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# SUMMARY

Newmont Mining Corporation (Newmont) proposes to develop and operate an underground mine with associated surface support facilities at the Leeville Project in Eureka County, Nevada. The Project would result in development of an underground mine; construction of a waste rock disposal facility, refractory ore stockpiles, and ancillary facilities; rerouting and upgrading an existing access road to a haul road; construction of a water treatment facility to treat discharge water; installation of a pipeline to deliver water from the Leeville Project dewatering well system to the TS Ranch Reservoir and irrigation system; continuation of geologic evaluation and exploration activities; and rerouting an existing Sierra-Pacific power line. Development of the Leeville Project is described in a Plan of Operations (Newmont 1997a) submitted in April 1997 to the Elko Field Office of the Bureau of Land Management (BLM).

The Leeville Project is located on public and private land in Eureka County, Nevada approximately 20 miles northwest of Carlin, Nevada. BLM reviewed the Plan of Operations submitted by Newmont and determined that the proposed Leeville Project (Proposed Action) has the potential to result in significant environmental impacts and preparation of an Environmental Impact Statement (EIS) would be required.

This EIS describes Newmont's Proposed Action, reasonable alternatives to the Proposed Action, and environmental consequences that could result from implementation of these actions. Potential direct, indirect, and cumulative effects on the environment have been analyzed for the Proposed Action. Alternatives were developed and analyzed for potential direct and indirect effects. The evaluation in this EIS has been completed to the extent necessary to determine whether potential impacts are significant. Impacts described in this EIS will form the basis for a BLM decision regarding the Proposed Action, alternatives, and selection of appropriate mitigation measures. No distinction is made in this EIS between potential impacts on public versus private land that would result from the possible authorizations by BLM.

## SUMMARY OF PROPOSED ACTION

Implementation of Newmont's Proposed Action would result in removal of ore and waste rock from multiple underground ore deposits identified as West Leeville, Four Corners, and Turf. Five shafts (four ventilation and one production) would be constructed to support underground mining for production, underground access, and ventilation. Approximately 18 million tons of ore and waste rock would be removed over an 18-year mine life.

Construction of mine shafts and surface support facilities would disturb approximately 453 acres of public land and 33 acres of private land. The mine would extend approximately 2,500 feet below existing ground surface.

Ore and waste rock would be drilled, blasted, and hoisted to the surface. Most mined-out stopes would be backfilled with cemented rock fill. Development waste rock would be used for stope backfill whenever possible.

Ore hoisted to the surface would be hauled directly to processing facilities at the Refractory Ore Treatment Plant (Mill #6) located at Newmont's South Operations Area or placed in a refractory ore stockpile approximately one-half mile west of the production shaft. Temporary refractory ore stockpiles would be constructed in accordance with Newmont's Refractory Ore Stockpile and Waste Rock Dump Design, Construction, and Monitoring Plan (Newmont 1997a)

Refractory ore stockpiles would be built on low permeability bases compacted and sloped to allow drainage to a collection point. Ditches would be constructed around the base of each stockpile to divert surface runoff away from the area. Solution would be captured in a sediment pond for sampling and sediment control. Any acid-generating refractory material deemed as waste at the end of the Project would be encapsulated in place or moved to encapsulation cells constructed at the waste rock disposal facility.

Since ore deposits at the Leeville Project lie below the water table, dewatering wells would be needed to control inflow to underground workings. Newmont proposes to complete up to 35 dewatering wells, pumping at a maximum collective rate of 25,000 gallons per minute, to lower the existing water table to an approximate elevation of 3,800 feet above mean sea level (AMSL). Localized water that is not intercepted by the network of dewatering wells and enters the mine workings would be routed to one or more central sumps and pumped to a mine water sump on the surface. Mine water would be used for mine development and dust control at the Project area.

Excess discharged groundwater remaining after mine development and dust control requirements have been met would be routed to infiltration basins (including TS Ranch Reservoir), the irrigation system, or as a contingency, to the Humboldt River via the Boulder Valley conveyance system.

