GOLDEN QUEEN MINING COMPANY, INC.

SOLEDAD MOUNTAIN PROJECT

MOJAVE, KERN COUNTY, CALIFORNIA

FINAL
ENVIRONMENTAL IMPACT REPORT /
ENVIRONMENTAL IMPACT STATEMENT

VOLUME 1

SEPTEMBER 1997

State Clearinghouse Number 96061052

COUNTY OF KERN
PLANNING DEPARTMENT
BAKERSFIELD, CALIFORNIA

BUREAU OF LAND MANAGEMENT
RIDGECREST RESOURCE AREA
RIDGECREST, CALIFORNIA

VOLUME 1 OF 7

SOLEDAD MOUNTAIN PROJECT
KERN COUNTY, CALIFORNIA

FINAL ENVIRONMENTAL IMPACT REPORT/ ENVIRONMENTAL IMPACT STATEMENT

State Clearinghouse No. 96061052
Department of the Interior No. FES-97-26

LEAD AGENCIES:

- Kern County Planning Department
  Bakersfield, California

- United States Department of Interior
  Bureau of Land Management
  Ridgecrest, California

PROPOSED ACTION: Construction and operation of the Soledad Mountain Project, a proposed open pit heap leach gold mine.

ABSTRACT: The United States Bureau of Land Management (BLM) issued a Notice of Intent on March 21, 1996, to prepare an Environmental Impact Statement (EIS) for the Proposed Action. On June 16, 1996, the County of Kern (County) issued a Notice of Preparation of an Environmental Impact Report. In accordance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), the County and BLM prepared a joint Draft EIR/EIS which was made available on June 2, 1996. Written comments were accepted until August 11, 1997. Oral comments were heard at public meetings in Rosamond, Kern County, California on June 24, 1997 and Mojave, Kern County, California on June 25, 1997. The Final EIR/EIS contains the Comments and Response to Comments and the monitoring programs for all mitigation measures. The Proposed Action would construct and use conventional heap leach processing to recover disseminated gold from ore recovered from an open pit excavation. Ore would be processed at a rate of approximately six million tons annually for approximately ten years. A total of 930 acres of land would be disturbed by the project activities. Reclamation of disturbed areas would occur at the completion of operations. The total project life would be about fifteen years. Five alternatives to the Proposed Action were analyzed in detail in the Draft EIR/EIS: 1) No Action; 2) Increased Mining and Processing Rate; 3) Decreased Mining and Processing Rate; 4) Reduced Project Size; and 5) Partial Backfilling. Other alternatives were considered and eliminated from detailed consideration. Issues identified through the scoping process and evaluated in the Draft EIR/EIS include mineral resources, topography, geology and soils, hydrology, vegetation, wildlife, air quality, land use, visual resources, cultural resources, transportation, noise, socioeconomics and public health and safety. Regulatory requirements and mitigation measures incorporated by project design would result in impacts that are less than significant for soils, hydrology, air quality, vegetation, wildlife, visual resources, noise, land use, socioeconomics, public health and safety and traffic and transportation. Additional mitigation measures are recommended in the EIR/EIS to reduce significant cultural and historical resources to less than significant. Impacts to topography and mineral resources are considered significant and unavoidable adverse.

PUBLIC REVIEW: This Final EIR/EIS is being distributed for a 30-day public review and comment period according to the National Environmental Policy Act. Comments should be submitted by October 19, 1997 to the attention of Ahmed Mohsen at the following address:

Bureau of Land Management
Ridgecrest Resource Area
300 South Richmond
Ridgecrest, California 93555
(760) 384-5421

The Comments and Response to Comments were sent to the agencies and individuals who provided comments on the Draft EIR/EIS on August 25, 1997 as part of the CEQA process. A public hearing was held before the Board of Supervisors of the County of Kern on September 8, 1997. A Conditional Use Permit will be issued in September.

This document has been approved for public review.

Ted James
Director
Kern County Planning Department

Sept. 9, 1997
Date

Henri Bisson
Acting
District Manager, California Desert District
Bureau of Land Management

September 3, 1997
Date

SOLEDAD MOUNTAIN PROJECT
MOJAVE, KERN COUNTY
CALIFORNIA

FINAL
ENVIRONMENTAL IMPACT REPORT
ENVIRONMENTAL IMPACT STATEMENT

Volume 1

COUNTY OF KERN PLANNING DEPARTMENT

UNITED STATES BUREAU OF LAND MANAGEMENT
California Desert District
Ridgecrest Resource Area

September 1997

State Clearinghouse Number 96061052
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VOLUME 7

APPENDIX XIII Draft EIR/EIS Public Notification
Transcripts of Rosamond and Mojave Public Meetings

USER'S GUIDE

PURPOSE

The Soledad Mountain Project is a surface open pit gold mine proposed by Golden Queen Mining Company, Inc., located on public and private lands southwest of the town of Mojave in the County of Kern, California. This document is the joint Final Environmental Impact Report/Environmental Impact Statement (Final EIR/EIS) prepared by Kern County (County) and the United States Bureau of Land Management (BLM) in compliance with the Federal National Environmental Policy Act (NEPA) and the State of California Environmental Quality Act (CEQA) laws.

The U.S. Bureau of Land Management (BLM) issued a Notice of Intent on March 21, 1996, to prepare an Environmental Impact Statement (EIS) for the Proposed Action. On June 16, 1996, the County of Kern (County) issued a Notice of Preparation of an Environmental Impact Report. In accordance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), the County and BLM prepared a joint Draft EIR/EIS which was made available on June 2, 1996. Written comments were accepted until August 11, 1997. Oral comments were heard at public meetings in Rosamond, Kern County California on June 24, 1997 and in Mojave, Kern County, California on June 25, 1997. The Final EIR/EIS contains the comments and response to comments and the monitoring programs for all mitigation measures as well as changes made in response to comments.

The EIR/EIS is an informational document designed to outline to the public the effects on the land and resources of implementing the proposed action or alternative actions, identify ways to minimize the significant effects and describe reasonable alternatives.

This Final EIR/EIS has been formatted in accordance with the National Environmental Policy Act (NEPA), implementing regulations under 40 CFR 1502.10 and California's Public Resources Codes 21100(a) and 21003(b). This assures that the document is organized in a manner that provides meaningful and useful information to decision-makers, organizations and the public.

FORMAT AND CONTENT

This document is intended to be combined with the Draft EIR/EIS to form a complete EIR/EIS in the following manner. Replace the Table of Contents, User's Guide, and Executive Summary in the Draft EIR/EIS with the new pages contained in the Final EIR/EIS. Replace individual correction pages and Section 6.0, Comments and Response to Comments, Section 7.0, Mitigation Monitoring Program, Section 8.0, Report Preparation, and Section 9.0, Glossary and References, from the Final into Volume 1 of the Draft EIR/EIS. Correction pages for appendices are contained at the back of the Final EIR/EIS and should replace the individual pages in the Draft appendices with the same page number. Section 6.0, Section 7.0 and Section 8.4 are new for the Final EIR/EIS. All other pages contain corrections or new page numbers. The corrections include corrections of typographic errors, clarification of wording, and revisions to the Draft in response to comments. The correction pages contain additions in shading and deletions in strikeout. Please note that the term Draft EIR/EIS is used throughout the Draft EIR/EIS and should be changed to Final EIR/EIS, however, correction pages were not supplied for each occurrence of the term Draft EIR/EIS.

This is an abbreviated Final EIR/EIS, prepared according to NEPA. As stated in 40 CFR 1503.4(c), if minor changes are made in the Draft EIS in response to comments, consisting of technical, editorial or nonsubstantive factual corrections, then an abbreviated Final EIS may be prepared. An abbreviated Final EIS only contains copies of substantive comments received on the Draft EIS, responses to those comments, and an errata section with specific modifications and corrections to the Draft EIS in response to comments. Additionally, in accordance with the CEQA process, a Mitigation Monitoring Program was developed and has been included in the Final EIR/EIS.

When combined with the Draft EIR/EIS, this document forms the complete EIR/EIS which is organized in the following manner: Executive Summary, Introduction, Proposed Action and Alternatives, Affected Environment, Environmental Impacts and Mitigation Measures of the Proposed Action, Affected Environment, Environmental Impacts and Mitigation Measures of the Alternatives, CEQA Statutory Sections, Comments and Response to Comments, Mitigation Monitoring Program, Report Preparation and Technical Appendices.

Executive Summary - This section provides a brief project description, major conclusions and selection of the Preferred Action by the Lead Agencies, a description of any controversial

issues, a description of each significant impact with proposed mitigation measures and a summary of the unavoidable adverse project impacts and other issues to be resolved by the Lead Agency.

Introduction/Regulatory Framework (Section 1.0) - This section contains brief discussions of the material contained in the document and provides readers with an overview of the CEQA/ NEPA process, an overview of the organization and structure of the Environmental Review document, the purpose and need of the proposed project and a brief description of the project.

Proposed Action and Alternatives (Section 2.0) -The Proposed Action portion of this section includes a description of the basic characteristics of the project, including its: objectives, location, technical, economic and environmental characteristics, size and design, implementation schedule and a list of reviewing agencies and required discretionary approvals. The Alternatives portion of this section proposed for consideration a range of reasonable alternatives to the project which could: 1) reduce to Less Than Significant environmental impacts associated with the Proposed Action; 2) achieve the basic project objectives; and 3) be technically and economically feasible. Reasonable alternatives are those alternatives which may be feasibly carried out based on technical and economic factors and meet the purpose and need as outlined in Section 1 of the Final EIR/EIS. A No Action alternative is included to form a basis for comparing impacts to a baseline.

Affected Environment, Environmental Impacts and Mitigation Measures of the Proposed Action (Section 3.0) - This section examines the setting, direct and indirect impacts, the irreversible/ irretrievable commitment of resources, the cumulative impacts, the regulatory requirements, proposed project design features, the recommended mitigation and the residual impacts of the Proposed Action for each environmental area associated with the project, including:

- Mineral Resources (Natural Resources)
- Physiography and Geology (Earth Resources)
- Soils (Earth Resources)
- Hydrology (Water Resources)
- Air Quality
- Biology
- Cultural and Historical Resources (Cultural Resources)

- Visual Resources (Light and Glare/Aesthetics)
- Noise
- Land Use (Land Use/Population/Housing)
- Socioeconomics (Economic Development/Fiscal Analysis)
- Health Hazards and Public Safety (Human Health/Risk of Upset)
- Traffic and Transportation (Transportation/Circulation)

Affected Environment, Environmental Impacts and Mitigation Measures of the Alternatives (Section 4.0) - The Alternatives section examines in detail the reasonable alternatives considered for further analysis. It evaluates the impact of each of the alternatives on each of the project environmental resources, in the same manner as for the Proposed Action. It includes a detailed evaluation of the No Action alternative, and a comparison of the impacts of the alternatives to those of the Proposed Action.

CEQA Statutory Sections (Section 5.0) - This section includes assessments of short-term uses versus long-term productivity, growth-inducing impacts and a summary of environmental impacts of the proposed project.

Comments and Response to Comments (Section 6.0) - This section includes the written comments on the Draft EIR/EIS and responses to those comments. It also includes responses to oral comments made at two public meetings.

Mitigation Monitoring Program (Section 7.0) - This section presents a program to monitor and demonstrate compliance with the mitigation measures developed to avoid potentially significant impacts and specific conditions of approval associated with the Conditional Use Permit (CUP).

Report Preparation (Section 8.0) - The Report Preparation section contains a listing of the participants responsible for preparation of this document and the individuals, organizations and agency representatives contacted during the preparation of the Environmental Review.

Glossary and References (Section 9.0) - This section contains definitions of technical terms and acronyms used in the document, and a list of references cited.

Technical Appendices - The Technical Appendices section includes various supporting technical reports.

The descriptions and analyses in this Final EIR/EIS are based on a comprehensive body of data and information derived from technical studies, engineering reports and project permit applications. Appropriate information has been incorporated to allow assessment of the potential for significant environmental impacts of project implementation, following guidelines provided in NEPA and CEQA implementing regulations. Various technical documents identified in this Environmental Review are attached as appendices.

DECISION-MAKING PROCESS

CEQA - There are three basic CEQA compliance tracks: 1) projects exempt from CEQA are subject to few, if any, analytical or public participation requirements; 2) projects which are not exempt from CEQA, but which will not cause significant adverse environmental impacts are subject to simplified analytical and public participation requirements, concluding with the issuance of a Negative Declaration; and 3) projects which will, or may, result in significant environmental effects are subject to extensive analytical and public participation requirements, including the issuance of a Draft EIR and Final EIR. Kern County is the Lead Agency under CEQA for preparation of this Final EIR/EIS.

Open pit mining operations which use cyanide heap leaching processes to produce gold or other precious metals require an EIR.[1] The EIR process entails a full and detailed disclosure of the environmental impacts of the proposed project, potentially feasible mitigation measures to reduce these impacts and potentially feasible project alternatives.

An EIR consists of two documents: a Draft EIR, which is circulated to solicit comments from the public and other government agencies, and a Final EIR, which consists of responses to comments on the Draft EIR and modifications to the Draft EIR. If an agency makes substantial changes to the project or decides to present significant new information following issuance of the Draft EIR, the agency must then recirculate a revised Draft EIR for additional public review and comment.

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1 CEQA §21151.7

The final step in the CEQA process is the requirement that agencies adopt findings to document the agencies' rationale for approving the proposed project with respect to the environmental analysis presented in the EIR. CEQA requires that agencies must find that: 1) the project will have no significant environmental impacts; 2) the project may have significant impacts, but these impacts can be reduced to a Less Than Significant level by mitigation measures that can and should be implemented; and/or 3) the project will result in significant impacts, but there are specific social, economic or other overriding considerations justifying project approval.

An EIR provides an important opportunity for public participation and informed public agency decisions relating to proposed projects, plans and regulatory programs. CEQA compliance is significantly enhanced by the establishment and maintenance of sound working relationships with all concerned parties, including the community, the media and the project sponsor. By using the CEQA process to address environmental impacts and take public concerns into account, public agencies can comply with CEQA's legal requirements and establish a process that both encourages and benefits from public involvement.

NEPA - There are five basic steps to completing the NEPA process:

1) Scoping
2) Data collection
3) Documentation of the Environmental Analysis
4) Decision documentation
5) Project implementation and monitoring

The MOU between Kern County and the BLM encourages preparation of a joint document to minimize duplication of effort and paperwork. This document is prepared in accordance with the MOU and addresses those items specific to NEPA which are not covered in the CEQA process.

The BLM will use this document to process the mining Plan of Operations submitted by Golden Queen Mining Company under 43 CFR 3809, Surface Mining Regulations. A Record of Decision (ROD) will be the administrative mechanism to approve or deny the Proposed Action. Appeals of BLM decisions are subject to 43 CFR 4.

EXECUTIVE SUMMARY

INTRODUCTION

This ~~Draft~~ Final Environmental Impact Report/Environmental Impact Statement (~~Draft~~ Final EIR/EIS) has been prepared in accordance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) for use by Kern County and the United States Bureau of Land Management, Ridgecrest Area Office of the California Desert District (BLM) in consideration of a proposed development, by Golden Queen Mining Company, Inc. (Golden Queen), of the Soledad Mountain Project, approximately five miles southwest of the unincorporated town of Mojave (population approximately 4,000) in Kern County, California.

The purpose of this ~~Draft~~ Final EIR/EIS is to present BLM and Kern County's comparative analysis of the impacts of the Proposed Action and Alternatives on the physical, biological, social and economic resources of the area and to present comments and response to comments on the Draft EIR/EIS. The Proposed Action is a mining proposal to extract minerals from the subsurface, process the ore using chemical leaching methods and place the waste rock adjacent to the processing and mining areas. Alternatives to the Proposed Action include variations on the duration of operations and placement of waste rock. After careful consideration of the impacts of the Proposed Action and all the alternatives, BLM and Kern County have identified a joint Preferred Action in response to regulatory requirements, issues raised, resources present, impact analysis results and the effectiveness of mitigation and reclamation measures.

A total of 930 acres are proposed to be disturbed by the Proposed Action at the end of operations. The project area consists of approximately 1,690 acres, of which 1,219 acres (72 percent) are privately owned land and 471 acres (28 percent) are unpatented mining claims on public lands administered by the BLM. The Kern County Planning Department is the lead agency for compliance with the California Environmental Quality Act and will oversee the implementation of and compliance with the Surface Mining and Reclamation Act of 1975 (SMARA), which is applicable to all mining operations within the State of California. BLM is the Lead Agency for compliance with the National Environmental Policy Act and will oversee compliance with the standards and procedures in the BLM regulations for surface mining of public land under the United States Mining Law.

A public scoping process was initiated by the BLM and Kern County to identify issues and concerns relating to the proposed mining operation and assist the lead agencies in formulating alternatives to the Proposed Action. The scoping process was designed to provide an opportunity for receipt of verbal and written comments from the public, organizations and government agencies. This was achieved through two public meetings, newspaper publications, federal register notice and notice of preparation of an EIR/EIS. Project description, resource inventories and public meeting proceedings were made available on the worldwide web as early as March 1996.

The issues raised during the scoping process include the project's impact upon:

- Storm water runoff and erosion control
- Water supply and availability
- Water quality
- Damage to public roads by heavy truck traffic
- Vibration damage (from blasting) to structures and water wells
- Visual impacts
- Health impacts from dust, fumes and toxic emissions
- Noise
- Traffic
- Property values

Each of these issues was given special attention and consideration in the development of the impact analyses and the conclusions derived from the analyses. In accordance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), the County and BLM prepared a joint Draft EIR/EIS which was made available on June 2, 1996. Written comments were accepted until August 11, 1997. Oral comments were heard at public meetings in Rosamond, Kern County, California on June 24, 1997 and in Mojave, Kern County, California on June 25, 1997.

PROJECT LOCATION AND SETTING

The project is located within an unincorporated area of eastern Kern County. The project area is on and around Soledad Mountain, west of State Route 14 and south of Silver Queen Road. The project area includes portions of Sections 5, 6, 7 and 8 in Township 10 North, Range 12 West, Section 1 in Township 10 North, Range 13 West, and Section 32 in Township 11 North, Range 12 West, San Bernardino Base and Meridian. The entrance to the facilities will be from Silver Queen Road, approximately one and one-half miles west of State Route 14.

The topography of the western Mojave Desert in the area of the site varies from relatively flat alluvial areas to steep mountains. Elevations vary from approximately 2,000 feet above mean sea level in the flat alluvial-covered areas to over 5,000 feet in some of the mountainous areas. Soledad Mountain is a volcanic peak approximately three miles in diameter. The topography of the project area consists of rugged outcrops and ridges with intervening drainage which grade to alluvial slopes and flat areas on the flanks of Soledad Mountain. The elevation of the project area varies from 4,190 feet above mean sea level at the peak of Soledad Mountain to approximately 2,700 feet above mean sea level along the northeast flank.

Industrial facilities in the area include chemical plants, recycling facilities and airplane storage and repair facilities at the Mojave Airport. In the higher elevations to the northwest of the site are several hundred windmills which generate electricity. Edwards Air Force base is located to the east and occupies a large portion of the desert floor.

Soledad Mountain has been the site of nearly continuous exploration for and mining of precious metals since gold was discovered there in 1894. Other open pit mining activity in the Mojave area near the project site includes Standard Hill (precious metals), Cactus Gold (precious metals), Granite Construction (aggregate), Asphalt Construction (aggregate and asphalt batch plant) and California Portland Cement Mojave Plant (aggregate and cement plant).

Distances to the nearest urban centers include Bakersfield, approximately 49 miles northwest, Lancaster, approximately 22 miles south, and Los Angeles, approximately 62 miles southwest. Approximately five residences are located on Silver Queen Road to the north of Soledad Mountain. The Camelot housing and golf course development is located three miles north of the project area and consists of 109 houses on approximately 15 acres. Less than 10 additional homes are located on the north side of the golf course outside the development. ~~Approximately 15 residences are located along Backus Road south of the mountain.~~ There are approximately 48 residences, inhabited and uninhabited, south of the project area on or near Backus Road west of State Route 14 and approximately 21 residences east of State Route 14 within two miles of the proposed disturbance.

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Proposed Action

The Soledad Mountain Project is a proposal to develop an open pit precious metals (gold and silver) mining and heap leach processing operation with the potential for the production of aggregate and construction materials. Up to 60 million tons of ore and 230 million tons of overburden materials will be mined. The anticipated life of the project is up to 15 years with employment expected for approximately 230 people. The project will operate 24-hours per day, 7-days per week. Processing operations will continue for approximately two years after the cessation of mining, at which time the project will begin closure and reclamation.

Construction activities for the Soledad Mountain Project would last one year and would include: construction of haulage and access roads to the open pit mine areas, preparation of the initial open pit mine production areas, leveling the crushing and sizing area and installing the equipment, grading the first cells of the heap leach pad and installing the liner and leak detection systems, creating growth media stockpiles, establishing water wells, erecting the process facility, grading the office and parking areas and erecting office, maintenance and ancillary facilities.

