monitoring began. Nitrate has never been detected above Profile I levels. The three bedrock units are oxide in character and drilling indicates little to no sulfidic materials will be encountered during mining.

Trout creek and Cottonwood creek both traverse the Marigold Mine site from south to north. At the Millennium Catchment Area Trout Creek is diverted to join

Cottonwood Creek in order to bypass mine operations. Both are ephemeral streams fed by precipitation and runoff from the north flank of the Battle Mountain Range.

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 new Permit.

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

See Section I of the Permit.

G. Rationale for Permit Requirements

The facility must not discharge a pollutant that would result in the degradation of existing or potential underground sources of drinking water, or that would cause an exceedance of an applicable surface water quality standard or regulation.

The primary methods for ensuring compliance will be required routine monitoring and reporting, augmented by Division site inspections. Specific monitoring requirements can be found in the 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: Sara Jensen, P.E.
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Revision 00: New Permit