Groundwater discharged to the Humboldt River would require authorization from the Nevada State Engineer and, in addition to treatment for contaminants, may require cooling to meet discharge temperature requirements. Newmont would use Barrick's cooling towers to reduce the temperature of discharge water to meet State of Nevada water quality standards. Water from the Leeville Project would be treated to meet State of Nevada water quality standards prior to discharge to the TS Ranch Reservoir. Discharge would not be allowed to reach the Humboldt River unless excess water cannot be removed via infiltration and/or irrigation within the Boulder Valley.

Excess groundwater would be transported from dewatering wells to Barrick's Boulder Valley conveyance system, located about 5.5 miles west of Leeville, through a gravity-fed, 42-inch diameter pipeline and canal system. The pipeline would be buried except for rocky areas, where it would be constructed on ground surface. The last 5,700 feet of the proposed system would be constructed as an open canal. The canal would begin near the western edge of Section 1, T35N, R49E, and continue to its terminus at Barrick's existing cooling canal located near the TS Ranch Reservoir.

Development of the Leeville Project would require construction of a new waste rock disposal facility with a capacity of up to 4 million tons. A portion of the waste rock to be produced would be potentially acid-generating material (PAG). The combination of potentially acid-producing rock with other non-acid-producing rock is expected to result in a net acid-neutralizing waste rock disposal facility. The proposed waste rock disposal facility would be constructed in accordance with Newmont's Refractory Ore Stockpile and Waste Rock Dump Design, Construction, and Monitoring Plan (Newmont 1997a).

In cases where acid-base accounting (ABA) indicates the total mixture of waste rock is acid-generating, waste rock would be placed on a base constructed of compacted, low permeability materials, designed to prevent vertical migration of fluids. Encapsulation would be achieved by placing the toe of the sulfide material back from the perimeter of the ultimate footprint of the waste rock disposal facility to allow placement of an outer cover of acid-neutralizing waste rock. Surface drainage upstream of the base perimeter would be diverted with ditches to prevent run-on to the disposal facility.

A low permeability cap would be constructed on the final lift of the PAG cell. The cap would be constructed of random wheel compacted clay or alluvium to provide a barrier to fluid migration.

Haul and access roads would be constructed or upgraded to provide haul truck access to the production shaft and other surface support facilities. Ancillary facilities at the Leeville Project would be located above – and below-ground. An existing Sierra Pacific Power Company transmission line would be rerouted to avoid the proposed shafts and surface support facilities.

Reclamation activities would include regrading of the waste rock disposal facility, removal of structures after cessation of operations, capping shafts, regrading of disturbed areas (including roads), drainage control, well closure (e.g., dewatering wells, piezometers), removal and regrading of stockpile areas, replacement of salvaged soil, revegetation, and reclamation monitoring. The reclamation schedule would encompass the period between cessation of mining through revegetation. Reclamation activities would be completed approximately 8 years after mining ceases.

## PROJECT ALTERNATIVES

Issues raised during public scoping and agency review of the Proposed Action were used to identify potential impacts that could result from the proposed Leeville Project. In general, potentially adverse effects that were identified include effects of the canal segment of the water discharge pipeline system on wildlife, long-term safety associated with closure of the production and ventilation shafts, and opportunity to reduce the amount of land disturbance associated with the Proposed Action.

Four alternatives are described in this section of the EIS: **Alternative A** – Eliminate Canal Portion of Water Discharge Pipeline System; **Alternative B** – Backfill Shafts; **Alternative C** – Relocate Waste Rock Disposal Facility and Refractory Ore Stockpile; and the **No Action Alternative**.

### ALTERNATIVE A – ELIMINATE CANAL PORTION OF WATER DISCHARGE PIPELINE SYSTEM

Alternative A would include implementation of all components of the Proposed Action and would require Newmont to eliminate the canal at the end of the proposed water discharge system. Newmont would extend the proposed pipeline to replace the canal.

### ALTERNATIVE B – BACKFILL SHAFTS

Alternative B would include implementation of all components described in the Proposed Action and would require Newmont to backfill the production and ventilation shafts associated with the Leeville Project. Newmont would use waste rock generated from the mining operation as backfill for the shafts and overburden in the uppermost portion of the shaft to facilitate revegetation.