Mining will be done using conventional open pit, hard rock mining methods, including: drilling of blast holes, blasting, loading haul trucks with shovels or front-end loaders, hauling ore to the processing area and hauling overburden to the overburden piles. These activities will be supported by bulldozers, road graders, water trucks and miscellaneous service vehicles. Dust generation will be controlled by the use of dust suppressant palliatives and watering of roads and working areas.

Prior to leaching, the ore will be crushed and screened to reduce the ore to a nominal minus 10 mesh (about one-sixteenth inch) particle size. After crushing, it will be agglomerated, a process where fine particles are used to coat larger particles to produce relatively uniform size particles. These agglomerates enhance solution percolation within the heap leaching process. The agglomeration process will include the addition of cement and/or lime to the ore, which minimizes the evolution of cyanide from the leach solution. Throughout the crushing and agglomeration process, dust generation will be suppressed using water sprays and/or controlled by dust collectors.

The design concept for this project utilizes modified valley-fill heap leach pads in which heap leach pads with internal solution control are constructed. The heap leach pads will be designed as side-hill leach pads with a perimeter berm supporting the toe of each heap and providing internal solution storage capacity. Gold and silver will be recovered from the Soledad Mountain Project ore by cyanide heap leaching, followed by the Merrill-Crowe recovery process.

The project will require the use of an average of 750 gallons per minute of water, pumped from up to three water supply wells, over the life of the project. This water will be used for dust control and to replenish the water lost in processing to evaporation and residual heap ore moisture. Bottled water will meet the potable water needs for the project. A new electricity substation will be constructed on the project site with overhead and underground distribution to serve the various locations on the project site.

Reclamation

A total of 930 acres will be disturbed by the project, approximately 215 of which have been disturbed as a result of prior activities on the site. Except for the steep walls of the open pit mine, which cover 221 acres, and 20 acres of process area high wall and side slope, all disturbed acreage will be subject to reclamation and/or stabilization processes. A total of 419 acres will be revegetated using locally gathered seeds. Project operations will be followed by closure and reclamation of the site.

The general objectives of reclamation are: to return disturbed lands to a condition similar to the pre-mining land use condition.

Specifically, reclamation of the Soledad Mountain Project will include:

- Salvage and storage of top soils for use as growth media;
- Slope reduction of the overburden piles;
- Contouring and surface preparation of the top horizontal surfaces of the overburden piles;
- Contouring and surface preparation of the top and sides of the heap leach piles;

- Contouring and surface preparation of exploration disturbances and production support facilities sites;
- Revegetation of the prepared surfaces of the overburden piles, heap leach pads and support facilities sites;
- Revegetation with seeds collected from the site and vicinity;
- Neutralization of process components;
- Dismantling and removal of structures;
- Preserving evidence of the mineralization and the mineral resources; and
- Reducing risk to public health and safety.

To assure that reclamation and heap neutralization will be satisfactorily completed at no public expense, financial assurances will be posted by Golden Queen prior to construction with Kern County, BLM and the Lahontan Regional Water Quality Control Board.

Alternatives

NEPA and CEQA require lead agencies to rigorously explore and objectively evaluate all reasonable alternatives to the proposed action. The objectives of analyzing alternatives to the Proposed Action is to provide the public and decision makers with a comparative analysis of the impacts of reasonable alternatives, including the No Action alternative. This provides a clear basis for choice among options that are evenly examined. This process provides the rationale that allows the lead agencies, in consultation with all affected interests, to select a Preferred alternative that best meets its statutory mission.

A total of 16 alternatives to the Proposed Action were considered for evaluation.

These included: alternative mining techniques, different overburden disposal methods, precious metals recovery processes, project site and facility locations and power supplies.

Evaluation of Alternatives

After careful evaluation of each alternative, five alternatives were identified as reasonable alternatives considered for detailed analysis. Reasonable alternatives are the ones

determined by BLM and Kern County which may meet the purpose and need of the proposed project.

Those reasonable alternatives selected for consideration are:

- No Action - in which the proposed project is not approved, and no change from existing environmental conditions occurs.
- Increased Mining and Processing Rate - in which the rate of mining and processing is increased by 20 percent.
- Decreased Mining and Processing Rate - in which the rate of mining and processing is reduced by 20 percent.
- Reduced Project Size - in which the total amount of mining is reduced to avoid topographic impact to significant ridge lines of Soledad Mountain.
- Partial Backfilling - in which portions of the open excavation would be used for waste rock disposal.

Significant Impacts and Mitigation Measures of the Proposed Action

The environmental impacts of the Proposed Action upon each of the following resources have been analyzed and conclusions of significance reached. These impacts are summarized below:

- Mineral Resources

  Utilization of the known mineral resources would increase the potential for the discovery of additional mineral resources, currently unknown, and is consistent with land use policies encouraging the development of mineral resources. Removal of mineral resources is considered a Significant and Unavoidable Adverse impact.

- Physiography and Geology

  The topography of the project site would be altered by the creation of an open pit mine, overburden piles and heap leach pads. These will be permanent land forms after reclamation is complete. The environmental impact on topography would be Significant and Unavoidable Adverse.

Geologic understanding of the area would be enhanced by improved access for observation and interpretation. New facilities will be constructed in accordance with the Uniform Building Code for the seismic risk at the site. Many existing seismic hazards would be eliminated by project development. The environmental impact on geology and seismicity would be Less Than Significant.

- Soils

Four soil types would be disturbed, two of which would be collected for reclamation use as growth media. An approved site drainage plan will provide for storm water and erosion control. Since the area soils are rocky and nutrient poor and the best soils will be salvaged for reuse, the environmental impact upon soils would be Less Than Significant.

- Hydrology

Overburden piles are not acid producing and would not release substances to the environment which might potentially degrade surface or groundwater. Ore heaps will be constructed and managed according to Lahontan Regional Water Quality Control Board requirements and regulations. An approved site drainage plan will control storm water runoff. The project will be a zero discharge facility. Reagents, chemicals, fuels, lubricants and supplies will be stored, used and disposed of in accordance with all regulatory agency requirements. Leak detection systems will be installed and monitored. The environmental impact upon surface water and water quality would be Less Than Significant.

Approximately 750 gallons of water per minute would be used over the life of the project, which is less than 7 percent of the estimated recharge to the basin. This would result in a localized water table drawdown, but would not significantly affect other water supply wells. The groundwater would recover to within 80 percent of its pre-project level within five years after discontinuing the use of the project water supply wells. The environmental impact upon water supply would be Less Than Significant.

- Air Quality

District air quality standards and regulations will be met. A health risk assessment for the project has indicated that no significant risk from project-related toxic contaminants or activities would occur. Operations will be conducted using Best Available Control Technology under permits issued by the Kern County Air Pollution Control District. United States Environmental Protection Agency-approved air quality modeling methods indicate that the environmental impact upon air quality would meet district air quality standards and would be Less Than Significant. Existing ambient air quality will be improved in the long-term through reclamation of existing tailings piles that contribute a calculated 136,000 pounds of PM_{10} emissions per year.

- Biology

No endangered, threatened, rare or sensitive plant or endangered or threatened animal species have been found at the site. Site disturbance would affect existing plants and animals until reclamation is complete. Fencing, heap leach pad and agglomeration designs would limit wildlife contact with process solutions. Reclamation of the site, using locally gathered seeds, would reduce the environmental impact to biological resources to Less Than Significant.

- Cultural and Historical Resources

Four historical sites have been identified as having scientific and historical value. Salvage excavation, architectural recording and data recovery will be performed at each of these sites prior to construction. A viewing and informational kiosk, which will include site historical information, will be built. Without these studies, deterioration of these sites would continue and their value would be lost.

By definition, disturbance of these sites would constitute a Significant environmental impact. As a result of the data recordation efforts proposed, this impact will be mitigated to Less Than Significant.

- Visual Resources

Impacts would result from the surface disturbance associated with construction and mine operations. Reclamation of the site would reduce the long-term impact. The view from residences immediately north of Soledad Mountain, and, to a lesser extent, along Backus Road to the south of Soledad Mountain, would be affected. The Proposed Action, while retaining the basic elements of the form, line, color and texture of the mountain, may attract attention. Evaluation of the impact using BLM Visual Resource Management methods indicates a weak contrast in relation to other current and historical activities in the surrounding region. This, combined with the viewing distance from towns and major travel routes, indicates that the environmental impact upon visual resources would be Less Than Significant.

- Noise

The project site is designated for mineral development and mining. Current sources of noise include sonic booms, vehicle traffic from nearby major roads and trains on nearby railroad tracks. The local terrain is complex, sheltering noise which may be generated from mining operations. There would be a perceptible increase in area noise, attenuated by distance, during the life of the project. The maximum noise levels generated from the project would be within the limits recommended by the Noise Element of the Kern County General Plan at nearby occupied residences. The environmental impact of noise would be Less Than Significant.

- Land Use

The majority of the project site is zoned for Limited Agriculture. The Specific Plan for Soledad Mountain - Elephant Butte and Vicinity - South of Mojave use designation for the site is for mineral extraction and processing, public lands and low-density residential uses. Public lands managed by BLM at the site include mining as a permitted use. The primary land use within the project area consists of mineral exploration, minerals development and open space. Mineral rights for the site have been acquired by Golden Queen, and no legal restraints to the project exist. A portion of New Eagle Road extending into the project site will be vacated. Following reclamation, the site will be returned to pre-project land uses. The environmental impact upon land use would be

Less Than Significant. Golden Queen intends to pursue a land exchange with BLM whereby all the disturbed public lands within the project boundary would become private land. In exchange, the BLM would receive land in areas where there are large areas of public holdings. The BLM had previously designated the public land in this area for exchange.

- Socioeconomics

The project will create 250 construction jobs, approximately 230 full-time jobs and 136 indirect jobs. During the construction period approximately 13.7 million dollars would flow to the local economy. The value added to the region over the life of the project is estimated at 11 million dollars per year. Tax receipts would exceed government services provided. Most employees would come from the local area, and no growth-inducing impacts would result. The project would substantially enhance the local economy, which will be positive. The environmental impact on socioeconomics would be Less Than Significant.

- Health Hazards and Public Safety

Project construction and reclamation activities would eliminate or reduce existing hazards from historical mining activities, such as particulate emissions from blowing tailings, access to existing underground mine openings and unstable structures which would reduce existing hazards to Less Than Significant.

- Traffic and Transportation

The project would increase traffic by 375 average daily trips, an increase of 91 percent over the current level. Silver Queen Road is a county road, constructed and maintained to support truck traffic as well as passenger vehicles. The capacity of Silver Queen Road is 15,000 average daily trips. The volume to capacity ratio of Silver Queen Road would increase from its current 0.03 level to 0.05. Potential aggregate sales could result in an additional 140 average daily trips, increasing the volume to capacity ratio to 0.06. Ample parking will be provided on the project site. Local transit requirements would not be affected since most of the employees will be local residents. There is little pedestrian traffic in this undeveloped area, so there would be no effect upon

pedestrians. The environmental impact upon traffic and transportation would be Less Than Significant.

Significant Impacts and Mitigation Measures of the Alternatives

Components of the Proposed Action related to the mining operation are common to all of the alternatives except the No Action. Each environmental impact was analyzed for each alternative in the same manner as for the Proposed Action.

Of the alternatives, the No Action and the Reduced Project Size represent a change in the amount of land that would be disturbed relative to the Proposed Action. The potential impacts of these alternatives may vary from those of the Proposed Action in many of the resource areas evaluated.

The Increased Mining and Processing Rate, the Decreased Mining and Processing Rate and the Partial Backfilling alternatives do not change the overall size of the project from the Proposed Action relative to the land area disturbed or the amount of material mined and processed. Therefore, most of the impacts to resources will be the same as those of the Proposed Action, with the exception of the tempo or duration of impacts relative to the set time frame.

- No Action Alternative

The No Action alternative would constitute denial of the operational permit to develop the project. This alternative is the CEQA environmentally superior alternative and NEPA environmentally preferred alternative. The No Action alternative would result in no change to the current impacts on the resources of the area. The No Action alternative would not benefit the socioeconomic and employment opportunities of the area. Reclamation of 215 acres disturbed by historic mining activities would not be realized under this alternative. This would increase impacts to vegetation, wildlife and visual resources from the current levels. Air and water quality impacts would continue at their current levels if the No Action alternative is implemented. Other benefits to the resources would not be realized as a result of this alternative, they include: seismic hazard impacts, long-term air quality, cultural and historical resources.

Because it has several beneficial environmental benefits, this alternative is environmentally superior to the Proposed Action. However, the selection of the No Action alternative would not be consistent with federal mining laws and regulations (1976 FLPMA and 43 CFR 3809) unless operations result in undue and unnecessary degradation of the subject lands. Some state and county policies encourage mineral development. While the Specific Plan for Soledad Mountain - Elephant Butte and Vicinity - South of Mojave recognizes gold and silver mining operations as important land uses, a No Action alternative would still be consistent with both the County General Plan and the Specific Plan.

- Increased Mining and Processing Rate

This alternative examines the environmental effects of an increased rate of mining and ore processing relative to the Proposed Action. The Increased Mining and Processing Rate alternative is technically feasible. This alternative would result in the exceedence of PM_{10} standards. It also would require implementation of additional mitigation measures associated with dust control. This would result in additional water usage and operational equipment exhaust.

If operational air quality monitoring should indicate that the results of pre-operational modeling were not indicative of actual conditions, consideration of increased rates should not be precluded.

Although this alternative is technically feasible, it is not environmentally superior to the Proposed Action.

- Decreased Mining and Processing Rate

This alternative examines the environmental effects of a decreased rate of mining and ore processing relative to the Proposed Action. The Decreased Mining and Processing Rate alternative is technically feasible. This alternative would have a slight beneficial effect on drawdown of groundwater levels, slightly lower noise levels and slightly less traffic. The alternative would produce a negligible impact on water supply due to the need for an increased total amount of water. With respect to other resources affected, there would be no significant difference between this alternative and the Proposed Action.

Although this alternative is technically feasible and has some beneficial effects, it is not environmentally superior to the Proposed Action. It is comparable to the Proposed Action.

- Reduced Project Size

The Reduced Project Size alternative examines the environmental effect of the project designed to minimize topographical impact and improve, incrementally, visual impacts. This alternative would be technically feasible.

This alternative would have a slight beneficial effect on the topographic profiles in relation to the Proposed Action since less disturbed acreage is involved. This alternative would have a slight beneficial effect on the vegetative resources of the affected area. With respect to the visual impact of this alternative, relative to the Proposed Action, there is a slight beneficial difference. This alternative would result in a decrease in employment duration by seven years, as compared to the Proposed Action. Health hazard risks would increase as a result of this Reduced Project Size alternative, mainly due to the decreased acreage subject to reclamation. For all other resources affected, its environmental impacts are essentially equivalent to the Proposed Action.

Reducing the project size would be slightly beneficial relative to the Proposed Action with respect to topographic profiles and vegetative resources. This, however, does not render this alternative environmentally superior to the Proposed Action since the benefits of reducing existing hazards and reclamation of previously disturbed mining activities would not be fully realized.

- Partial Backfilling of the Open Pit

This alternative examines the environmental affects of modifying the Proposed Action to allow for partial backfilling of the depressions created by open pit mining activities. Although this alternative is technically feasible, it is not considered to be environmentally superior to the Proposed Action because it extends the impacts of the earth-moving operations for an additional two and one-quarter years.

Partial Backfilling would be slightly beneficial relative to the Proposed Action with respect to topographic profiles and vegetative resources. However, this alternative is slightly less beneficial relative to the Proposed Action with respect to noise, air and water quantity.

CONCLUSIONS

Three significant impacts would result from the Proposed Action. They include the impact of the project upon the mineral resources, the topography of the site and upon cultural and historical resources.

The mining of the ore will result in the removal of the mineral resource which is considered a significant and unavoidable adverse impact. Commercial utilization of the geologic resources constitutes a beneficial use of available resources.

The nature of the project will necessarily affect the topography of the site and will result in the creation of mine high walls, heap leach piles and overburden piles. Even after reclamation is complete, these features will remain. Other than those reclamation actions proposed in the reclamation plan, no mitigation measures have been proposed or specified that have the ability to reduce the impact of the project to Less Than Significant.

Resources of cultural and historical significance would be impacted by the project. This impact will be mitigated to a Less Than Significant impact through site investigations and recordation of data. Since these sites are deteriorating and their historical significance would likely be lost without this effort, the recordation of the sites is positive to an understanding of the mining history.

Although each of the resources analyzed for environmental impact will be affected in some manner, the impacts on each were found to be Less Than Significant. Therefore, no additional mitigation measures are recommended.

Evaluation of these Proposed Action and the alternatives resulted in the following conclusions:

- The No Action alternative is the NEPA Environmentally Preferred alternative and the CEQA Environmentally Superior alternative.
- The Proposed Action is the BLM's NEPA Preferred alternative.

A summary of the alternatives is in Table S-1. Table S-2 summarizes the environmental impacts of the Proposed Action.

TABLE S-1

Summary of Alternatives

	Technically Feasible	Environmentally Superior	Meets County Objectives(1)	Meets BLM Objectives(2)	Remains Under Consideration (3)
Proposed Action	Yes	-	Yes	Yes	Yes
No Project Alternative	Yes	Yes	Yes	No	Yes
Increased Mining and Processing Rate Alternative	Yes	No	Yes	No	No
Decreased Mining and Processing Rate Alternative	Yes	Same	Yes	Yes	Yes
Reduced Project Size Alternative	Yes	Same	Yes	No	Yes
Partial Backfilling Alternative	Yes	No	Yes	Yes	Yes

(1) Consistency with General Plan and/or Specific Plan.
(2) BLM multiple use mission.
(3) Remains under consideration after analysis in Section 4.0.