Backfilling the shafts would eliminate the need for reinforced concrete closures Newmont has proposed for the shafts. The uppermost portion of the shaft would be backfilled with overburden and revegetated.

### ALTERNATIVE C – RELOCATION OF THE WASTE ROCK DISPOSAL FACILITY AND REFRACTORY ORE STOCKPILE

Alternative C would incorporate all components of the Proposed Action but Newmont would relocate the proposed Waste Rock Disposal Facility and Refractory Ore Stockpile to Section 3, T35N, R50E. Construction of these mine facilities would occur on Newmont's existing North Area Leach facilities and not result in new disturbance in Section 3. Implementation of Alternative C would result in 118 acres less new disturbance on land in Section 10, T35N, R50E.

The area in Section 3 proposed for the Leeville Mine Waste Rock Disposal Facility and Refractory Ore Stockpile is currently used as a refractory ore stockpile for Newmont's North Area Operations and was constructed in accordance with Newmont's Refractory Ore Stockpile and Waste Rock Dump Design, Construction, and Monitoring Plan (Newmont 1997a). Reclamation of the Leeville Waste Rock Disposal Facility and Refractory Ore Stockpile would be consistent with the approved reclamation plan for the North Area Leach and includes regrading the surface of the facility, placement of growth media, and seeding.

### NO ACTION ALTERNATIVE

Under the No Action Alternative, the Proposed Action would not be approved. Newmont would not be authorized to develop the defined ore reserves, construct ancillary mine facilities, place waste rock in the disposal facility, or construct the dewatering system discharge pipeline on public land. Potential impacts predicted to result from development of the Project would not be realized.

### AGENCY PREFERRED ALTERNATIVE

The agency preferred alternative is Alternative A, Eliminate Canal Portion of Water Discharge Pipeline System; B, Backfill Shafts; and, C, Relocation of the Waste Rock Disposal Facility and Refractory Ore Stockpile.

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## SUMMARY OF IMPACTS

Analysis of potential impacts and mitigation associated with Newmont's proposed Leeville Project is presented in Chapter 4 – *Consequences of the Proposed Action and Alternatives*. The following is a summary of potential impacts, by resource, resulting from the Proposed Action and Alternatives.

## PROPOSED ACTION

### GEOLOGY AND MINERALS

Direct impacts to the geologic resource associated with implementation of the Proposed Action include relocation of approximately 3 million tons of waste rock and 14 million tons of ore. Indirect impacts could include potential discharge of acidic water from waste rock disposal facilities and sulfide-bearing ore stockpiles. Waste rock and refractory ore produced from Leeville ore bodies have potential for leaching antimony, arsenic, manganese, nickel, selenium, and sulfate. Static geochemical and leach extraction acid-base accounting (ABA) test results indicate that about 8 percent of ore and waste rock that would be generated under the Proposed Action is potentially acid-generating (PAG). Meteoric Water Mobility Procedure (MWMP) tests completed on rock from the Leeville Project site indicate that waste rock and refractory ore have potential for leaching some metals (see *Geology and Minerals* section in *Chapter 3*).

Newmont has developed a program for controlling acid generation and leachate migration in stockpiles to prevent adverse environmental effects resulting from stockpiled mine rock. Newmont has also proposed reclamation methods for waste rock facilities to prevent post-mining acid generation within the stockpiles. These methods are described in greater detail in *Chapter 2*.

### PALEONTOLOGICAL RESOURCES

No known fossil quarries or vertebrate fossils are located in the area to be physically disturbed by the Proposed Action and therefore would result in no identified impacts to paleontological resources.

## AIR QUALITY

Fugitive dust emissions would be generated by mining, processing, hauling, and stockpiling ore. Gaseous pollutant emissions would result from blasting, construction and mining equipment, and vehicle exhaust. Maximum potential hourly mercury emissions would not increase due to processing of Leeville ore at the South Operations Area. Emissions from the Leeville Project would not affect air quality or visibility in any Class I Airshed areas.