TABLE S-2
Executive Summary Table

Environmental Issue	Impact	Regulatory Requirements	Project Design Features (Applicant-Proposed Mitigation)	Additional Recommended Mitigation Measures	Level of Significance After Mitigation
Mineral Resources 1. Loss of mineral resources through extraction.	Significant and Unavoidable Adverse	• There are no regulatory requirements related to the mineral resources of the project.	• Exploration activity, drilling boreholes and analysis of rock samples, has been conducted to ensure mineral resources will not be covered by overburden or heap piles.	None	Significant and Unavoidable Adverse
Physiography and Geology 1. Natural ground contours would be modified.	Significant and Unavoidable Adverse	• The State Mining and Geology Board Reclamation Regulations require that slopes of the pit and overburden piles be stable and conform with the surrounding topography and proposed end use. • A Reclamation Plan is required which identifies areas to be revegetated and type of vegetation. • Bonding for reclamation is required.	• During final reclamation, overburden will be graded to break up the unnatural angles at the top edges.	None	Significant and Unavoidable Adverse
2. Potential ground motion from earthquakes could cause instability of slopes, pose of hazard to site facilities, or cause collapse of historic underground mine areas and above ground structures.	Less Than Significant	• Construction of buildings will be in accordance with Zone 4 seismic design provisions of the Uniform Building Code. Building plans require review and approval by Kern County. • Earthwork and fills will be constructed in accordance with geotechnical design specifications and Kern County excavation and grading guidelines. Grading plans require review and approval by Kern County. • The State Mining and Geology Board Reclamation Regulations require that slopes of the pit and overburden piles be stable and conform with the surrounding topography and proposed end use. The requisite slope stability analysis will be incorporated as part of the approved reclamation plan.	• Mine pit slopes will be evaluated throughout operations to assure that excavation occurs at a slope angle that is safe, considering actual rock strength and structural conditions encountered. • Old underground mining areas will be excavated or remediated. • Historical structures will be stabilized or removed by the applicant prior to site disturbance.	None	Less Than Significant

TABLE S-2
Executive Summary Table

Environmental Issue	Impact	Regulatory Requirements	Project Design Features (Applicant-Proposed Mitigation)	Additional Recommended Mitigation Measures	Level of Significance After Mitigation
Physiography and Geology (Continued)		• An Emergency Response Plan to address problems related to a seismic occurrence will be developed by the applicant as part of the Hazardous Materials Business Plan filed with the Kern County Environmental Health Services Department.			
Soils 1. Potential Loss of topsoil due to surface disturbances or erosion.	Less Than Significant	• Up to six inches of Arizo and Cajon type soils will be removed from areas to be disturbed and stockpiled as growth media for use in reclamation and revegetation. The reclamation plan will be reviewed and approved by Kern County. • A Site Drainage Plan has been prepared to control erosion and soil stabilization and will be incorporated as part of the approved surface mining and reclamation plan. • Soils in areas subject to minimal disturbance will be left in place and stabilized, as necessary, in accordance with the surface mining and reclamation plan reviewed and approved by Kern County.	• Surface disturbance outside the project area will be kept to a minimum by clearly delineating operating areas to limit roads and vehicle traffic outside designated areas. • Growth media stockpiles will be stabilized by allowing germination of seeds naturally contained in the soil. • The feasibility of inoculation of soil with biological components will be investigated in test plots. • Site drainage will be inspected periodically to assure that excessive erosion is not occurring. In the event excessive erosion is identified, the drainage plan will be revised in consultation with Kern County.	None	Less Than Significant

TABLE S-2
Executive Summary Table

Environmental Issue	Impact	Regulatory Requirements	Project Design Features (Applicant-Proposed Mitigation)	Additional Recommended Mitigation Measures	Level of Significance After Mitigation
Hydrology 1. Alternations of the drainage pattern resulting in erosion and/or flooding.	Less Than Significant	• A General Construction Activity Storm Water Permit will be obtained from t he Lahontan Regional Board to regulate storm water flows at the site during construction • A Site Drainage Plan for the control of surface flow during operations has been submitted to Kern County. • The BLM will regulate the surface drainage modifications and erosion control measures through review, approval and issuance of the Plan of Operations. Annual inspections will assure compliance. • Kern County will regulate reclamation activities reviewed to stabilization of drainage and erosion control to assure consistency with SMARA requirements. Kern County will conduct inspections annually to assure compliance.	• Additional erosion prevention techniques include: - Site drainage will be retained onsite. - Site roads and drainage will be inspected by Golden Queen personnel after rainfall events which result in surface flow to ensure erosion prevention is maintained and upgraded as needed. - Drainage from the tops of overburden piles will be directed away from the slopes toward the pit. - Salvaged growth media will be stockpiled away from areas of concentrated drainage. - Reclamation of disturbed areas will occur as soon as possible.	None	Less Than Significant

TABLE S-2
Executive Summary Table

Environmental Issue	Impact	Regulatory Requirements	Project Design Features (Applicant-Proposed Mitigation)	Additional Recommended Mitigation Measures	Level of Significance After Mitigation
Hydrology (cont.) 2. Potential degradation of surface water and groundwater quality.	Less Than Significant	• A Report of Waste Discharge will be filed with the Lahontan Regional Board in accordance with Title 23 CCR, Chapter 15, Article 7. The Lahontan Regional Board will implement the following requirements through detailed design review, issuance of waste discharge requirements, and yearly inspections. - Soil and foundation materials under the liner will be tested. - Approval of heap leach pad design and construction. - Low permeability liner systems will be installed by experienced contractors with quality assurance being provided by an independent engineering firm. - A leachate collection and recovery system (LCRS) will monitor and collect any solution which may pass through the upper liner. - A perimeter berm around the heap leach pads designed to contain solution from the leach pads and the 100-year, 24-hour storm event will be installed. - Drainage or diversion ditches outside the processing solution area will be built to preclude entry of storm runoff into the system. - Water quality will be monitored in groundwater monitoring wells for one year prior to the use of sodium cyanide as background information.	• The over liner protective material placed in direct contact with the HDPE liner will not exceed 1.5 inches in diameter, and will not contain hard, sharp, angular pieces. • A cyanide destructing compound (e.g., hydrogen peroxide or calcium hypochlorite) will be maintained onsite for use in the event that a spill occurs. • Historical mining wastes and tailings will be tested and used onsite or, if indicated, disposed of at an offsite permitted disposal facility, removing any future threat of surface water contamination. • The Lahontan Regional Board will be consulted prior to the use of dust suppression or soil stabilization chemicals.	None	Less Than Significant

TABLE S-2
Executive Summary Table

Environmental Issue	Impact	Regulatory Requirements	Project Design Features (Applicant-Proposed Mitigation)	Additional Recommended Mitigation Measures	Level of Significance After Mitigation
Hydrology (cont.)		- Storm water runoff, the vadose zone (the unsaturated zone between the liner and groundwater), and groundwater will be monitored for constituents of concern using statistical analysis. - Quarterly reports on monitoring results and the current status of operations will be submitted to the Lahontan Regional Board. - The heap leach pile will be neutralized at the time of closure. A Final Closure and Post-Closure Maintenance Plan will be approved 180 days before the start of closure. - Financial assurance for neutralization and closure of the heap leach pile will be posted in accordance with Title 23 CCR, Section 2580(f). - Financial assurance sufficient to initiate and complete corrective actions for any reasonably foreseeable potential release to the environment will be posted in accordance with Title 23 CCR, Section 2550.0(b). • Storage in above ground storage tanks will be regulated by the Lahontan Regional Board, in accordance with the California Health and Safety Code, Chapter 6.67, and the California Porter-Cologne Water Quality Act of 1985, with the following: - Development of a detailed Spill Prevention ~~Countermeasure~~, Control and ~~Control Countermeasure~~ Plan prepared in accordance with the guidelines of 40 CFR, Part 112;			

TABLE S-2
Executive Summary Table

Environmental Issue	Impact	Regulatory Requirements	Project Design Features (Applicant-Proposed Mitigation)	Additional Recommended Mitigation Measures	Level of Significance After Mitigation
Hydrology (cont.)		- Frequent visual inspections for leakage or deterioration of tanks, fittings or containment facilities; - Secondary containment; and - Grading of truck-transfer areas to contain potential spills. • Storage of hazardous chemicals will comply with the spill control and secondary containment provisions found in Section 8003.1.7 of the 1994 Uniform Fire Code. • An approval for the septic system design will be obtained from Kern County Environmental Health Services Department. • The BLM will regulate the surface drainage modifications and erosion control measures through review, approval and issuance of the Plan of Operations. Annual inspections will assure compliance. • Kern County will regulate surface mining and reclamation activities related to stabilization of drainage and erosion control to assure consistency with SMARA requirements. Kern County will conduct inspections annually to assure compliance.			

TABLE S-2
Executive Summary Table

Environmental Issue	Impact	Regulatory Requirements	Project Design Features (Applicant-Proposed Mitigation)	Additional Recommended Mitigation Measures	Level of Significance After Mitigation
Hydrology (cont.) 3. Drawdown of water levels due to pumping for project activities.	Less Than Significant	• New water supply wells will be drilled under a permit from Kern County Environmental Health Services Department in accordance with approved methods. A surface seal will be witnessed by a representative from the county.	• The evaporation of water and, therefore, the need for make up water will be minimized by the use of enclosed solution storage. • ~~Water withdrawal from the aquifer will be monitored on a quarterly basis by Golden Queen and submitted annually to Kern County for review. Golden Queen will annually compare the water level data collected by the monitoring program to the water levels predicted by the modeling. In the event the monitoring program shows a 200 percent difference between the actual data and the model results, Golden Queen will supplement the water supply with up to 300 gpm from Antelope Valley - East Kern Water Agency to maintain the drawdown at or less than 200 percent of the predicted amount.~~ • Golden Queen will monitor the groundwater level on a monthly basis and compare the water level data collected by the monitoring program to water levels predicted by the groundwater drawdown model. In the event that the monitoring program shows that the actual water drawdown in the well, when corrected for well conditions, exceeds the predicted model for six consecutive months, Golden Queen will supplement the water supplied by the production wells with up to 300 gpm of water from Antelope Valley - East Kern Water Agency.	None	Less Than Significant

TABLE S-2
Executive Summary Table

Environmental Issue	Impact	Regulatory Requirements	Project Design Features (Applicant-Proposed Mitigation)	Additional Recommended Mitigation Measures	Level of Significance After Mitigation
Air Quality 1. Potential impact to visibility and air quality.	Less Than Significant	• The Kern County Air Pollution Control District (KCAPCD) will review facility designs and operations for compliance with Federal and California regulations for the protection of air quality. An application for Authority to Construct has been submitted to the KCAPCD. • As required by the KCAPCD, permitted sources of emissions will be equipped with Best Available Control Technology (BACT). • Roads will be maintained on a routine basis. Appropriate dust suppression techniques will be used on roads and disturbed surfaces to minimize fugitive emissions. • As required by the KCAPCD, sources of emissions will be controlled to ensure compliance with California Health and Safety Code §41700 (i.e., nuisance) and §41701 (i.e., visible emissions).	• Onsite equipment and vehicles will be maintained on a routine basis, as recommended by manufacturer manuals, to reduce exhaust emissions. • Monitoring stations for PM_{10} will be established upwind and downwind from the processing facilities. • A mercury retort will be installed to control mercury emissions. • The size and number of blasts in the mine will be limited by good engineering design. • The existing tailings piles will be removed, thereby reducing the long-term fugitive emissions from the site. • The adopted reclamation plan shall include rReclamation of previously disturbed areas.	None	Less Than Significant
2. Potential impact to short- or long-term health risks.	Less Than Significant	• Cyanide concentrations at leach pads and processes will be monitored. • Kern County APCD will be notified prior to demolition of any existing structures, as required under National Emission Standards for Hazardous Air Pollutants (NESHAPS) Subpart M - National Emission Standard for Asbestos.		None	Less Than Significant

TABLE S-2
Executive Summary Table

Environmental Issue	Impact	Regulatory Requirements	Project Design Features (Applicant-Proposed Mitigation)	Additional Recommended Mitigation Measures	Level of Significance After Mitigation
Vegetative Resources 1. Project activities would result in the disturbance of vegetation.	Less Than Significant	• A Reclamation Plan is filed with Kern County in accordance with Surface Mining and Reclamation Act requirements. • The Reclamation Plan requires revegetation of disturbed areas which will include the heap leach pads, facilities area, unnecessary roads, the tops of the overburden piles and the bottom areas of the pit. • The seed mix will utilize only plant species native to the site area. • Financial assurance is required to assure appropriate revegetation efforts are completed.	• Project disturbance will be minimized to that necessary for safe and efficient operation. The limits of the construction areas will be clearly marked and vehicles and equipment will be confined to these areas. • Mature Joshua trees which may be disturbed will be salvaged and replanted in undisturbed areas within the property boundary. • The use of seedlings for revegetation will be investigated in test plots. • Fencing around the heap leach pile will remain in place until vegetation is established or as otherwise specified in the Reclamation Plan.	None	Less Than Significant
Wildlife Resources 1. The project will disturb wildlife habitats.	Less Than Significant	• Reclamation according to SMARA will return the project site to open habitat including native vegetation after mining is completed.	• Grading for the project will be minimized to the extent consistent with safe and efficient operations to limit the total area of surface disturbance.	None	Less Than Significant

TABLE S-2
Executive Summary Table

Environmental Issue	Impact	Regulatory Requirements	Project Design Features (Applicant-Proposed Mitigation)	Additional Recommended Mitigation Measures	Level of Significance After Mitigation
Wildlife Resources (cont.) 2. The project will disturb wildlife in the area.	Less Than Significant	• An informal consultation with the California Department of Fish and Game will take place before construction begins. • An informal consultation with the United States Fish and Wildlife Service will take place before construction begins. • A preconstruction survey for desert tortoises was conducted in April 1997. • A desert tortoise survey will be conducted by a qualified biologist before construction of each portion of the heap leach pads and the surveyed area will be fenced with appropriate material for exclusion of desert tortoises. • In the event that a desert tortoise is found within the project site, mining activities must cease and the Bureau of Land Management shall be contacted immediately. At this time, BLM is responsible for initiating formal Section 7 consultation with the U.S. Fish and Wildlife Service. The Golden Queen Mining Company is not authorized for any form of "take" of desert tortoise. Taking is defined as harassing, harming, pursuing, hunting, shooting, wounding, trapping, capturing, collecting or attempting to engage in any such conduct. Authorization for take of desert tortoise by Golden Queen Mining can only be obtained after a biological opinion has been issued to the BLM by the U.S. Fish and Wildlife Service.	• Routine distribution of cyanide solution on the top of the heap leach pad will occur via a drip irrigation system and the heap leach pads will be contoured to prevent surface ponding which could attract birds and small animals. • Containers of reagents will be stored within controlled reagent storage areas and kept closed, stored in enclosed areas, or otherwise managed to prevent access by wildlife. • Project waste will be properly managed at the site to control garbage that could attract wildlife • The maximum vehicle speed will be 25 mph. • Wildlife habitat awareness will be included in the worker's education program. • Some of the mine adits will be retained and ~~fenced~~ gated and some of the mine shafts will be covered by grates to allow access by bats while excluding people.	None	Less Than Significant

TABLE S-2
Executive Summary Table

Environmental Issue	Impact	Regulatory Requirements	Project Design Features (Applicant-Proposed Mitigation)	Additional Recommended Mitigation Measures	Level of Significance After Mitigation
Cultural and Historical 1. Project related activities could disturb or destroy potentially significant sites.	Significant	• If any unknown cultural resources (i.e., archaeological artifacts, human remains, paleontological resources) are discovered in the course of operations on federal land, the operator shall bring this to the attention of the authorized officer and shall leave such discovery intact until told to proceed by the authorized officer. • In the event of discovery of human remains, work in the area will halt until the coroner has determined that no investigation of the cause of death is required; or, if the remains are of Native American origin, descendants have made a recommendation to the owner regarding proper disposal of remains, or no descendants have been identified or descendants failed to make a recommendation with 24 hours of notification. If no recommendation is received, remains are to be reinterred with appropriate dignity on the property in a location not subject to future development.	• Artifacts from the historical sites will be used to establish a small display of historical mining activities onsite. After conclusion of the project, the items on display will be donated to a museum located in Kern County. • As part of the worker education program, construction contractors and operations personnel will be instructed regarding the sensitivity of cultural resources and the presence of laws against unauthorized collection and disturbance. • If any unknown archaeological/cultural resources are discovered on private land during the course of mining or reclamation, work in the area of discovery shall be stopped and a qualified archeologist contacted to evaluate the find and, if necessary, ~~mitigated~~ mitigate impacts prior to resumption of work.	• A Phase III Data Recovery (salvage excavation and architectural recording) will be conducted at four sites. • Seven sites will have an archaeological monitor review the area during grading activity.	Less Than Significant

TABLE S-2
Executive Summary Table

Environmental Issue	Impact	Regulatory Requirements	Project Design Features (Applicant-Proposed Mitigation)	Additional Recommended Mitigation Measures	Level of Significance After Mitigation
Visual 1. The visual character of the site could be altered by the project activities.	Less Than Significant	• A Reclamation Plan approved by Kern County will include: - The removal of all buildings and foundations at the end of the project; - Grading of overburden piles and heap leach piles to fit in with the surrounding topography; and - Revegetation of the disturbed areas with native species of plants. • Dust control measures required in the air permit to control particulate emissions will minimize the potential visual impact of fugitive dust.	• Surface disturbance will be minimized to that required for safe and efficient operation. • Historical mining disturbance will be reclaimed. • Buildings and structures will be painted with nonreflective earthtone colors to blend with the predominant background. • Outdoor lighting for the mine pit and other areas of nighttime activities will be shielded and directed downward to reduce fugitive light. Light poles will be no higher than necessary for safe and efficient lighting Low-pressure sodium bulbs or other appropriate technology will be used for outdoor lighting.	None	Less Than Significant
Noise 1. Noise levels would increase in the vicinity of the project due to construction and operations.	Less Than Significant	• The noise levels at nearby residences will remain within the recommendations of the Noise Element of the Kern County General plan. • Machinery, equipment and vehicles will be equipped with mufflers in accordance with MSHA requirements.	• Approximately 75 to 80 percent of construction activities will take place during daylight. • Blasting will occur during daylight one time per day and will be engineered to minimize the amount of explosives used, according to United States Bureau of Mines guidelines.	None	Less Than Significant

TABLE S-2
Executive Summary Table

Environmental Issue	Impact	Regulatory Requirements	Project Design Features (Applicant-Proposed Mitigation)	Additional Recommended Mitigation Measures	Level of Significance After Mitigation
Land Use 1. The project could conflict with the uses, plans, and goals of the community in the area.	No impact	• Compliance with all regulatory permits and plans as sited in the Introduction (Section 1.2). • Surface mining is a permitted use in the existing zoning districts subject to the requirement to obtain a Conditional Use Permit and an approved Reclamation Plan. • Compliance with the Noise Element of the Kern County General Plan (Section 3.9). • Compliance with permits issued by the Kern County Air Pollution Control District, including the use of Best Available Control Technology (Section 3.5). • Drainage will be controlled according to a Site Drainage Plan which is reviewed and approved by Kern County (Section 3.4.1). • The acquisition of legal interests in minerals is required to conduct mining activities.	• Buildings and structures will be painted with non-reflective earthtone colors to blend with the predominant background. • Outdoor lighting will be shielded and directed downward to reduce reflective light. • Low-pressure sodium bulbs or other appropriate technology will be used for outdoor lighting.	~~Permanent access to parcels of land currently served by New Eagle Road will be provided permanent access.~~ None	No Impact
Socioeconomics 1. The project could increase growth, causing a shortage of housing and services.	Less Than Significant	• No regulatory design features with respect to potential socioeconomic impacts have been identified.	• Golden Queen has committed to hiring from the local population.	None	Less Than Significant

TABLE S-2
Executive Summary Table

Environmental Issue	Impact	Regulatory Requirements	Project Design Features (Applicant-Proposed Mitigation)	Additional Recommended Mitigation Measures	Level of Significance After Mitigation
Health Hazard/Public Safety 1. The project could create a potential health hazard or threat to public safety.	Less Than Significant	• Site operations will be conducted in compliance with Federal Mine Safety and Health Administration regulations. • The routes of hazardous materials being shipped to and away from the proposed project will be coordinated with the California Highway Patrol or other appropriate agencies. • Transportation of materials and equipment to the site would be regulated under state, federal and/or local laws, regulations and ordinances. • Storage, use and disposal of all hazardous materials will be in accordance with all federal, state and local regulations, codes and rules. • Storage and use of explosives will occur in compliance with federal regulations. • Hazardous Materials Business Plan and inventory will be submitted to Kern County Environmental Health Services Department. • Onsite personnel will receive annual training in emergency response procedures. • Used oil and solvents will be collected and sent offsite to a licensed recycler. • A Process Safety Management (PSM) and Risk Management Plan (RMP) will be prepared, if required.	• Fences will be erected around potentially hazardous areas to discourage entry by unauthorized mine personnel or visitors. • Historical mining operations will be removed or closed to the extent feasible. • Former mine waste will be removed. • Project design will be in accordance with a preconstruction design study.	None	Less Than Significant

TABLE S-2
Executive Summary Table

Environmental Issue	Impact	Regulatory Requirements	Project Design Features (Applicant-Proposed Mitigation)	Additional Recommended Mitigation Measures	Level of Significance After Mitigation
Traffic and Transportation 1. The project would increase the level of traffic on roads in the vicinity of the project.	Less Than Significant	• Kern County policy requires roadways to maintain a level of service of D or better.	• The entrances road from Silver Queen Road to the office area will be paved. • Provide a left turn lane on Silver Queen Road at the entrance to the project site.	None	Less Than Significant

1.0 INTRODUCTION

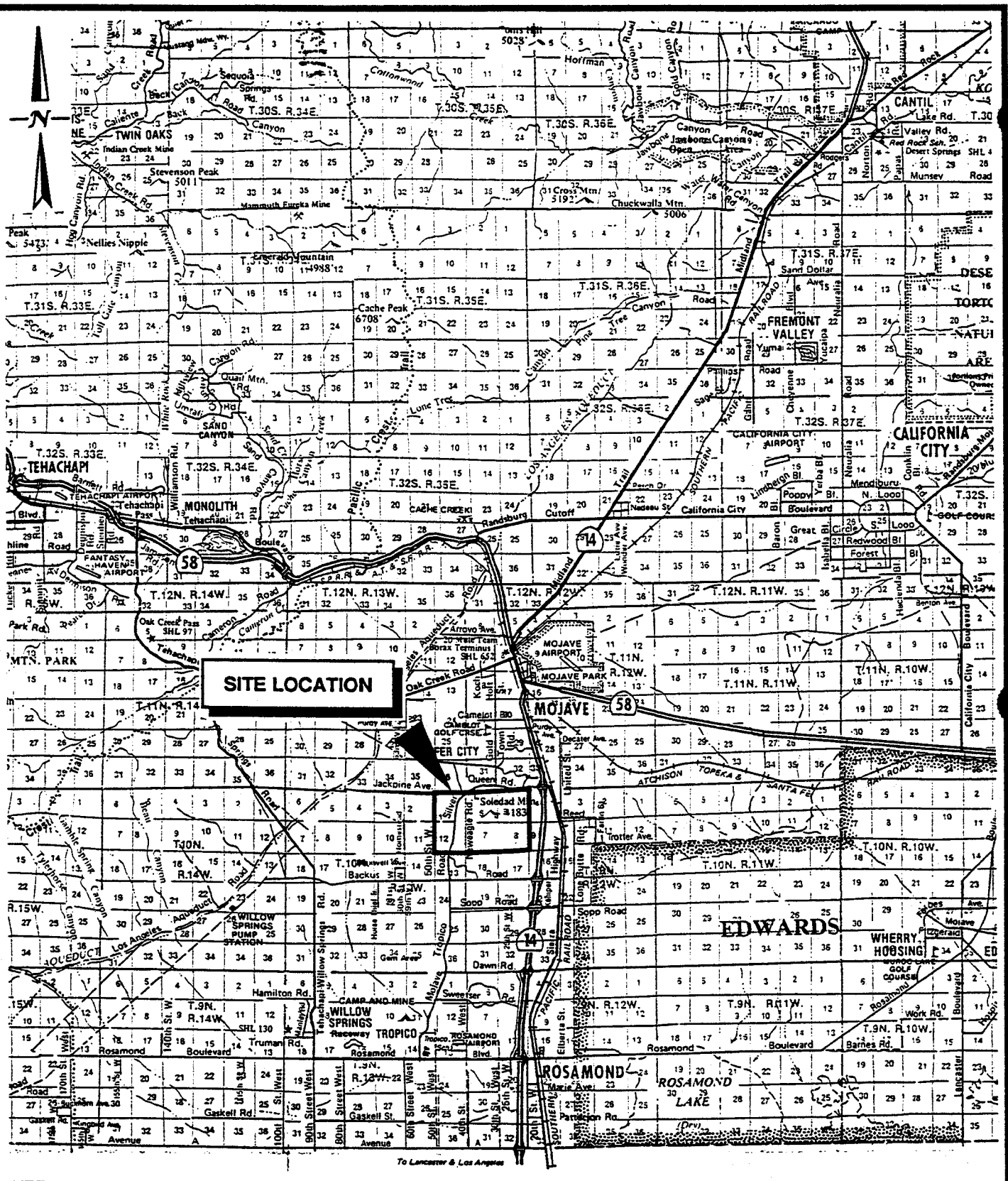
This document is a Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/EIS) which has been jointly prepared by the Kern County Planning Department and the United States Department of the Interior, Bureau of Land Management - Ridgecrest Resource Area (BLM). This document is intended to fulfill the requirements of both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

Golden Queen is proposing to construct and operate the Soledad Mountain Project, an open pit precious metal (gold and silver) mining and a heap leach ore processing project at Soledad Mountain. Gold will be recovered using conventional cyanide leaching and Merrill-Crowe gold recovery technology (zinc precipitation). Carbon absorption may be used near the end of the life of the gold recovery process.

The project area is located approximately five miles southwest of the town of Mojave in Kern County, California, as shown in Exhibit 1.0-1. The Proposed Action includes: construction of project facilities; mining and processing precious metal ore; stockpiling of overburden materials; sale of overburden materials (as aggregate and construction materials); reclamation of the project site; vacation of New Eagle Road on the project site; and acquisition of federal lands on the project site under a land exchange which is consistent with BLM's policy and the Western Mojave Land Tenure Adjustment (see Section 1.2.4.6.2).

CEQA defines a project to include the whole of an action which has the potential for resulting in a physical change in the environment. With respect to this definition, the Proposed Action includes provision to explore for additional gold and silver resources within the project boundaries during project operations. Any expansion or additional operation beyond the currently proposed area of disturbance will require additional environmental review. The proposed project has been designed for and the impacts evaluated based upon a foreseeable ore reserve of 60 million tons.

The project area is approximately 1,690 acres, of which 1,219 acres are private lands and 471 acres are unpatented mining claims on public lands administered by the BLM (Exhibit 1.0-2). A total of approximately 930 acres of surface disturbance would result if the Proposed Action is approved: 735 acres on private land and 195 acres on public land.



KERN COUNTY, CALIFORNIA

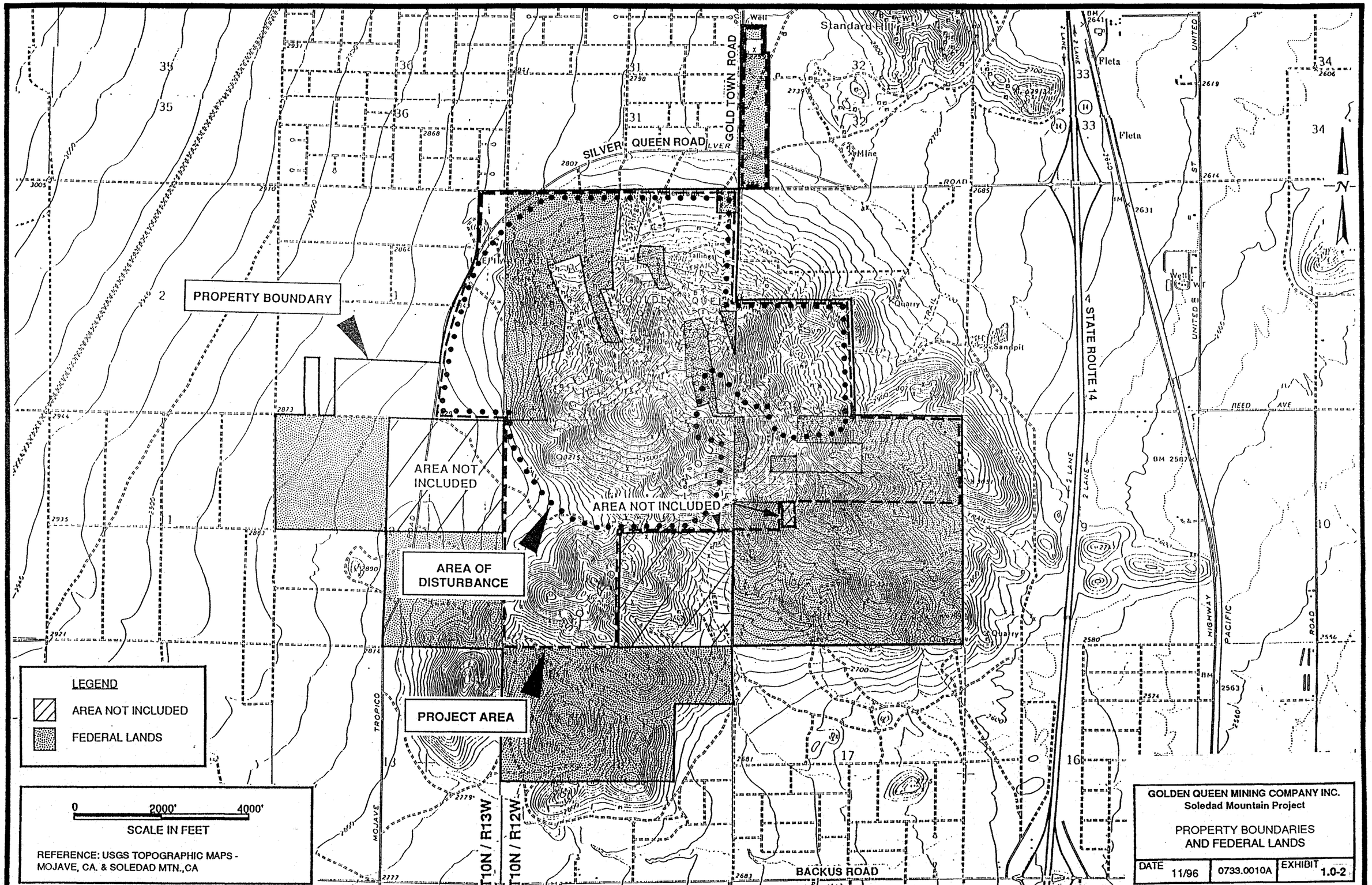
0 Miles 2mi 4mi. 6mi.

0 Kilometers 5km 10km

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

LOCATION MAP

DATE		EXHIBIT
11/96	0733.0010	1.0-1


PROPERTY BOUNDARY
AREA NOT INCLUDED
AREA NOT INCLUDED
AREA OF DISTURBANCE
PROJECT AREA
SILVER QUEEN ROAD
GOLD TOWN ROAD
Standard Hill
Fleta
STATE ROUTE 14
UNITED ST
REED AVE
HIGHWAY
PACIFIC
ROAD
TROPICO
MOJAVE
BACKUS ROAD
T10N / R13W
T10N / R12W
LEGEND
AREA NOT INCLUDED
FEDERAL LANDS
0 2000' 4000'
SCALE IN FEET
REFERENCE: USGS TOPOGRAPHIC MAPS - MOJAVE, CA. & SOLEDAD MTN.,CA
GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project
PROPERTY BOUNDARIES AND FEDERAL LANDS
DATE 11/96
0733.0010A
EXHIBIT 1.0-2

The proposed project would mine a reasonably foreseeable total of 290 million tons of combined ore and overburden material, with the potential for the sale of some overburden for aggregate and construction material use. Based upon a reasonably foreseeable total ore reserve of up to 60 million tons and a mining rate of up to six million tons of ore per year, mining operations at the project may be expected to continue for up to 15 years. The proposed Soledad Mountain Project includes interconnected open pit mining areas within the boundaries of the planned open pit mine, four overburden material piles, two heap leach pads and associated processing and support facilities. Construction is anticipated to begin in 1997, and require nine to 12 months to complete. Mining operations would begin in 1998, and could continue until about 2013. Processing operations would begin in 1998, and could continue until approximately the year 2015, at which time the project could begin closure and reclamation. During the development of the open pit mine, it is expected that higher grade vein mineralization will be exposed within the open pit. Some of the higher grade ore may be mined by underground methods with access from the pit.

The entire Soledad Mountain Project site and surrounding area, totaling approximately 9,600 acres, are included in the Specific Plan for Soledad Mountain - Elephant Butte and Vicinity - South of Mojave.[2] This Specific Plan was prepared in March 1973, and adopted by the Kern County Board of Supervisors as Resolution 73-485 on June 18, 1973. Gold and silver mining operations are recognized in the Specific Plan as important past land uses. The proposed project is consistent with the Specific Plan for the general vicinity of the project site and previous land use.

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2 Kern County Planning Commission, *Specific Plan for Soledad Mountain - Elephant Butte and Vicinity - South of Mojave*, 1973.

1.1 Purpose and Need

Pursuant to 40 CFR, 1502.13, the purpose and need of the proposed project must be addressed in an Environmental Impact Statement (EIS).

The purpose of the Proposed Action is to construct and operate mining, ore processing and project support facilities to recover precious metal (gold and silver) from the Soledad Mountain mineral resource. The Proposed Action will occur on and within fee lands, mining leases, patented mining claims and unpatented mining claims owned and/or controlled by Golden Queen Mining Company, Inc. (Golden Queen).

The purpose of the Proposed Action is to develop and operate a mine to recover gold from the Soledad Mountain Project ore deposit within the boundary of the property controlled by Golden Queen Mining Company.

The need to be met by the Proposed Action is the market demand for precious metal.

Golden Queen's objective in this action is to recover precious metals in a manner that is environmentally responsible and to comply with applicable laws and regulations while optimizing precious metal production, maximizing the utilization of the resource and meeting the financial expectations of its shareholders.

Kern County's objective relative to the Proposed Action is in compliance with the Kern County General Plan, to provide employment opportunities in the county and to facilitate other regional socioeconomic benefits of project development in an environmentally responsible manner that is consistent with other plan elements and the Surface Mining and Reclamation Act of 1975, codified as California Public Resources Code (PRC) Section 2710 et. seq.

The BLM's objective is to meet federal laws, regulations and policies related to the development of mineral resources on public lands and to fulfil its land management responsibilities. The BLM has, through land use plans, managed the subject lands under multiple use policy, allowing access to mineral rights and mining, subject to Title 43 Code of Federal Regulations (CFR) Section 3809 requirements.

1.2 Regulatory Framework

1.2.1 Intent of CEQA/NEPA

Projects subject to CEQA and NEPA are covered by Title 14, California Code of Regulations (CCR), Sections 15220 to 15228, which establish preparation of joint documents. The guidelines for implementation of CEQA are contained in Title 14 CCR, Sections 15000 to 15387. The purposes of CEQA are to:

- Inform public agency decision-makers and members of the public regarding the potential significant environmental impacts of proposed activities.
- Identify ways to avoid or significantly reduce these impacts.
- Prevent significant, avoidable damage to the environment by requiring project changes, alternatives or mitigation measures which are technically, legally, economically, socially and environmentally feasible.
- Disclose to the public the reasons why a public agency decides to approve a project if the project will cause significant environmental impacts.

Under NEPA, 40 CFR, Sections 1500 to 1508, federal agencies are required to:

- Develop methods and procedures which will ensure that environmental resources may be given appropriate consideration in decision-making, along with economic and technical considerations.
- Utilize a systematic and interdisciplinary approach in the review and evaluation of the proposal.
- Make diligent efforts to involve the public in the process, and to provide for public disclosure of proposed actions on public land. The disclosure includes the analysis of the Proposed Action and alternatives and the BLM decision regarding the Preferred Alternative.

1.2.2 Type of Environmental Review

This Draft EIR/EIS has been prepared by Kern County in conjunction with the BLM in accordance with the Memorandum of Understanding (MOU) between Kern County and the

Bureau of Land Management.[3] This Draft EIR/EIS assesses the potential environmental effects of the Soledad Mountain Project as proposed by Golden Queen and addresses both CEQA and NEPA concerns.

Open pit mining operations which use cyanide heap leaching processes to produce gold or other precious metals require an EIR.[4] This document was prepared in accordance with CEQA guidelines for the preparation of an EIR,[5] Kern County guidelines for the preparation of an EIR, BLM mining regulations,[6] the Council of Environmental Quality's regulations for implementing NEPA[7] and BLM guidelines for implementing NEPA.[8] This Draft EIR/EIS was prepared by Kern County and BLM using the best available information compiled from existing files or gathered by consultants in the field.

A Notice of Intent (NOI) to prepare an EIS was published in the Federal Register on March 28, 1996. A Notice of Preparation (NOP) of an EIR was distributed by Kern County on June 18, 1996. Copies of the NOI, NOP and NOP distribution are included in Appendix II. Public scoping meetings were held in Rosamond on April 16, 1996, and in Mojave on April 17, 1996. Comments received as a result of distribution of the NOI and NOP and during public scoping are addressed in this Draft EIR/EIS. The written comments are included in Appendix II.

This Draft EIR/EIS analyzes:

1) The environmental impacts of the Proposed Action and alternatives, including 930 acres of surface disturbance within the 1,690 acre project boundary;

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3 Ted James, Director, Kern County Planning Department, to Kern County Board of Supervisors, re: Memorandum of Understanding, Kern County and the Bureau of Land Management; Surface Mining and Reclamation Plan Coordination, June 13, 1994, included as Appendix I.

4 CEQA §21151.7

5 14 CCR §§15000-15387

6 43 CFR §3809

7 40 CFR §§1500-1508

8 United States Department of the Interior, Bureau of Land Management, *National Environmental Policy Act Handbook*, BLM Handbook H-1790-1, Release 1-1547, October 25, 1988.

2) The proposed Reclamation Plan for the surface disturbance within the project area; and
3) Mitigation measures which reduce impacts to the environment.

This Draft EIR/EIS also evaluates the cumulative impacts of the alternatives, including the Proposed Action, on the environmental resources of the Mojave - Rosamond area.

The Soledad Mountain Project is required to comply with the Surface Mining and Reclamation Act of 1975 (SMARA)[9] and State Mining and Geology Board regulations regarding the reclamation of mining operations on lands within the State of California.[10] These regulations relate to: mining operation and closure; end land use; environmental setting; geotechnical requirements; erosion and sediment control; resoiling and revegetation; and administrative requirements.

Impacts of the mining operation will be addressed by conditions of approval associated with the Lead Agency's (Kern County) approval of the Conditional Use Permit (CUP) for the project. These conditions, if not specifically addressed by SMARA or other federal, state or county regulations, will appear as mitigation measures to the development of the project or as specific conditions of approval to ensure compliance with SMARA and Chapter 19.100 (Surface Mining Operations) of the Kern County Zoning Ordinance. All required conditions will be identified in a resolution adopted by the hearing body at a regularly scheduled public hearing. The environmental document, resolution and staff report, in addition to any material contained therein, will constitute the Lead Agency's response to comments received from the California Department of Conservation/Division of Mines and Geology (DMG).

The Proposed Action and alternatives are subject to federal laws specifically governing the permitting and the operations of surface gold mining activities. The Golden Queen Mining Company Plan of Operations was submitted pursuant to 43 CFR 3809 surface mining regulations. These regulations recognize the statutory right of mineral claim holders to explore and develop federal mineral resources, and encourage such development. The federal regulations require the BLM to review proposed operations to ensure that: 1) adequate

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9 California Public Resources Code §2710 et. seq.

10 14 CCR §3500 et.seq.

provisions are included to prevent unnecessary or undue degradation of public lands, 2) measures are included to provide for reclamation and 3) the proposed operations comply with other applicable federal, state and local laws and regulations.

1.2.3 Responsible Agency List

The Kern County Planning Department is the Lead Agency for preparation of the CEQA compliance document and BLM is the Lead Agency for preparation of the NEPA compliance document. A list of persons/agencies consulted has been identified by Kern County and the BLM and is included in Section 8.2.

1.2.4 Applicable Permits and Approvals

This section summarizes the legislative and regulatory framework which, in addition to NEPA and CEQA guidelines, would be addressed as part of the Soledad Mountain Project. Various aspects of the Soledad Mountain Project must be in compliance with applicable federal and state environmental requirements. Numerous different acts, codes, rules and regulations have been identified.

It is anticipated that the permits listed in Table 1.2-1 will be required for the Soledad Mountain Project.

1.2.4.1 Air Quality

Construction and operation of the Soledad Mountain Project will be subject to federal, state and local rules and regulations[11] pertaining to the control of air pollutants. Region IX of the United States Environmental Protection Agency (EPA) has federal jurisdiction over the area, and the California Air Resources Board (CARB) is responsible at the state level. At the local level, the Kern County Air Pollution Control District (KCAPCD) has authority over stationary

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[11] Federal Clean Air Act (42 USC §§7401 to 7671q), California Clean Air Act (California Health & Safety Code §§39000 to 44394) and Kern County Air Pollution Control District Rules and Regulations.

TABLE 1.2-1
Permits Required for the Soledad Mountain Project

Agency/Department	Permit/Approval	Contact Position Phone Number
Federal Agencies		
Bureau of Land Management	Plan of Operations	NEPA Coordinator (760) 384-5400
	Cultural/Paleontological Resource Permit (National Historic Preservation Act, 16 USC §470)	
Fish and Wildlife Service	Informal Consultation	FWS Field Supr. (805) 644-1766
Bureau of Alcohol, Tobacco and Firearms	Purchase, Storage or Transportation of Explosives Permit	Technical Advisor, Regulatory Office (209) 487-5093
Environmental Protection Agency	Toxic Chemical Release Inventory System	HazMat Specialist (415) 744-1087
Mine Safety and Health Administration	Mine Identification Number	Mine Inspector Supr. (909) 383-5664
State Agencies		
State Water Resources Control Board Lahontan Regional Water Quality Control Board	General Construction Activity Storm Water Permit	WRC Engineer (760) 241-7393
	Waste Discharge Permit	
	Spill Prevention, Control and Countermeasure Plan	
California Department of Fish and Game	Informal Consultation	CDFG Biologist (209) 243-4005
State Office of Historic Preservation (SHPO)	Section 106, (National Historic Preservation Act, 16 USC 470): Designation, Survey, Determination of Effect	Unit Supervisor (916) 653-6624
California Occupational Safety and Health Administration (Cal OSHA)	Construction Permit	Sr. Safety Engineer, Mining & Tunneling (916) 574-2540
	Explosive Blaster's License	
	Process Safety Management Program	
Kern County		
Planning Department	Environmental Report	Planner (805) 862-8600
	Mitigation Monitoring Plan	
	Mining/Reclamation Plan and Financial Assurance	
	Conditional Use Permit	
Roads Department/Planning Department	Road Encroachment/Road Vacation	Engineer/Planner (805) 862-8850
Engineering and Survey Services Department	Grading Permit	Permit Technician (805) 862-8655
	Building Permit	
Environmental Health Services Department	Sewage Disposal System Permit/Water Well Drilling Permit	Specialist (805) 862-8700
	Hazardous Materials Business Plan	HazMat Specialist (805) 862-8700
	Hazardous Materials Inventory	
	Risk Management Plan	
Kern County Fire Department	Fire Protection Plan	(805) 862-8750
Air Pollution Control District	Authority to Construct	Control Officer (805) 862-5250
	Permit to Operate	

sources of air pollutants. CARB serves as technical review and advisory agency, providing technical advice to KCAPCD when necessary. CARB has retained authority over mobile sources in California.

As provided under the Clean Air Act, EPA has delegated primacy for implementation of the New Source Review (NSR) permitting program to KCAPCD. EPA retains control for the Prevention of Significant Deterioration (PSD) permit program for this area. KCAPCD will have primary, regulatory authority over potential sources of air pollution associated with the Soledad Mountain Project.