## WATER QUANTITY AND QUALITY

Removal of groundwater using dewatering wells in the Leeville Mine area would be the primary cause of water-related impacts from the Proposed Action. The proposed dewatering wells would increase the depth of groundwater drawdown in a portion of the existing cone of depression created by current dewatering systems at the Goldstrike Property and Gold Quarry Mine. A total of about 360,000 acre-feet of water would be removed by Leeville dewatering from the regional aquifer system during the life-of-mine. Approximately 212,000 acre-feet of this water would be infiltrated into the Boulder Valley via irrigation, TS Ranch Reservoir, and other infiltration basins. Of the remaining 148,000 acre-feet, 133,500 acre-feet would be consumed by irrigation systems in the Boulder Valley, and approximately 14,500 acre-feet would be used by the mining operation.

A water treatment plant would be constructed at Leeville to treat excess mine water to necessary standards. Therefore, no impacts would occur to water quality from the excess mine discharge in Boulder Valley. Minor, short-term impacts to groundwater quality (e.g, nitrate and some metals) could occur immediately surrounding underground workings as the water table rises during recovery of the cone of depression. Minor increases in sedimentation would occur on the surface during construction and reclamation activities.

Dewatering at Leeville would extend the period to 90 percent recovery of the premining water table elevation in the Carlin Trend by about 20 years. This would include recovery of groundwater levels, flow from springs/seeps, and flow in affected streams. Reductions in baseflow resulting from adding Leeville Project dewatering to existing mine dewatering in the

Carlin Trend are predicted to be 0.1 cubic foot per second (cfs) or less for each of the potentially affected streams (Maggie, Boulder, Marys, and Beaver creeks) and the Humboldt River. Overall recovery to equilibrium conditions of hydrologic systems affected by regional dewatering in the Carlin Trend would be approximately 250 years in the vicinity of the Leeville Project area.

## **SOILS**

Potential impacts on soil resources include loss of soil during salvage and replacement, sediment loss due to erosion, and reduced biological productivity over a surface disturbance area of 486 acres. These impacts are expected to be minimized following successful reclamation of disturbed land. Some disturbed areas, such as rock faces would not be reclaimed following completion of the Project.

## **VEGETATION**

The Proposed Action would result in disturbance to 486 acres of rangeland vegetation communities at the mine site, along the discharge pipeline and canal route, ancillary facility sites, and haul roads. Potential impacts to riparian vegetation resulting from the Proposed Action would be limited to an extension of the duration of the water table drawdown currently impacted by existing dewatering operations in the Carlin Trend. See Wetlands/Riparian Zones section in this summary.

## **INVASIVE, NONNATIVE SPECIES**

Potential exists for invasion or spread of noxious weeds onto disturbed areas as a result of the Proposed Action.

## **WETLANDS/RIPARIAN ZONES**

Dewatering activities associated with the Leeville Project would prolong water table recovery to 90 percent of premining water table conditions within the area directly affected by Leeville's dewatering by approximately 20 years. This would delay restoration of up to 70 acres of wetlands and riparian zones potentially impacted by existing dewatering activities in the Carlin Trend. Wetlands and riparian zones potentially affected by Leeville dewatering include upper

Simon Creek, upper Lynn Creek, Welches Creek, James Creek, and portions of Maggie Creek (the Narrows). Discharge of water from Leeville's dewatering system to the TS Ranch Reservoir would result in a continuation of flow that supports springs and riparian zones in the Boulder Valley including Sand Dune, Green, and Knob springs.

Base flow loss to area streams (e.g., Marys, Maggie, Beaver, and Boulder creeks and the Humboldt River) caused by adding Leeville dewatering pumping to other dewatering operations in the Carlin Trend is predicted to be 0.1 cfs or less for each affected waterbody.

## **FISHERIES AND AQUATIC RESOURCES**

Dewatering activities at the proposed Leeville Project would prolong water table recovery to 90 percent of premining water table conditions within the area directly affected by Leeville's dewatering by approximately 20 years. This would result in a longer time period for recovery of stream flow potentially reduced by current dewatering operations in the Carlin Trend thus lengthening the time frame for recovery of any impacted aquatic habitat in these streams. Streams included in the direct impact area associated with the Leeville Project dewatering system include upper Simon Creek, upper Lynn Creek, and middle Maggie Creek (the Narrows).

The magnitude of base flow loss to area streams (e.g. Marys, Maggie, Beaver, and Boulder creeks, and the Humboldt River) caused by adding Leeville dewatering pumping to the other dewatering operations in the Carlin Trend at any given time is predicted to be 0.1cfs or less for each affected waterbody.

## **TERRESTRIAL WILDLIFE**

Impacts to wildlife resources as a result of the Proposed Action would include direct loss of habitat and loss or displacement of wildlife from affected habitat. Direct loss of wildlife habitat would eliminate cover/nesting, hiding, breeding sites, and forage over 486 acres of surface disturbance. Associated human activity and alterations to existing natural resources are expected to have minimal impact on wildlife resources in the Project area.

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## **THREATENED, ENDANGERED, CANDIDATE AND SENSITIVE SPECIES**

Direct and indirect impacts to threatened, endangered, candidate, and sensitive species or their habitat would include incremental loss of habitat or prey base due to mine disturbance. Species habitat that would be potentially affected by Leeville Project development include goshawks, burrowing owls, sage grouse, and ferruginous hawks. Lahontan cutthroat trout, springsnails, spotted frogs, and California floaters have not been documented in any stream segments directly impacted by Leeville dewatering activities, but some of these species could be located in the cumulative drawdown area.

The magnitude of base flow loss to area streams (e.g., Maggie, Marys, Beaver, and Boulder creeks and the Humboldt River) caused by adding Leeville dewatering to other dewatering operations in the Carlin Trend at any given time would be 0.1 cfs of less for each affected waterbody. Portions of three streams that support LCT (e.g., upper Coyote Creek, upper Little Jack Creek, and a mid-section of Beaver Creek) are within the predicted cumulative cone of depression in the Carlin Trend. Other stream segments and springs within the cumulative effects drawdown area support springsnails.

## **GRAZING MANAGEMENT**

The majority of the Project area has been fenced to exclude grazing due to on-going mining activity that predates Leeville. Approximately 264 acres of the proposed mine area currently open to grazing would be fenced to preclude grazing for the life of the Project. This would amount to a decrease of 36 animal unit months (AUMs) in the T Lazy S grazing allotment.

Livestock grazing potentially affected by loss of water availability due to dewatering activities in the Carlin Trend would continue to be impacted for an additional 20 year period as a result of the Proposed Action.

## **RECREATION AND WILDERNESS**

Potential impacts of the Proposed Action on recreation would be fewer acres available for recreational activities during operation and after cessation of mining until reclamation is complete. Impacts to existing campgrounds and other area recreational opportunities are expected to be minimal relative to existing conditions. Wilderness and Wilderness Study Areas (WSAs) would not be impacted by the Proposed Action.

## **ACCESS AND LAND USE**

The Proposed Action would not affect rights-of-way for Barrick's communication site and access road or Sierra Pacific Power Company's powerline along the North-South Haul Road. An amendment to an existing Sierra Pacific Power Company right-of-way allowing rerouting of approximately 3,800 feet of existing powerline through the proposed mine area would be submitted to BLM for approval. Existing access into the Project area is controlled by Newmont and Barrick. The Proposed Action would not result in a change in current access restrictions.

## **NOISE**

The Leeville Project would result in an increase in noise generated by mining and ore-processing activities in the North Operations Area. Noise generated would not affect residential areas.

## **VISUAL RESOURCES**

The primary impact of the Proposed Action would be large-scale modification of landforms. Angular, blocky forms and horizontal lines would create moderate contrasts with the natural rounded, rolling hills and ridges of the characteristic landscape. Clearing of vegetation in mine facility areas would create weak to moderate color contrasts with the existing landscape. New lines would be introduced delineating the edges of cleared areas and some change in texture would be seen, but overall contrast would be weak.

Visual impacts would be short-term as reclamation would reduce visual contrast associated with the Proposed Action.