1.2.4.1.1 The Federal and California Clean Air Acts

The Federal Clean Air Act as amended was enacted to ensure that minimum standards were maintained for certain "criteria pollutants" in all areas of the United States. These minimum standards are termed National Ambient Air Quality Standards (NAAQS) and are limits for ambient levels of air pollution. Pollutants for which NAAQS have been established are nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), suspended particulate matter less than 10 microns in aerodynamic diameter (PM_{10}), ozone (O_3) and lead (Pb).

There are primary and secondary NAAQS established for criteria pollutants. The primary standards are intended to reflect levels of air quality deemed necessary to protect the public health, incorporating an adequate margin of safety. The secondary standards reflect the levels of air quality necessary to protect public welfare from any other known or anticipated adverse effects of a pollutant (e.g., effects to wildlife or visibility). Most areas of the United States were required to attain the primary standards no later than December 31, 1982, with conditional extensions to 1987 granted to certain problem areas.

The NAAQS may be equaled continuously or exceeded once per year. NAAQS for fine particulate matter ($PM_{2.5}$) were proposed in November 1996 at levels of 15 $\mu g/m^3$ (annual average) and 50 $\mu g/m^3$ (24-hour average).[12] These new standards are not scheduled to be finalized until July 1997.[13] In addition, the analytical and technical tools for evaluating $PM_{2.5}$

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[12] 61 FR §§65637 to 65713 (December 13, 1996)

[13] *Inside EPA's Clean Air Report*, Vol. VIII, No. 4, February 20, 1997.

emissions and concentrations are still being developed. For this project, evaluation of the impacts of $PM_{2.5}$ is not required.

Under the Clean Air Act, state and local authorities were given primary responsibility for assuring that their respective regions were in attainment of the NAAQS, or had a verifiable Attainment Plan to achieve them. This provision also gave state and local agencies authority to promulgate more stringent ambient air quality standards.

In California, CARB has promulgated its own set of California Ambient Air Quality Standards (CAAQS). The CAAQS were established in 1969 as a result of the Mulford-Carrell Act. There is no deadline for attainment of the CAAQS. However, the Air Quality Attainment Plan must allow for a 5 percent reduction in annual volatile organic compounds, carbon monoxide and nitrogen dioxide emissions in nonattainment areas, until the state standards for these pollutants are achieved. Based on the ambient air quality of the San Joaquin Valley portion of Kern County, the desert portion of Kern County is currently classified nonattainment for ozone. Thus, a 5 percent annual reduction is required for volatile organic compounds and nitrogen dioxide emissions (e.g., ozone precursors). KCAPCD has submitted the required "Reasonable Further Progress" Plan for achieving the requisite reductions.

In addition to the criteria pollutants, California also established standards for visibility reducing particles, sulfates, hydrogen sulfide and vinyl chloride. The CAAQS for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide and PM_{10} are not to be exceeded, while the remaining California standards cannot be equaled or exceeded.

The pollutants and their corresponding national and state ambient air quality standards are shown in Table 1.2-2.

The 1977 Federal Clean Air Act Amendments required each state to identify geographic areas in compliance with the NAAQS, as well as those areas that are not in compliance. These designations are known as the "attainment" status designations.

Areas not in compliance with the NAAQS are termed "nonattainment" and are subject to New Source Review (NSR) regulations. Areas meeting the NAAQS are referred to as "attainment."

TABLE 1.2-2
State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentratio	Method [4]	Primary [3,5]	Secondary	Method [7]
Ozone	1 hour	0.09 ppm (180 $\mu g/m^3$)	Ultraviolet Photometry	0.12 ppm (235 $\mu g/m^3$)	Same as Primary Std	Ethylene Chemilumi-nescence
Carbon Monoxide	8 hour	9.0 ppm (10 mg/m^3)	Non-dispersive Infrared Spectroscopy (NDIR)	9 ppm (10 mg/m^3)		Non-dispersive Infrared Spectroscopy (NDIR)
	1 hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
Nitrogen Dioxide	Annual Average		Gas Phase Chemilumi-nescence	0.053 ppm (100 $\mu g/m^3$)	Same as Primary Std	Gas Phase Chemilumi-nescence
	1 hour	0.25 ppm (470 $\mu g/m^3$)				
Sulfur Dioxide	Annual Average		Ultraviolet Fluorescence	80 $\mu g/m^3$ (0.03 ppm)		Pararosaniline
	24 hour	0.04 ppm (105 $\mu g/m^3$)		365 $\mu g/m^3$ (0.14 ppm)		
	3 hour				1,300 $\mu g/m^3$ (0.5 ppm)	
	1 hour	0.25 ppm (655 $\mu g/m^3$)				
Suspended Particulate Matter (PM_{10})	Annual Geometric	30 $\mu g/m^3$	Size Selective Inlet High-volume Sampler and Gravimetric Analysis			Inertial Separation and Gravimeteric Analysis
	24 hour	50 $\mu g/m^3$		150 $\mu g/m^3$	Same as Primary Std	
	Annual Arithmetic			50 $\mu g/m^3$		
Sulfates	24 hour	25 $\mu g/m^3$	Turbidimetric Barium Sulfate			
Lead	30-day Average	1.5 $\mu g/m^3$	Atomic Absorption			Atomic Absorption
	Calendar Quarter			1.5 $\mu g/m^3$	Same as Primary Std	
Hydrogen Sulfide	1 hour	0.03 ppm (42 $\mu g/m^3$)	Cadmium Hydr-oxide STRactan			
Vinyl Chloride (chloroethene)	24 hour	0.010 ppm (26 $\mu g/m^3$)	Tedlar Bag Collection, Gas Chromatography			
Visibility Reducing Particles [8]	8 hour (10am to 6pm, PST)	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent. Measurement in accordance with ARB Method V				

Source: CALEPA, 1992.

1. California standards for ozone, carbon monoxide, sulfur dioxide (one hour), nitrogen dioxide, visibility - reducing particles, and particulate matter - PM_{10}, are values that are not to be exceeded. The sulfates, lead, hydrogen sulfide, and vinyl chloride standards are not to be equaled or exceeded.
2. National standards, other than ozone and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25° C and a reference pressure of 760 mm of mercury. All measurements of air quality are to be corrected to a reference temperature of 25° C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent procedure which can be shown to the satisfaction of the Air Resources Board to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than three years after that state's implementation plan is approved by the Environmental Protection Agency.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the implementation plan is approved by the EPA.
7. Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.
8. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range when relative humidity is less than 70 percent.

Part of the New Source Review process includes the evaluation of Best Available Control Technology (BACT) for individual processes. BACT are defined as the most stringent control technique or limitation that has been achieved in practice for the same class of source, or is contained in an approved implementation plan, or is both technologically feasible and cost effective. BACT are required for all pollutants expected to be emitted from a new emissions unit.

Federal PSD regulations[14] require that the maximum allowable increase in total suspended particulate in a Class I wilderness area resulting from emissions from a major stationary source is five $\mu g/m^3$ (annual geometric mean) and 10 $\mu g/m^3$ (24-hour maximum). Federal major stationary source PSD regulations apply to 28 specific-named facilities emitting, or having the potential to emit, 100 tons per year or more of any pollutant subject to regulation under the Act, or any other facility emitting, or having the potential to emit, 250 tons per year or more of any pollutant subject to regulation under the Act. Fugitive emissions are not counted toward the emissions quantification for PSD, unless the source is one of the 28 specifically-named types of facilities.

The Mojave Desert Air Basin, where the Soledad Mountain Project site is located, is an area that is in attainment or unclassified (due to a lack of data) for all NAAQS and CAAQS except the California 24-hour PM_{10} standard and the California and federal one-hour ozone standards.

Section 176(c) of the Federal Clean Air Act, as amended (42 U.S.C. 7401 et. seq.) and regulations under 40 CFR part 51 sub-part W, with respect to the conformity of general federal actions to the applicable implementation plan, apply to projects within nonattainment areas. Under those authorities, no department, agencies or instrumentality of the federal government will engage in, support in any way or provide financial assistance for, license or permit, or approve any activity which does not conform to an applicable implementation plan. Under Clean Air Act 176(c) and 40 CFR part 51 sub-part W, a federal agency must make a determination that a federal action conforms to the applicable implementation plan before the action is taken.

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[14] 40 CFR §52.21

Federal and California laws also regulate emission and notification requirements related to air toxics (or hazardous air pollutants), some of which are typically emitted by precious metal mining operations. California's Air Toxics "Hot Spots" Information and Assessment Act[15] requires specified facilities to submit comprehensive air toxics emission inventory plans and reports to local air pollution control districts, and, if necessary, to conduct health risk assessments for approximately 350 toxic substances identified by AB2588. In addition to requiring such an inventory, AB2588 established standards and requirements for health risk assessments and public notification of possible health risks.

1.2.4.1.2 KCAPCD Rules and Regulations

KCAPCD is empowered to regulate stationary sources of air pollutant emissions in such a manner that the region within its jurisdiction either attains, or is projected to attain, the NAAQS for all criteria pollutants. Should it become clear that any part of the region is moving away from attainment of the standards, KCAPCD must implement corrective measures to bring the region back into attainment or toward attainment. These could include measures such as lowering net emissions and creating more stringent air pollution control regulations. In certain instances, these regulations could be retroactive and require existing emission sources to conform to the new regulations.

Emissions from sources of any contaminant for which there is an NAAQS are governed by KCAPCD rules and regulations. These rules and regulations include New Source Review as part of a permitting process whereby new or modified sources of emissions are evaluated for adequate controls and compliance with federal, state and local regulations.

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15 The Air Toxics "Hot Spots" Information and Assessment Act of 1987 is commonly referred to by the name of the authorizing legislative bill; Assembly Bill 2588 (AB2588). California Health & Safety Code §44300 et. seq.

1.2.4.2 Water Quality

1.2.4.2.1 The Federal Clean Water Act

The Clean Water Act[16] regulates discharges to surface waters from all types of sources. Discharges to surface water are subject to the requirements of a National Pollutant Discharge Elimination System (NPDES) permit, which ensures that the water meets applicable standards at the point of discharge. The NPDES provisions are contained in Section 402 of the Clean Water Act. In California, control of surface water discharges in accordance with the Clean Water Act (Section 401) is delegated by EPA to the State Water Resources Control Board (SWRCB), and ultimately, the Regional Water Quality Control Board (Lahontan Regional Board). The State may issue, condition, deny or waive certification for such discharge. Certification or waiver of certification must be based on a finding that the proposed discharge will comply with water quality standards.

Section 404 of the Clean Water Act regulates discharge of dredged or fill material into waters of the United States. Permitting of these types of discharges occurs under the authority of the U.S. Army Corp of Engineers. The definition of "waters of the United States" is included in 33 CFR, 328.3 which, in part, states that they include "...lakes, rivers, streams [including intermittent streams], mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce..."

1.2.4.2.2 The Federal Safe Drinking Water Act

The Safe Drinking Water Act[17] establishes minimum national drinking water standards and guidelines for protecting groundwater. Both primary and secondary standards are specified for drinking water. Primary standards are established for the protection of human health and set Maximum Contaminant Levels (MCLs) for a variety of inorganic and organic substances. Secondary standards are intended as guidelines and are not federally enforceable. They are established primarily for aesthetic purposes such as color and taste.

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[16] 33 USC §§1251 to 1387

[17] 42 USC §§300f to 300j-26

The Safe Drinking Water Act is enforced at the state and local level by the SWRCB and the Lahontan Regional Board, through water quality protection regulations, and by the California Department of Health Services (DHS) and the Kern County Department of Environmental Health Services through regulation of drinking water systems.

1.2.4.2.3 California Water Code

The state enforces federal water quality protection programs for which they have been delegated authority under the California Water Code and implementing regulations. The Porter-Cologne Water Quality Control Act[18] provided a comprehensive statewide system for water pollution control that included designation of the SWRCB and nine Regional Boards covering the entire state. Local jurisdiction over water quality is also provided. Under the Porter-Cologne Act, the SWRCB is responsible for adopting water quality standards as required to fulfill the state's responsibilities under the Clean Water Act. In addition to surface water discharge permitting requirements of the Clean Water Act, the Porter-Cologne Act regulates discharges and potential discharges to groundwater.

Any person proposing to discharge waste that could affect the quality of waters of the state must file a Report of Waste Discharge with the Lahontan Regional Board. The Lahontan Regional Board may permit discharges that comply with the Clean Water Act and the Porter-Cologne Act, subject to issuance of waste discharge requirements to protect the quality of waters of the state.

Standards more stringent than required under these laws may be required in waste discharge requirements, if needed, to implement water quality control plans and to protect beneficial water uses.

The Regional Boards regulate water resources under federal and state antidegradation policies,[19] regional water quality control plans and other applicable policies and regulations. The project site is located in the northern part of the Antelope Valley in an area encompassed

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[18] California Water Code §§13000-14076

[19] 40 CFR Section 131.12, and State Water Resources Control Board Resolution 68-16

by the South Lahontan Basin Water Quality Control Plan,[20] which was adopted in 1975 and amended several times. Designated beneficial uses of water in the Antelope Valley are identified in this plan and are further discussed in Section 3.4 of this EIR/EIS.

1.2.4.2.4 California Code of Regulations Title 23

The SWRCB, and ultimately the Regional Boards, regulates systems or activities that have the potential to discharge contaminants to surface or groundwater. The review and permitting process for mining facilities follow the requirements of Title 23 CCR, Chapter 15, Article 7 (Mining Waste Management). Article 7 also provides the Regional Board with the authority for adoption of waste discharge requirements to protect the waters of the state from contamination.

1.2.4.3 Biological Resources

1.2.4.3.1 Federal Endangered Species Act

The Endangered Species Act (Act) of 1973,[21] as amended, extends legal protection to plants and animals listed as endangered or threatened by the United States Fish and Wildlife Service (Service). The Act authorizes the Service to review proposed federal actions to assess potential impacts to "listed" species.

Listed species are those which are threatened or endangered (in danger of extinction throughout all or a significant portion of their range) and which have been the subject of final regulation and listing in the Federal Register, and those species officially proposed for listing in a Federal Register Notice.

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20 California Regional Water Quality Control Board - Lahonton Region, *Water Quality Control Plan for the Lahonton Region*, 1994.

21 16 USC §§1531 to 1544

Federal status lists are overseen by the Service and are defined as follows:

Endangered

Any species which is in danger of extinction throughout all or a significant portion of its range other than a species of the Class Insecta determined by the Secretary to constitute a pest whose protection under the provisions of this Act would present an overwhelming and overriding risk to man.

Threatened

Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Proposed

Species for which a general notice and a proposed regulation for listing have been published in the Federal Register.

Candidate

Those species for which the Service has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule, but issuance of the proposed regulation is precluded. The Service will publish a Notice of Review annually in the Federal Register identifying all current plant and animal taxa, and all taxa that has been proposed for listing.

In the past, as a tool for identifying candidates, the Service published lists of species for which additional information was needed to determine whether listing may be appropriate (formerly Category 2). Species which were Category 1 are now, for the most part, considered "Candidates." Species which were Category 2 or 3 are no longer listed as Category Candidates, but may be considered as species of concern.

Section 7, the interagency portion of the Endangered Species Act, requires federal agencies, in consultation with the Service, to ensure "that any action authorized, funded or carried out by such agencies...is not likely to jeopardize the continued existence of any listed species or result in the destruction or modification of [critical] habitat."

1.2.4.3.2 California Endangered Species Act and Native Plant Protection Act

The California Endangered Species Act (CESA) of 1984[22] and the Native Plant Protection Act of 1977 (NPPA)[23] are administered by the California Department of Fish and Game (CDFG). Maintaining priority within the various lists is the function of the California Natural Diversity Data Base, which is also maintained by CDFG.

The CDFG maintains lists of plant and animal species which are designated to be endangered, threatened, rare or candidates. The CDFG designations are defined as follows:

Endangered

A native California bird, mammal, fish, amphibian, reptile or plant (species or subspecies) is **endangered** when it is in serious danger of becoming extinct throughout all, or a significant portion of, its range due to one or more causes, including loss of habitat, change of habitat, over exploitation, predation, competition or disease.[24]

Threatened

A native California bird, mammal, fish, amphibian, invertebrate, reptile or plant (species or subspecies) is **threatened** when, although not presently threatened with extinction, it is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts. Any animal listed as "rare" by the Commission on or before January 1, 1985 is now included as a "threatened" species.[25]

Rare

A native California plant (species, subspecies or variety) is **rare** when, although not presently threatened with extinction, it is in such small numbers throughout its range that

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22 14 USC §670.5

23 California Food and Agricultural Code, Division 23

24 California Fish and Game Code §2062

25 California Fish and Game Code §2067

it may become endangered if its present environment worsens.[26] Since 1985, this designation applies to plants only.

Candidate

A native California species or subspecies of a bird, mammal, fish, amphibian, reptile or plant is a **candidate** when the Fish and Game Commission has formally noticed it as under review by the Department to determine whether listing as threatened or endangered is warranted, or when it is the subject of a proposed rule-making by the commission to list as threatened or endangered.[27]

Section 15380(d) of the Guidelines states that a species not listed as endangered, threatened or rare in Title 14 CCR[28] or 50 CFR,[29] "will nevertheless be considered to be rare or endangered if the species can be shown to meet the criteria in subsection (b)."

Section 15065 of the CEQA guidelines specify that "A Lead Agency will find that a project may have a significant effect on the environment and thereby require an EIR to be prepared..." if the project has "...the potential to reduce the number or restrict the range of a rare or endangered plant or animal..." Appendix G of the CEQA implementing guidelines indicates that "A project will normally have a significant effect on the environment if it will substantially affect a rare or endangered species of animal or plant or the habitat of the species." These concepts are utilized in the vegetation and wildlife impacts significance criteria presented in Section 3.0.

1.2.4.3.3 BLM Sensitive Species List

BLM Manual Section 6840 provides policy and guidance for the conservation of Special Status Species of plants and animals, and the habitats on which they depend.

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26 California Fish and Game Code §1901

27 California Fish and Game Code §2068

28 14 CCR §670.2 or §670.5

29 50 CFR §17.11 or §17.12

BLM California sensitive plant and animal species are those designated by the State Director, usually in cooperation with the state wildlife agency responsible for managing the species, as sensitive. The protection provided by the policy for candidate species will be used as the minimum level of protection. Management for the conservation of these species and their habitats will ensure that actions authorized, funded or carried out do not contribute to the need to list any of these species as threatened or endangered. They are species that are:

- under status review by the Service or the National Marine Fisheries Service; or
- whose numbers are declining so rapidly that federal listing may become necessary; or
- with typically small and widely dispersed populations; or
- those inhabiting ecological refugia or other specialized or unique habitats.

Sensitive plant species in California are designated as all plants on List 1B (Plants Rare, Threatened or Endangered in California and Elsewhere) of the most recent edition of the California Native Plant Society's Inventory of Rare and Endangered Plants of California that are on BLM lands or affected by BLM actions, unless they are specifically excluded by the BLM State Director or fall into another category.

1.2.4.3.4 Federal Migratory Bird Treaty Act

The Migratory Bird Treaty Act[30] makes no provision for the killing of migratory birds without a permit. All birds are considered migratory birds under the Migratory Bird Treaty Act, with the exception of three: English sparrow (*Passer domesticus*), starlings *(Sturnus vulgaris)* and barnyard pigeons *(Columba livia)*. A zero mortality objective regarding wildlife will be maintained. Migratory bird deaths associated with cyanide heap leaching processes would come under the jurisdiction of this statute. Any mining operation which repeatedly or negligently fails to prevent migratory bird mortality could be federally prosecuted.

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30 Title 16, United States Code (USC), §§701-718(h)

1.2.4.4 Cultural Resources

1.2.4.4.1 National Historic Preservation Act (Section 106)

The National Historic Preservation Act of 1966, as amended, established: (1) a National Register of Historic Places to be maintained by the Secretary of the Interior, (2) the position of State Historic Preservation Officer and (3) the Advisory Council on Historic Preservation. Section 106 requires federal agencies to provide the State Historic Preservation Officer and the Advisory Council on Historic Preservation an opportunity to comment on any project on federal lands within their state that would affect properties included in or eligible for inclusion in the National Register of Historic Places. Section 304 directs federal agencies to withhold from disclosure to the public information relating to the location or character of eligible properties whenever disclosure of such information may create risk or harm to such resources. National Register of Historic Places eligibility criteria are specified in 36 CFR, Part 60.4.

The advisory council regulations outline procedures to be followed by federal agencies.[31] Federal agencies are required to consult with the State Historic Preservation Officer to determine if a proposed undertaking encompasses any property included in or eligible for inclusion in the National Register of Historic Places. For each eligible property identified, the federal agency must determine if the proposed undertaking had an effect. If there could be an effect, the Criteria of Adverse Effect are applied, and treatment measures are developed for resources that would be adversely affected.

Within the statutory constraints,[32] the advisory council regulations encourage participation by local governments, Native American tribes and the public. Within this context, comments on the Soledad Mountain Project are sought from Kern County, the local Native Americans, archaeologists, historians and other groups or individuals concerned with cultural resources.