## CULTURAL RESOURCES

Thirty-one cultural resource sites are located within the Area of Direct Effect, none of which are eligible or potentially eligible to the National Register of Historic Places. One prehistoric site located in the Surrounding Area of Effect has been determined eligible to the National Register based on Criterion D. However, no impact to this property would occur as a result of the Proposed Action or Alternatives.

## NATIVE AMERICAN RELIGIOUS CONCERNS

Implementation of the Proposed Action and Alternatives would have no direct or indirect impacts on Newe/Western Shoshone traditional cultural values, practices, properties, or human remains.

## SOCIAL AND ECONOMIC RESOURCES

Positive impacts that would occur under the Proposed Action would be continued direct employment in the mining industry and secondary employment in the retail and service sectors in the study area; continued income generated from wages paid by Newmont and by secondary job employers within area communities; and continued tax base support including property taxes and net proceeds of mining taxes paid by Newmont for the Leeville mining operation collected by local and state jurisdictions. Negative impacts would be temporary and minimal because a small number of construction and operational workers are expected to be hired outside the local labor area.

## ENVIRONMENTAL JUSTICE

There would be no disproportionate impacts to minority or low-income populations resulting from implementation of the Proposed Action and Alternatives.

## ALTERNATIVES

The following is a summary of potential impacts, by resource, predicted to occur as a result of alternatives to the Proposed Action.

### Alternative A – Eliminate Canal Portion of Water Discharge Pipeline System

Impacts on the following resources from implementation of Alternative A would be similar to those described under the Proposed Action:

- Geology and Minerals;
- Paleontological Resources;
- Air Quality;
- Water Quantity and Quality;
- Soils;
- Vegetation;
- Invasive, Nonnative Species;
- Wetlands/Riparian Zones;
- Fisheries and Aquatic Resources;
- Grazing Management;
- Recreation and Wilderness;
- Access and Land Use;
- Noise;
- Visual Resources;
- Cultural Resources;
- Native American Religious Concerns;
- Social and Economic Resources; and
- Environmental Justice.

### Terrestrial Wildlife

Implementation of Alternative A would reduce the potential impacts to terrestrial wildlife by eliminating the physical hazard associated with the open canal system.

### Alternative B – Backfill Shafts

Impacts on the following resources from implementation of Alternative B would be similar to those described under the Proposed Action:

- Geology and Minerals;
- Paleontological Resources;
- Air Quality;
- Soils;
- Vegetation;
- Invasive, Nonnative Species;
- Terrestrial Wildlife;
- Wetlands/Riparian Zones;
- Fisheries and Aquatic Resources;
- Threatened, Endangered, Candidate, and Sensitive Species;
- Grazing Management;
- Recreation and Wilderness;
- Access and Land Use;
- Noise;
- Visual Resources;
- Cultural Resources;
- Native American Religious Concerns;
- Social and Economic Resources; and
- Environmental Justice.

### **Water Quantity and Quality**

Groundwater quality within and surrounding backfilled mine shafts could have increased, short-term impacts resulting from contact with the backfill material.

### **Alternative C – Relocate Waste Rock Disposal Facility and Refractory Ore Stockpile**

Impacts on the following resources resulting from implementation of Alternative C would be

similar to those described under the Proposed Action:

- Geology and Minerals;
- Air Quality;
- Water Quantity and Quality;
- Terrestrial Wildlife;
- Wetlands/Riparian Zones;
- Fisheries and Aquatic Resources;
- Threatened, Endangered, Candidate, and Sensitive Species;
- Grazing Management;
- Recreation and Wilderness;
- Access and Land Use;
- Noise;
- Visual Resources;
- Cultural Resources;
- Native American Religious Concerns;
- Social and Economic Resources; and
- Environmental Justice.

### **Paleontological Resources, Soils, Vegetation, and Invasive, Nonnative Species**

Under Alternative C, impacts to these resources would be reduced commensurate with 118 acres less new surface disturbance.

### **No Action Alternative**

Under the No Action Alternative, Newmont would not be authorized to develop defined ore reserves, construct ancillary mine facilities, place waste rock in the disposal facility, or construct the dewatering system discharge pipeline on public land. Potential impacts predicted to result from development of the Project would not be realized.