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[31] Volume 51, Federal Register (FR), 31118 (published September 2, 1986)

[32] National Historic Preservation Act §304 and Archaeological Resources Protection Act of 1979, Section 9.

1.2.4.4.2 CEQA Archaeological Guidance

CEQA Guidelines, Appendix K, Archaeological Impacts, provides guidance for the identification, evaluation and mitigation of archaeological properties that may be affected by a proposed project. Additionally, Appendix K contains detailed procedures for determining the significance, or lack thereof, of a proposed project on a cultural resource. Only impacts on "unique" or "important" cultural resources can be considered significant in terms of the potential effects of a proposed project.[33]

The terms "unique" and "important" are interchangeable when referring to cultural resources within a proposed project area under CEQA review. California Public Resources Code (PRC) Section 21083.2 uses the term "unique," while CEQA Guidelines, Appendix K, uses the term "important."

Guidelines for treatment of the cultural resources on federal lands are established by BLM and the "Secretary of Interior's Standards and Guidelines, Archeology and Historic Preservation."[34]

1.2.4.5 Hazardous Materials

1.2.4.5.1 Hazardous Materials Planning and Notification Programs

On October 17, 1986, the President signed into law the Superfund Amendments and Reauthorization Act of 1986 (SARA). Included as Title III of SARA, the Emergency Planning and Community Right-to-Know Act (EPCRA) contained authorizations relating to hazardous materials[35] emergency planning, notification, community right-to-know and a toxic release inventory.

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33 California Public Resources Code (PRC) §21083.2

34 48 FR 44716-44742 (September 29, 1983)

35 Herein, the term "hazardous material" is used universally for "hazardous materials" regulated under California regulations, and "hazardous substances" regulated under EPCRA regulations. California's "hazardous materials" include all of the EPCRA listed "hazardous substances."

Under EPCRA, businesses which handle certain quantities of listed hazardous materials must notify local, state and federal emergency response authorities of the location and quantity of such materials. Businesses must also notify authorities when a release of a hazardous material has occurred in excess of specified quantities.

California had previously passed similar legislation under the Waters Bill, which requires businesses which handle hazardous materials to prepare Hazardous Materials Business Plans.[36] To eliminate dual regulation, the California regulations were modified such that compliance with state requirements constitutes compliance with the EPCRA requirements. In addition to the EPCRA requirements, Hazardous Materials Business Plans also contain emergency response plans and an employee training program.

California law also includes regulations pertaining to materials deemed acutely hazardous. Business which handled such listed "acutely hazardous materials" above certain thresholds were required to prepare Risk Management and Prevention Plans (RMPPs). An RMPP includes a report and analysis of the accidents involving acutely hazardous materials which have occurred at the business during the past three years, information about the equipment or processes which use acutely hazardous materials, controls and procedures to minimize risks, training and emergency response procedures and a schedule for implementing additional safety equipment and procedures. Integral to each RMPP is a hazards and operability study which identifies the hazards associated with the handling of the acutely hazardous material due to operating error, equipment failure or external events which could cause or contribute to an accident involving the acutely hazardous material. RMPPs are reviewed by local emergency response authorities and made available for public comment.

The Federal Occupational Safety and Health Administration (OSHA) devised regulations which required facilities handling "highly hazardous chemicals" to prepare Process Safety Management (PSM) plans for their facilities.[37] Although the covered chemicals and threshold quantities are slightly different, the elements of the PSM plan were substantially the same as the California RMPP. The California Occupational Safety and Health Administration (Cal/OSHA) has adopted these regulations and implements the program.[38]

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36 California Health & Safety Code §25500 to 25545

37 29 CFR 1910.119

38 8 CCR 5189

Section 112 (r) of the 1990 Clean Air Act Amendments authorized the Risk Management Program (RMP). EPA promulgated the final RMP regulations on June 20, 1996, with an effective date of August 19, 1996.[39] The RMP contains the same basic elements as both the California RMPP and OSHA PSM programs: hazard assessment, a risk prevention program and an emergency response program. The RMP regulations apply to facilities which handle "regulated substances." Facilities subject to RMP requirements must comply with the program by June 1999.[40]

In order to reduce regulatory overlap, California replaced the RMPP regulations with the RMP regulations, effective January 1, 1997.[41] Under the California RMP program, new facilities which handle "regulated substances" in greater than threshold quantities must implement an RMP prior to operation.

One provision of EPCRA which has not been adopted under California State law is the toxic chemical release inventory (TRI).[42] The TRI program was codified February 16, 1988 as 40 CFR Part 372. The basic intent of the TRI program is to make available to the public information about releases of certain chemicals into the air, water and land that result from certain facilities within their communities. It contains provisions which allow the public to consistently track pollution prevention measures undertaken by individual facilities. Currently, 40 CFR, Part 372, applies to facilities with Standard Industrial Classification (SIC) codes that begin with the first two digits of 20 through 39, and have the equivalent of 10 or more full-time employees.

On June 27, 1996, EPA proposed to add seven new industrial groups to the TRI program.[43] Metal mining, with SIC codes that begin with 10, is included as one of the seven major industrial groups proposed for addition. To assure that the public and other interested parties

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39 61 FR 31668 (June 20, 1996). Regulations codified as 40 CFR 68.

40 40 CFR §68.10

41 California Health & Safety Code §25531

42 EPCRA §313

43 61 FR 33588

may review and comment, EPA was accepting comments on the proposed rule until September 4, 1996. EPA believes that the addition of these industrial groups to the TRI program will significantly add to the public's right-to-know about releases and other waste management activities of toxic chemicals in their communities.

TRI reporting will be required for metal mining facilities, with 10 or more employees, that manufacture, process or otherwise use threshold quantities of any listed chemicals or chemical categories established under the TRI program. These covered facilities will be required to submit annual reports on their releases, transfers and other management practices for more than 650 chemicals listed under the TRI regulations. The data contained in the report will be compiled and made available to the public through a variety of means, including a report issued by EPA.

If a facility exceeds the established threshold for a chemical release, the owner/operator must report all releases for that chemical throughout the facility. Releases to the environment include emissions to the air, discharges to surface waters, onsite releases to land, underground injection wells and quantities of materials sent offsite for recycling or disposal. Reportable releases also include both routine and accidental releases.

If the manufacturing, process or other use thresholds have been exceeded for a certain chemical, then the TRI program requires reporting of releases of that chemical to EPA. EPA has developed Form R to fill out and report for each chemical release. If a facility does not exceed the threshold for any of the reportable chemicals and release reporting is not required, then that facility should retain documentation onsite to be able to demonstrate that reporting was not required for that reporting year.

If a facility "manufactures" or "processes" 25,000 pounds per year of any listed chemical or chemical category, or if a facility "otherwise uses" 10,000 pounds per year of any listed chemical or chemical category, then the quantity thresholds are met and a report is required for that calendar year.

When this regulation was enacted, there were more than 300 chemicals and 20 chemical categories. EPA may add or delete chemicals from the list, which it has, and the current list now contains over 650 chemicals.

1.2.4.5.2 Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) of 1976[44] requires federal and state agencies to promulgate regulations implementing standards for handling hazardous waste materials. Regulations applicable to generators of hazardous waste are included in 40 CFR, Parts 260, 261, 262 and 266. California is authorized to implement a hazardous waste program that, at a minimum, must be at least as stringent as the federal standards. State hazardous waste standards are included in Title 22 CCR, which is administered by the California Department of Toxic Substances Control.

1.2.4.6 Relationship to Other Land Use Plans

1.2.4.6.1 West Mojave Coordinated Management Plan

The West Mojave Coordinated Management Plan is a proposed multi agency habitat conservation plan covering nearly nine and one-half million acres of California desert lands. It involves a regional planning and management framework to conserve species habitats and to foster economic development. An Administrative Draft EIS for the plan is currently in preparation. The Soledad Mountain project site is not included in any proposed or existing core reserve, specialty reserve or habitat linkage corridor in the current alternative.

1.2.4.6.2 Western Mojave Land Tenure Adjustment

The federal lands contained within the Soledad Mountain project site are designated for land exchange by the BLM according to a BLM Record of Decision dated January 1991 for the Western Mojave Land Tenure Adjustment Project. There are 522,000 acres of public lands within the 2.8 million acres included within the Land Tenure Adjustment project boundary. The purpose of the Land Tenure Adjustment Project is to consolidate federal land holding into manageable blocks through voluntary exchange with privately owned land. The project proposes to release 105,000 acres of public lands and proposes to acquire 255,000 acres of public lands through land exchanges. The BLM has established three zones or area classifications to assist in accomplishing the goal of the Land Tenure Adjustment Project Area. The three zones are consolidation, disposal and retention.

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[44] 42 USC §§6901 to 6991i

The consolidation zone is an area in which the BLM seeks to acquire private land that is intermingled with public lands in an effort to form manageable blocks of land. The disposal zone is comprised of scattered public lands interspersed with private holdings. The BLM has determined that the public lands in the disposal zone provide the least opportunity for successful public management. The public land within the disposal zone is designated for exchange with land in the consolidation zone. The retention zones represent areas where the BLM desires to retain the public land. The Golden Queen project is located within the area classified as a "disposal zone."

2.0 PROPOSED ACTION AND ALTERNATIVES

The Proposed Action has been designed to accomplish Golden Queen's basic objectives for the Soledad Mountain Project, which include the following:

- Develop a commercial mine to recover precious metals from the ore body.
- Efficiently design and manage the project to optimize precious metal recovery and meet the financial expectations of the shareholders.
- Minimize surface disturbances and mitigate other potential environmental effects.
- Perform reclamation that will return the site to a state that is consistent with surrounding land uses following mining.
- Construct, operate and reclaim the site in a manner consistent with federal, state and local laws and regulations.

2.1 Setting

2.1.1 Regional Location

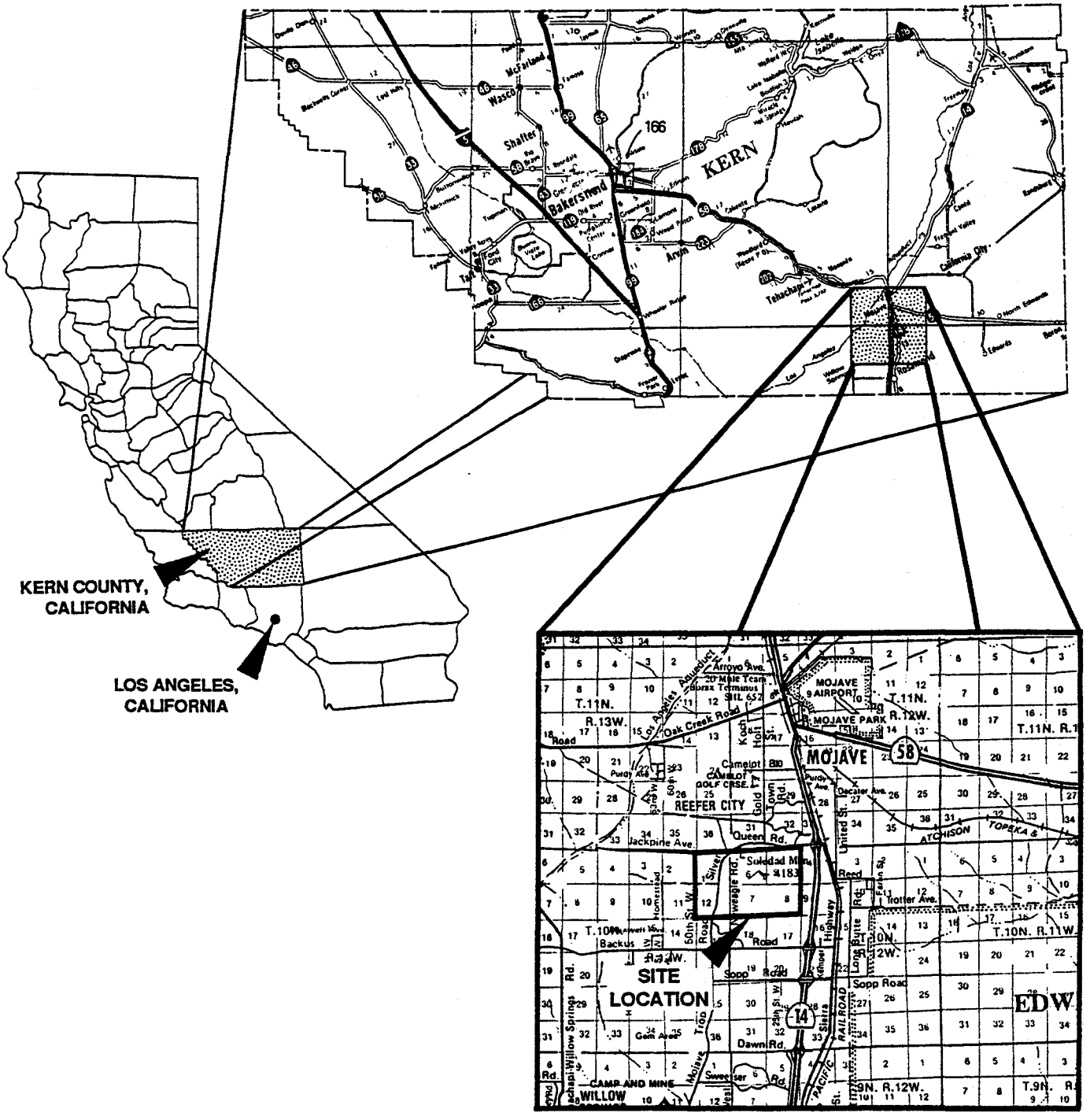
The project is located in the western Mojave Desert within the unincorporated area of eastern Kern County, California (Exhibit 2.1-1). The topography of the western Mojave Desert in the area of the site varies from relatively flat alluvial areas to steep mountains. Elevations vary from approximately 2,000 feet above mean sea level in the flat alluvial-covered areas to over 5,000 feet above mean sea level in some of the mountainous areas. The site is located approximately five miles southwest of Mojave, an unincorporated town of approximately 4,000 people situated at the intersection of State Route 58 and State Route 14. The Mojave airport stores and repairs jets for various operators. Industrial facilities in Mojave include chemical plants and recycling facilities. In the higher elevations to the northwest of the site are several hundred wind turbines generating electricity. Edwards Air Force Base is located east of the project, and occupies a large portion of the desert floor (Exhibit 2.1-2).

The unincorporated town of Rosamond, with a population of approximately 22,000 people, is located approximately seven miles to the south, adjacent to State Route 14.

The Tehachapi Mountains lie approximately 10 miles west and northwest of the project site. The Tehachapi Mountains form a natural barrier that separates the San Joaquin Valley from the desert portions of Kern County. The San Gabriel Mountains lie approximately 20 miles southwest of the project site and form a natural barrier that separates the Mojave Desert from the Los Angeles area. Distances to the nearest urban centers include Bakersfield, approximately 49 miles northwest, Lancaster, approximately 22 miles south, and Los Angeles, approximately 62 miles southwest.

2.1.2 Project Location

The project area is on and around Soledad Mountain, west of State Route 14 and south of Silver Queen Road. The project area includes portions of Sections 5, 6, 7 and 8 in Township 10 North, Range 12 West and Section 1 in Township 10 North, Range 13 West, and Section 32 in Township 11 North, Range 12 West, San Bernardino Base and Meridian (SBBM) (Exhibit 2.1-2). Golden Queen has acquired control of approximately 2,840 acres, including the project site.



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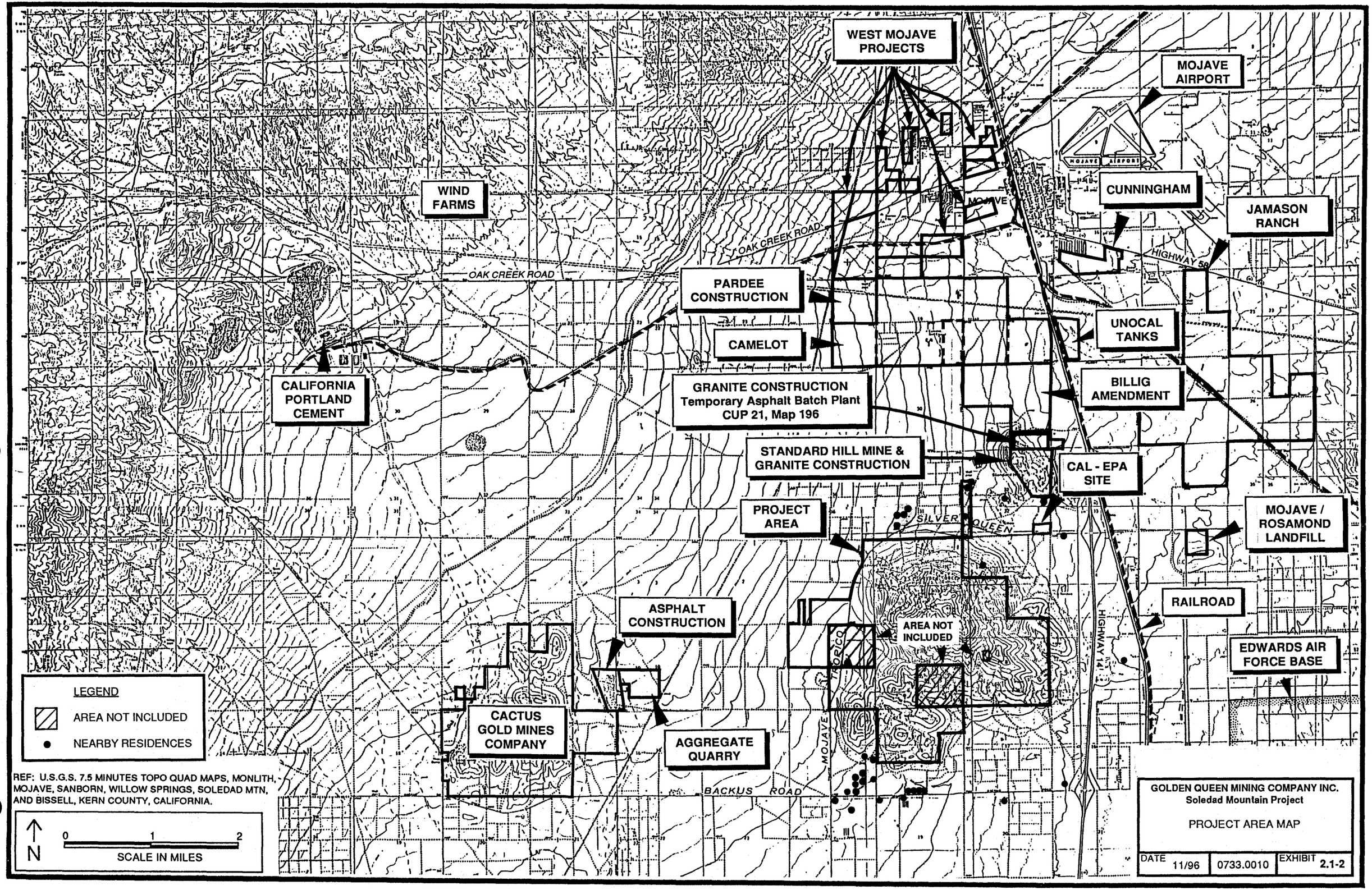
GOLDEN QUEEN MINING COMPANY INC. Soledad Mountain Project REGIONAL LOCATION MAP		
DATE 11/96	0733.0010	EXHIBIT 2.1-1


WEST MOJAVE PROJECTS
MOJAVE AIRPORT
WIND FARMS
CUNNINGHAM
JAMASON RANCH
OAK CREEK ROAD
HIGHWAY 58
PARDEE CONSTRUCTION
UNOCAL TANKS
CAMELOT
BILLIG AMENDMENT
CALIFORNIA PORTLAND CEMENT
GRANITE CONSTRUCTION
Temporary Asphalt Batch Plant
CUP 21, Map 196
STANDARD HILL MINE & GRANITE CONSTRUCTION
CAL - EPA SITE
PROJECT AREA
SILVER QUEEN
MOJAVE / ROSAMOND LANDFILL
RAILROAD
ASPHALT CONSTRUCTION
AREA NOT INCLUDED
HIGHWAY 14
EDWARDS AIR FORCE BASE
CACTUS GOLD MINES COMPANY
AGGREGATE QUARRY
MOJAVE
BACKUS ROAD
LEGEND
AREA NOT INCLUDED
NEARBY RESIDENCES
REF: U.S.G.S. 7.5 MINUTES TOPO QUAD MAPS, MONLITH, MOJAVE, SANBORN, WILLOW SPRINGS, SOLEDAD MTN, AND BISSELL, KERN COUNTY, CALIFORNIA.
N
0 1 2
SCALE IN MILES
GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project
PROJECT AREA MAP
DATE 11/96
0733.0010
EXHIBIT 2.1-2

The topography of the project area consists of rugged outcrops and ridges, with intervening drainage which grade to alluvial slopes and flat areas on the flanks of Soledad Mountain.

The elevation of the project area varies from 4,190 feet above mean sea level at the peak of Soledad Mountain to approximately 2,700 feet above mean sea level along the northeast flank.

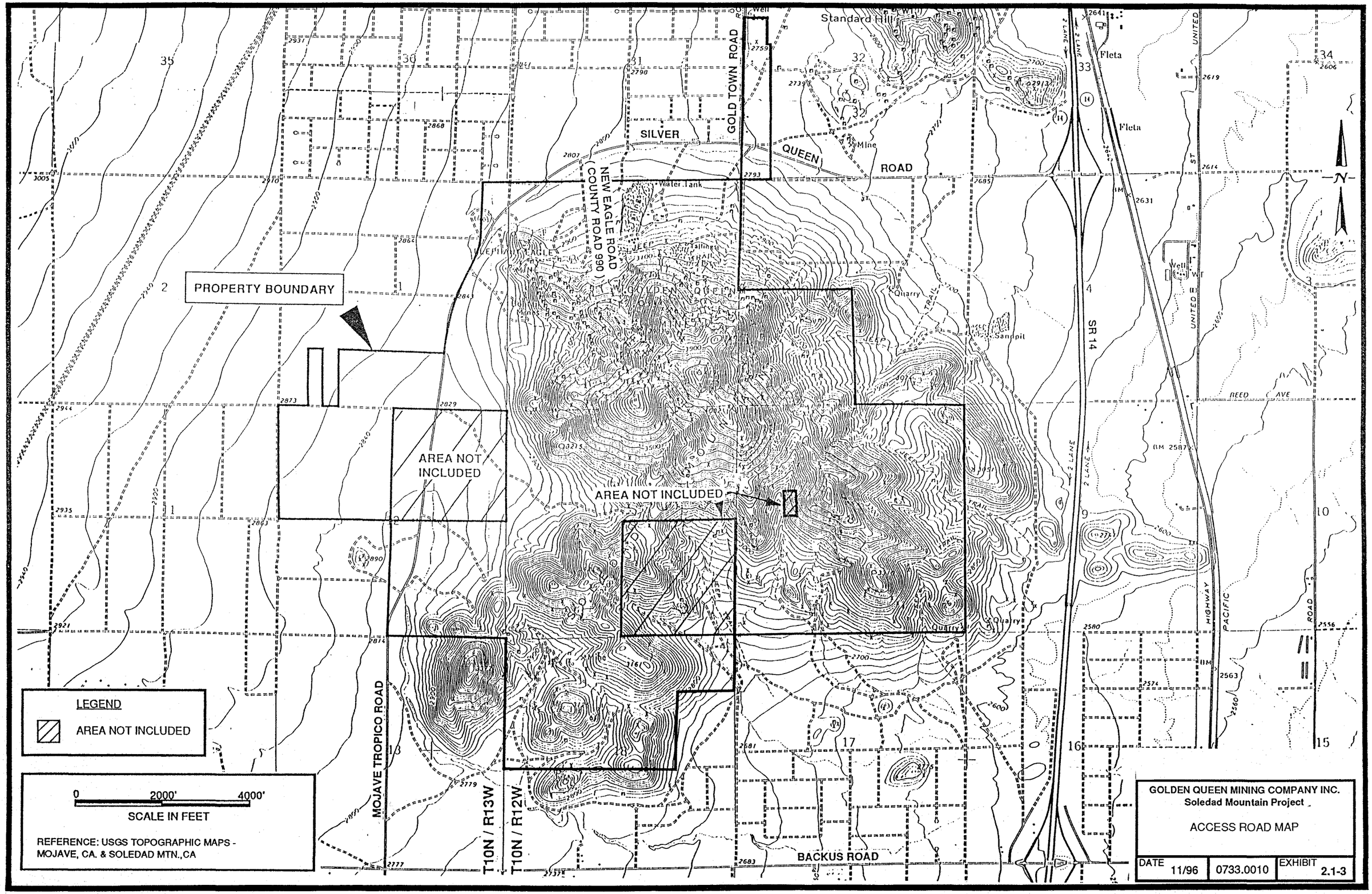
The project is situated in an area covered by the Kern County General Plan and the Specific Plan for Soledad Mountain - Elephant Butte and Vicinity - South of Mojave. The plan allows for the development of residential areas with a minimum lot size of one-half acre, by right as well as mining and processing of gold and silver ores upon obtaining approval of a conditional use permit.

Other open pit mining activity in the Mojave area near the project site includes Standard Hill (precious metal), Cactus Gold (precious metal), Granite Construction (aggregate), Asphalt Construction (aggregate and asphalt batch plant) and California Portland Cement Mojave Plant (aggregate and cement plant). Mining has ceased at Standard Hill and Cactus Gold Mines. Reclamation is expected to be completed in the near future.

The area surrounding the project is sparsely populated. ~~There are approximately 15 residences located along Backus Road south of Soledad Mountain.~~ There are approximately 48 residences, inhabited and uninhabited, south of the project area on or near Backus Road west of State Route 14 and approximately 21 residences east of State Route 14 within two miles of the proposed disturbance. Five residences are north of Soledad Mountain on the north side of Silver Queen Road. A tract of land east of the project site, referred to as Goldtown, is designed as a residential area. One house has been constructed in Goldtown, but has not been certified for occupancy and is not expected to receive certification in the foreseeable future. One house is located on Mojave - Tropico Road directly west of the project area.

The Camelot housing development is located two and one-half miles directly north of the project area and consists of 109 lots on approximately 15 acres. Development began in 1986; all lots have been developed. A golf course is located next to the development and less than 10 additional homes are located on the north side of the golf course outside the development.

Access to the site is from Silver Queen Road, an existing, paved county road. Silver Queen Road is an east-west road which runs approximately 600 feet north of the project site. Golden Queen's entrance road will intersect Silver Queen Road near the eastern boundary of Section 6, Township 10 North, Range 12 West, SBBM, directly opposite Gold Town Road (Exhibit 2.1-3).


PROPERTY BOUNDARY
AREA NOT INCLUDED
AREA NOT INCLUDED
SILVER
QUEEN
GOLD TOWN ROAD
NEW EAGLE ROAD
(COUNTY ROAD 990)
GOLDEN QUEEN
Standard Hill
Fleta
Fleta
Mine
Water Tank
Quarry
Sandpit
Well
SR 14
UNITED
UNITED ST
REED AVE
HIGHWAY
PACIFIC
ROAD
MOJAVE TROPICO ROAD
T10N / R13W
T10N / R12W
BACKUS ROAD
N
LEGEND
AREA NOT INCLUDED
0
2000'
4000'
SCALE IN FEET
REFERENCE: USGS TOPOGRAPHIC MAPS -
MOJAVE, CA. & SOLEDAD MTN.,CA
GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project
ACCESS ROAD MAP
DATE
11/96
0733.0010
EXHIBIT
2.1-3

2.2 Project Characteristics

2.2.1 Proposed Action

Golden Queen is a wholly-owned United States subsidiary of Golden Queen Mining Company, Ltd. (incorporated in November 1985). Golden Queen has headquarters in Spokane, Washington, and local offices at the project site. In addition to its own holdings of private land and mineral claims, Golden Queen has mining and mineral rights agreements with 76 landowners associated with the Soledad Mountain Project.

Golden Queen is proposing to construct and operate an open pit precious metals mine and heap leach recovery operation on Soledad Mountain. Aggregate and construction materials will be sold as a byproduct.

The project includes vacating a portion of New Eagle Road, an unpaved county road which extends into the project area in the northwest one-quarter of Section 6, Township 10 North, Range 12 West, SBBM.

New Eagle Road, a county road, currently extends into the project area in the northwest one-quarter of Section 6, Township 10 North, Range 12 West, SBBM (Exhibit 2.1-3). New Eagle Road was created as a public road by order of the Board of Supervisors of Kern County in 1937, and was recorded in Minute Book 39, Page 487 of the Board of Supervisors. New Eagle Road intersects Silver Queen Road in the south one-half of Section 31, Township 11 North, Range 12 West, SBBM, and travels in a southerly direction approximately 0.41 miles to the base of Soledad Mountain in Section 6, Township 10 North, Range 12 West, SBBM. Silver Queen Road and New Eagle Road are clearly visible in the lower left portion of Exhibit 2.2-1. New Eagle Road terminates at the base of Soledad Mountain and does not connect to any existing roads, and cannot be used by the general public to travel past its terminus in Section 6. The Soledad Mountain project includes vacating that portion of New Eagle Road within Section 6, Township 10 North, Range 12 West, SBBM.

The Golden Queen project area lies within the Bureau of Land Management's (BLM's) Western Mojave Land Tenure Adjustment Project.

0733.0010

OBLIQUE AERIAL PHOTOGRAPH (Looking South Southeast), JULY 19, 1996

EXHIBIT 2.2-1

Golden Queen plans to cooperate and work with the BLM toward the accomplishment of the Land Tenure Adjustment Project's objectives in the Soledad Mountain Project area. Golden Queen plans to acquire lands within the designated retention and consolidation zones, or in other areas acceptable to the BLM, in exchange for public lands designated for disposal within the Soledad Mountain property boundary.

2.2.2 Project Design

The project is scheduled to begin construction in mid-1997, or as soon as permitting is completed. Construction will be completed within twelve months, with a projected start of operations in 1998.

Construction activities for the Soledad Mountain Project will include:

- improving site access and creation of a construction staging area;
- building access and haulage roads to the open pit mining areas and other site facilities;
- preparation of the initial open pit mine production areas;
- site preparation and construction of crushing, conveying and agglomeration facilities;
- site preparation and construction of the heap leach solution processing and precious metal recovery plant;
- site preparation and installation of the first stage of the heap leach pad liner and leak detection system; and
- site preparation and construction of parking, office, maintenance and other ancillary facilities.

Short-term personnel needs for project construction activities are anticipated to be approximately 250 people. The work will be performed by a combination of contractor employees and company employees.

Long-term personnel requirements for project operations are expected to be approximately 230. The average number of employees per shift is expected to be 35 to 40. Local residents are expected to comprise up to 80 percent of the work force.

Exhibit 2.2-2 presents a conceptual plot plan for the project and facilities proposed for the site. The drawing illustrates the proposed location of the open pit mine and the proposed locations of the:

- overburden piles;
- heap leach pads;
- ore crushing, agglomeration, conveying and stacking facilities;
- precious metal recovery plant;
- analytical laboratory;
- entrance road, parking and offices;
- warehouse and maintenance shops; and
- fuel, lubricant and reagent storage area.

Exhibit 2.2-3 presents federal and private land ownership within the mine operational areas.

Within the constraints imposed by the location and the size of the ore body and the steep topography of Soledad Mountain, the project design was formulated to meet several objectives, including:

- minimizing surface disturbance and environmental impacts;
- providing for safe, efficient and economic operations; and
- efficient and timely reclamation.

The project is based upon the mining of a reasonably foreseeable total of 290 million tons of ore and overburden materials, with a portion of the overburden expected to be sold for aggregate and construction material use. Based upon a reasonably foreseeable total ore reserve of 60 million tons, and a mining rate of up to six million tons of ore per year (up to 30 million tons per year of combined ore and overburden), mining operations at the project will be expected to continue for up to 15 years. The proposed project has been designed for and the impacts evaluated based on the foreseeable ore reserve of 60 million tons.

During the development of the open pit mine, it is expected that higher grade vein mineralization will be exposed within the open pit. Some of the higher grade ore may be mined by underground methods with access from the pit.

PRODUCTION WELL #1

PRODUCTION WELL #2

PROJECT BOUNDARY

ELECTRICAL SUB STATION

A

AREA OF EXHIBIT 2.2-7

LEACH PAD 1

AREA OF EXHIBIT 2.2-11

MAIN OFFICE

GROWTH MEDIA STOCKPILE

PROCESS FACILITIES

GROWTH MEDIA STOCKPILE

MINE FACILITIES

A'

PROJECT BOUNDARY

OVERBURDEN

LEACH PAD 2

OVERBURDEN

OPEN PIT MINE

OVERBURDEN

OVERBURDEN

PROJECT BOUNDARY

DESIGNED BY: GC Sande	DATE 11/11/96
DRAWN BY: GC Sande	11/13/96
APPROVALS	
REVISED	
APPROVED	

Golden Queen
MINING CO. INC.

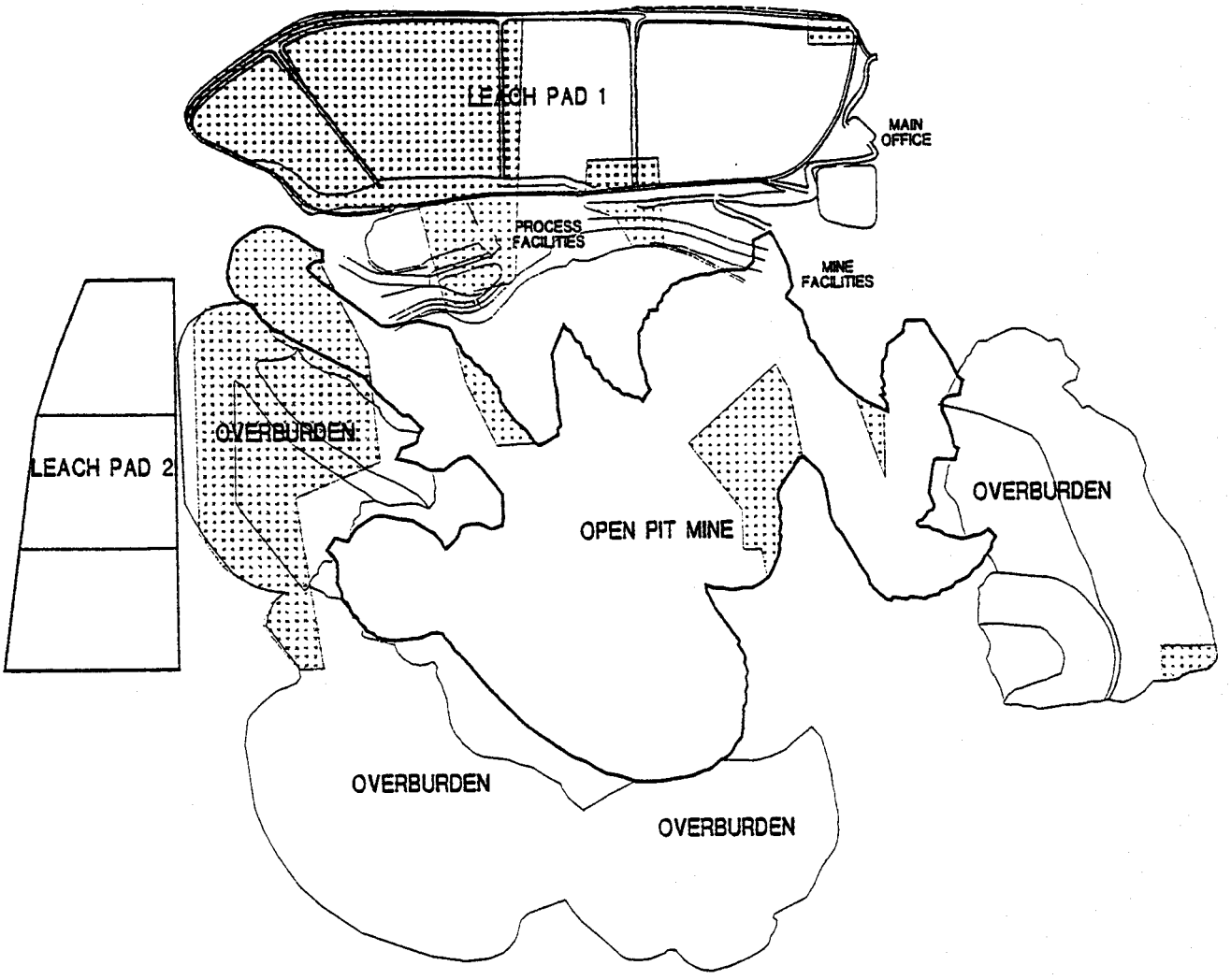
SOLEDAD MTN. PROJECT
GENERAL FOOTPRINT MAP

0 1000' 2000'
APPROXIMATE SCALE IN FEET

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

CONCEPTUAL PLOT PLAN

DATE		EXHIBIT
3/97	0733.0010	2.2-2



LAND FOOTPRINT - acres

	Federal	Private	Total
OVERBURDEN STOCKPILES	57	287	344
OPEN PIT	36	229	265
FACILITIES	15	54	69
HEAP LEACH PAD	81	162	243
TOTAL	189	732	921*

* Does not include 9 acres of growth media piles

N

0 1200' 2400'
SCALE IN FEET

LEGEND

PRIVATE LAND

FEDERAL LAND

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

FEDERAL AND PRIVATE LAND FOOTPRINT

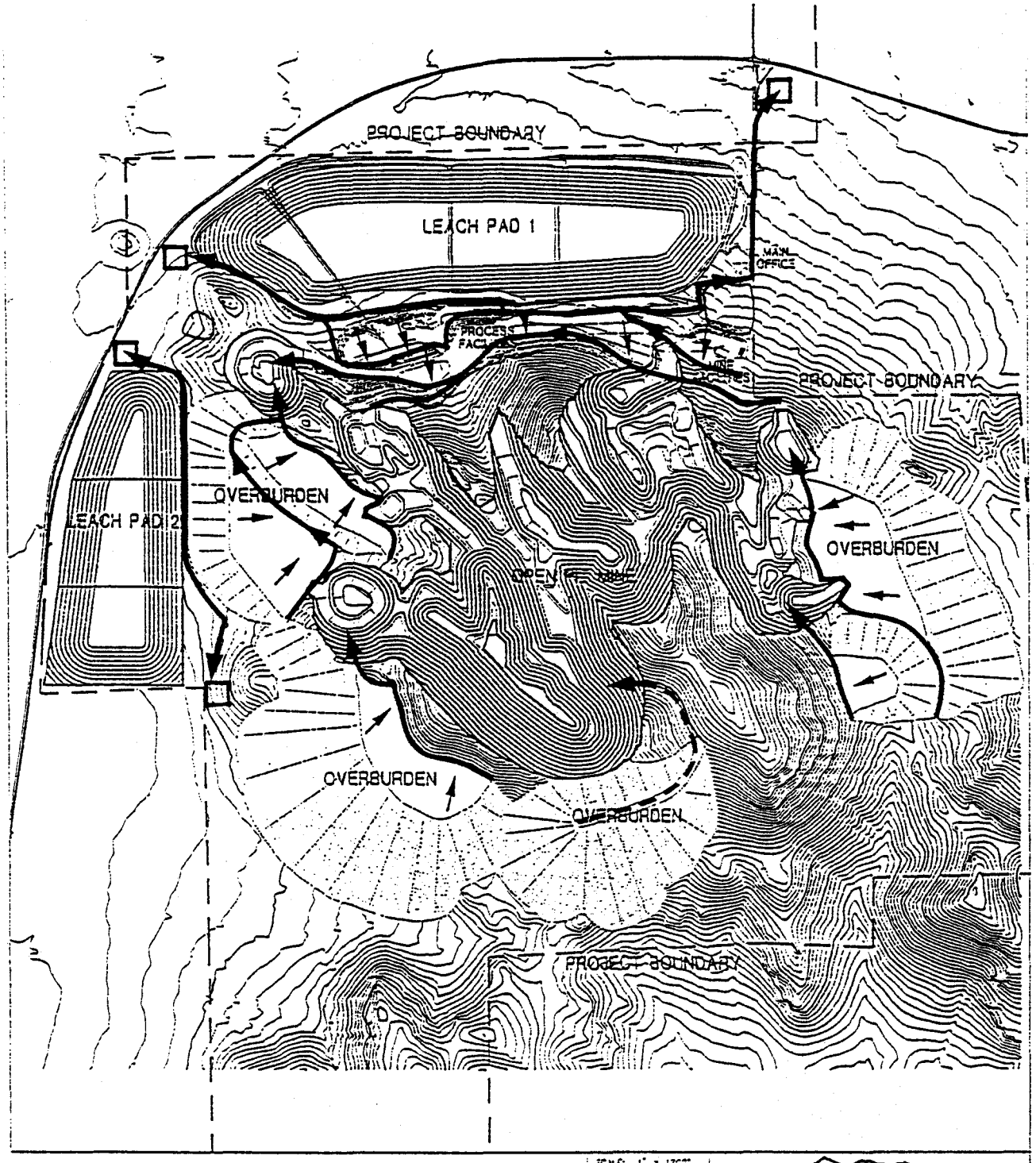
DATE		EXHIBIT
5/97	0733.0010	2.2-3

Exhibit 2.2-1 is a low angle, oblique aerial photograph of the project site viewed from the north-northwest. The photograph illustrates the extent of the disturbance resulting from previous activities at the site. A Site Drainage Plan has been developed in accordance with Kern County regulations and is presented in Appendix III as Attachment E. This plan provides for minimized land disturbance, erosion control through energy dissipation and direction of storm water runoff away from processing and other mine facilities to sedimentation catchment ponds. The project is designed as a zero discharge facility. The catchment ponds will be planted with native vegetation, which will encourage the percolation of storm water for soil and groundwater recharge. The settled solids may eventually be used as reclamation growth media. The plan is based upon the 100-year, 24-hour maximum storm event. Exhibit 2.2-4 presents a schematic site drainage profile showing the general features designed to control storm water runoff.

The choice of sites for location of the overburden piles, heap leach pads, processing facilities and the remaining ancillary facilities has taken into account, through drilling and examination of surface and underground site geology, the potential for recoverable mineral resources to exist at these sites. The planned location of these facilities is in areas with low potential for future mineral development.

Occasional upset conditions, such as storms, power outages, reagent spills and equipment breakdowns may occur. Preparation for unplanned or upset conditions will include personnel training, availability of emergency response equipment and plans and procedures for various types of response.

Reaction to a spill of hazardous, or potentially hazardous materials, will focus upon containment of the material, recovery of the material, recovery of contaminated materials, appropriate disposal of recovered and contaminated materials, treatment or neutralization of affected areas and testing of affected areas. Reactions to non-routine events or releases may require coordination with the appropriate regulatory agencies. Written plans, such as the Hazardous Materials Business Plan (which includes an emergency response plan), the Spill Prevention, Control and Countermeasure (SPCC) Plan and the Risk Management Program (RMP) will specify standard, acceptable procedures, and will include procedures for the notification of regulatory agencies. Employees will receive training in the procedures of these plans.



0 1500' 3000'

APPROXIMATE SCALE IN FEET

Golden Queen MINING CO. INC.

SOLEDAD MTN. PROJECT
GENERAL FOOTPRINT MAP

LEGEND

- Channels According To Site Drainage Plan
- Proposed Channel For Additional Overburden Pile
- Slope At 1 %
- Directed Water Flow
- Sedimentation Catchment Pond

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

SCHEMATIC SITE DRAINAGE PROFILE

DATE 11/96	0733.0010	EXHIBIT 2.2-4

Access to the project facilities will be controlled with fencing, utilization of berms and natural topography. The heap leach pads and process plant areas will be enclosed using eight-foot high fencing designed to exclude people and animals. The remainder of the fencing will be standard four-strand barbed wire.

2.2.2.1 Mine Plan

Mining will be conducted from interconnected areas contained within the planned boundaries of the open pit. Mining operations will be conducted 24-hours per day, seven-days per week. Each shift will employ approximately 25 people. Up to 30 million total tons of material will be mined per year, of which up to six million tons may be ore. The proposed project has been designed for and the impacts evaluated based upon the foreseeable ore reserve of 60 million tons.

The mining process will consist of the following operations:

- Exploration and development drilling, usually to a depth of 200 to 1,000 feet, to further define and delineate the extent and location of precious metals resources within the project area;
- Drilling blastholes on an engineered grid to allow for placement of the blasting agents within the deposit and the collection of drill cutting samples for assay and mine development;
- Loading of blasting agent, an ammonium nitrate and fuel oil mixture (ANFO), into the blastholes, connecting the detonation equipment and initiating the blast;
- Delineating the blasted ore and overburden materials based upon the blasthole cuttings analyses;
- Loading ore and overburden materials, using wheel loaders and/or track shovels into off-road haulage trucks; and
- Transporting ore in off-road haulage trucks to the crushing facility and overburden to one of the overburden piles, all of which are located adjacent to the mine.

In order to ensure that blasting does not result in damage or danger to project or neighboring structures, blasting procedures will be designed, conducted and monitored by experienced

mining engineers and California certified blasters. Blasting will take place one time per day, during the afternoon shift change or during the lunch break, approximately five days per week.

The United States Bureau of Mines has conducted extensive research into the effects of blasting upon structures. As a result, they have concluded that a peak particle velocity of less than two inches per second has a low likelihood of causing damage to structures. Also, they have determined that if individual detonations of blastholes are greater than eight milliseconds apart the effect of individual detonations will not be cumulative.[45]

Based upon this information, a relationship was developed correlating the amount of explosive used in a blast to the distance at which no damage would be expected to occur. This relationship will be applied to all blasting operations at Soledad Mountain. Initial blasting at the mine will be monitored to determine that there are no impacts to adjacent structures or water supply wells from the use of explosives.

Roads and other operating areas within the project will be maintained by using motor graders and/or wheel dozers to provide optimum road surfaces, and by using water trucks to control fugitive dust. Long-term and semipermanent roads and surfaces within the project will be constructed using dust palliatives to control dust and reduce road maintenance and water requirements. Mine haul roads will be designed with a maximum slope of 10 percent and will conform to Mining Safety and Health Act requirements.

Mining equipment will be refueled and lubricated within the mine using specially designed fuel/lubrication trucks or at the fueling station located near the mine maintenance shop. When equipment maintenance or repairs must be done at a location other than the maintenance shop, the work will be accomplished using mobile mechanics' vehicles, portable welding equipment and mobile cranes. Oil lubricants will be contained during maintenance operations using pans or similar containment devices.

Mine shift changes will generally be done within the mine. Miners will be transported to their work site using a passenger bus. Mine supervisors and surveyors will use small vehicles for access to the mine and transportation of people and materials within the mine.

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[45] Nickells, H. R., C. F. Johnson and W. I. Duvall, *Blasting, Vibration and Their Effects on Structures*: U.S. Department of Interior, Bureau of Mines Bulletin 656, 1971.

Table 2.2-1 presents the listing of the mining equipment anticipated to be required for the project. All of this equipment is either diesel or gasoline powered.

TABLE 2.2-1

Preliminary Mining Equipment List

Item	Quantity
Exploration drills (contracted/seasonal)	2
Blast hole drills	3
ANFO truck	1
Wheel loaders	5
Off-road haul trucks	9
Track dozers	4
Water trucks	2
Motor grader	2
Fuel trucks	1
Maintenance/lubrication trucks	3
Passenger van	1
Portable lights	8
Crane	1

A number of ore producing areas will be developed within the overall open pit mine, with operations being conducted at several locations during any day. The open pit will be excavated using the standard bench mining method. Examination by experts in rock mechanics and slope stability has confirmed that a safe and stable mine can be developed utilizing overall highwall slopes of 55 to 63 degrees.

Although the ultimate slopes will be developed by mining 20-foot high individual benches, the final slope configuration will consist of 60-foot high vertical intervals with 20-foot wide safety and stability benches. Appendix III, Attachment C, presents the slope stability work performed by John Abel Jr., Ph.D, and reviewed by Don Poulter, California Registered Engineer.

Exhibit 2.2-5 is a plan drawing which shows the locations of cross sections made through the current planned mining areas. Cross sections A-A' and D-D' are presented here (Exhibits 2.2-6 and 2.2-7). All of the cross sections are presented in Section 3.2. The actual mine configurations may change somewhat during operation as adjustments are made to adapt to localized conditions. As designed, the greatest vertical relief of the mine, measured from the original ground surface to the projected pit bottom, will be about 1,300 feet. The highest point on the mine highwall will be 4,150 feet above mean sea level. The lowest pit bottom elevation will be approximately 2,780 feet above mean sea level. The approximate, maximum linear dimensions of the mine area will be 5,600 feet in length and 4,900 feet in width. The existing high point topography of Soledad Mountain will not be altered. Open pit mining is a generalized term in surface mining. Mining of the open pit at the Soledad Mountain site will initially remove ore from elevated ridge lines. After a time, ground depressions will become more apparent.

Overburden piles will be constructed to stable design configurations by dumping haul truck loads directly into place or by dumping near the edge of the pile and using a track dozer to push the material into place.

The overburden piles are designed to be built with essentially horizontal tops and 37 degree side slopes (1.5:1.0 horizontal to vertical). This slope is the approximate natural angle of repose for this material and will be stable under static loading conditions. An engineering stability analysis has been done for these piles by Don Poulter, California Registered Engineer.[46] As designed, the aspect of the overburden piles ranges from 300 feet to 600 feet. When reclaimed, the overburden piles will be graded and contoured to approximately 29 degree side slopes (1.8:1.0 horizontal to vertical).

Golden Queen anticipates that much of the overburden material will be marketable in the form of aggregate and construction materials. Overburden resulting from mining on private lands owned or controlled by Golden Queen may be processed and/or sold as aggregate or construction materials, after obtaining necessary permits and licenses. Overburden materials

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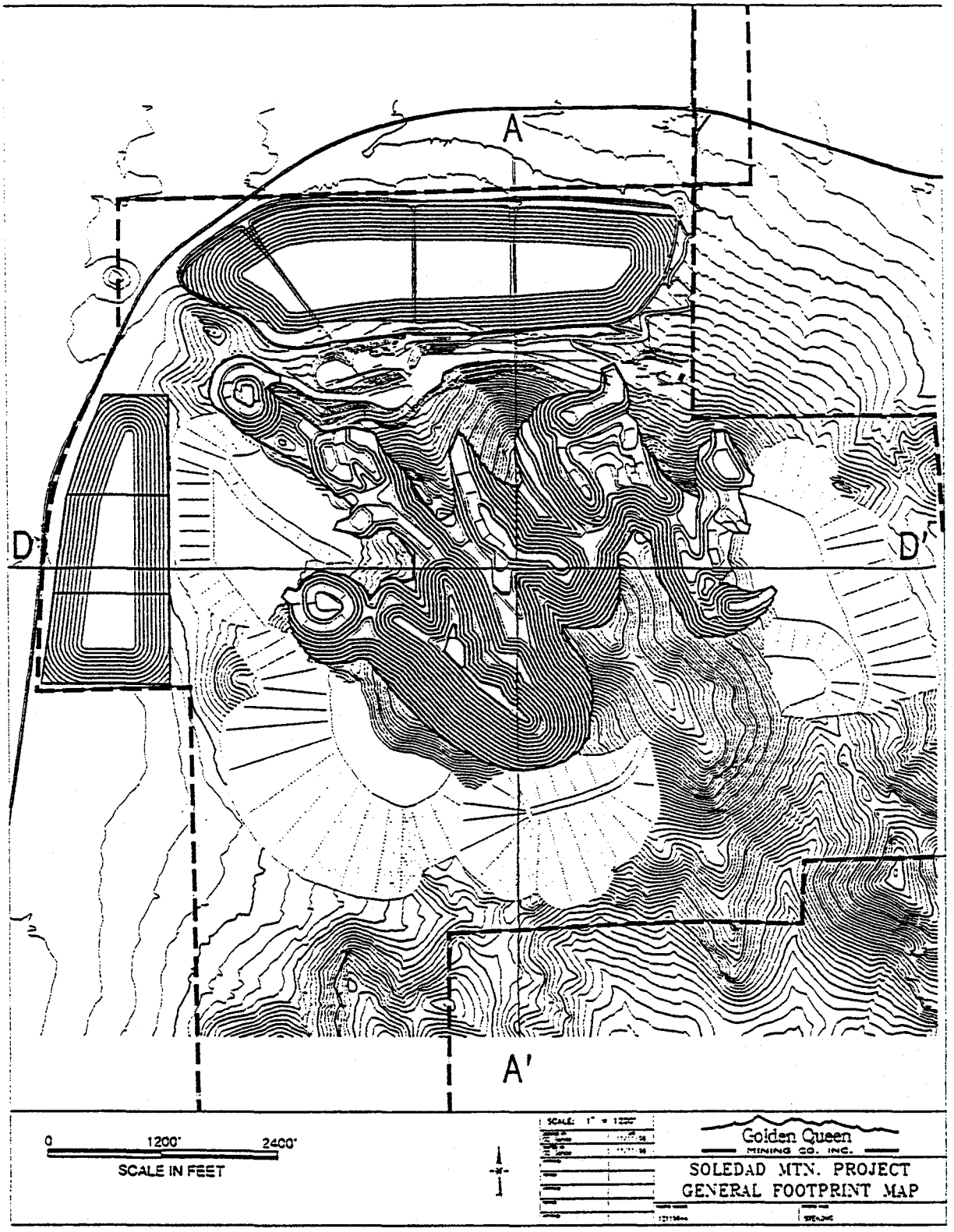
46 Poulter, Don A., Glasgow Engineering Group, Inc., to Tony Casagranda, Golden Queen Mining Corporation, re: Slope Stability for the Soledad Mountain Project Mine Overburden Disposal Piles, October 25, 1996, included in Appendix III, Attachment C.

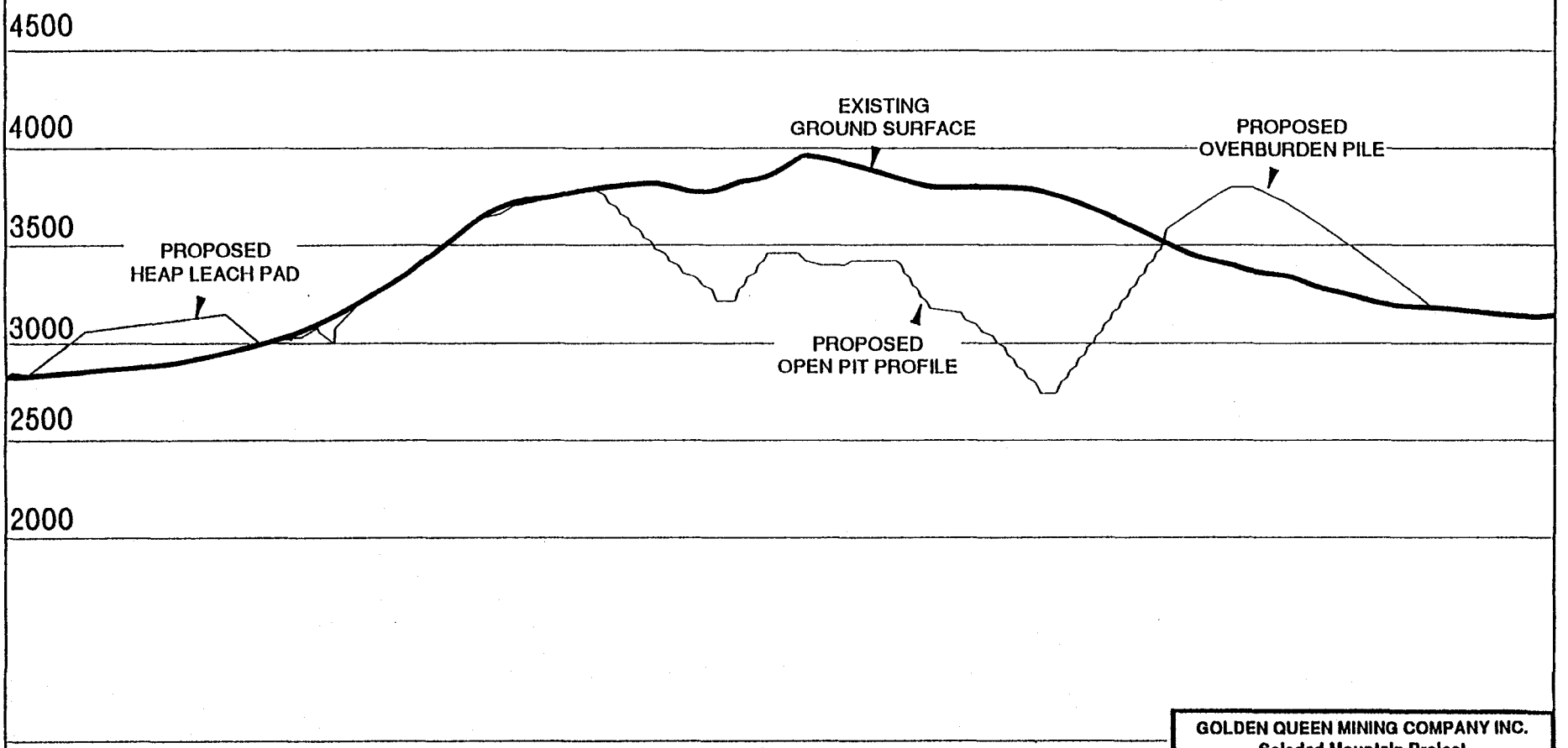


GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

PROPOSED TOPOGRAPHIC
PROFILE LOCATION MAP

DATE 11/96	0733.0010	EXHIBIT 2.2-5

CROSS SECTION
A - A'

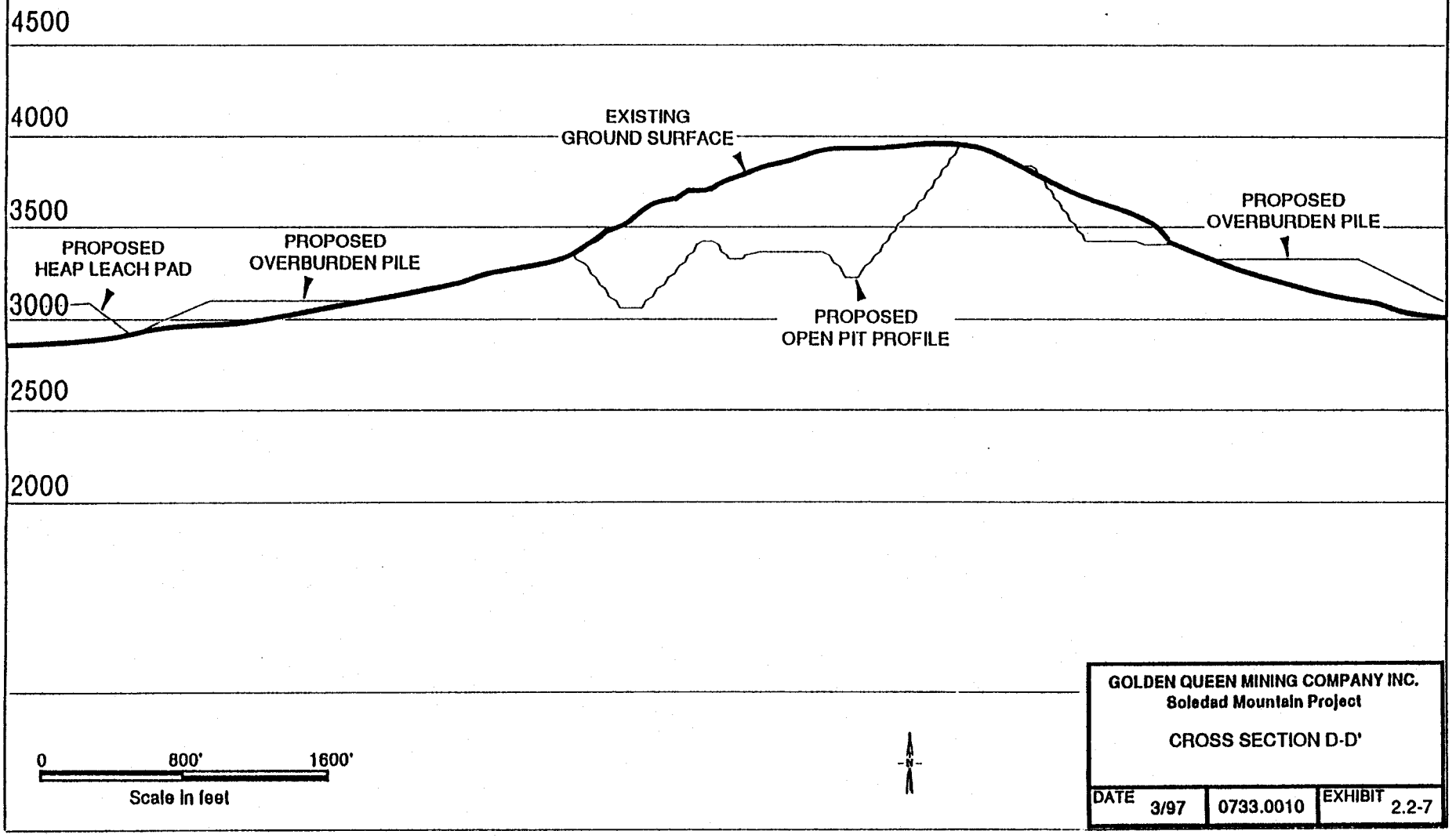


GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

CROSS SECTION A-A'

DATE		EXHIBIT
3/97	0733.0010	2.2-6

CROSS SECTION
D - D'



GOLDEN QUEEN MINING COMPANY INC. Soledad Mountain Project CROSS SECTION D-D'		
DATE 3/97	0733.0010	EXHIBIT 2.2-7

mined from or piled on BLM lands may not be used for such purposes unless prior approval is obtained from the BLM.

During the development of the open pit mine, it is expected that higher grade vein mineralization will be exposed within the open pit. Some of the higher grade ore may be mined by underground methods with access from the pit. Development of an underground mineral resource will result in the design, construction and operation of processing and recovery facilities, appropriate for the quantity and quality of the underground ore. These facilities, which may include additional milling and leaching capacity, will be integrated with the existing process facilities.

2.2.2.2 Process

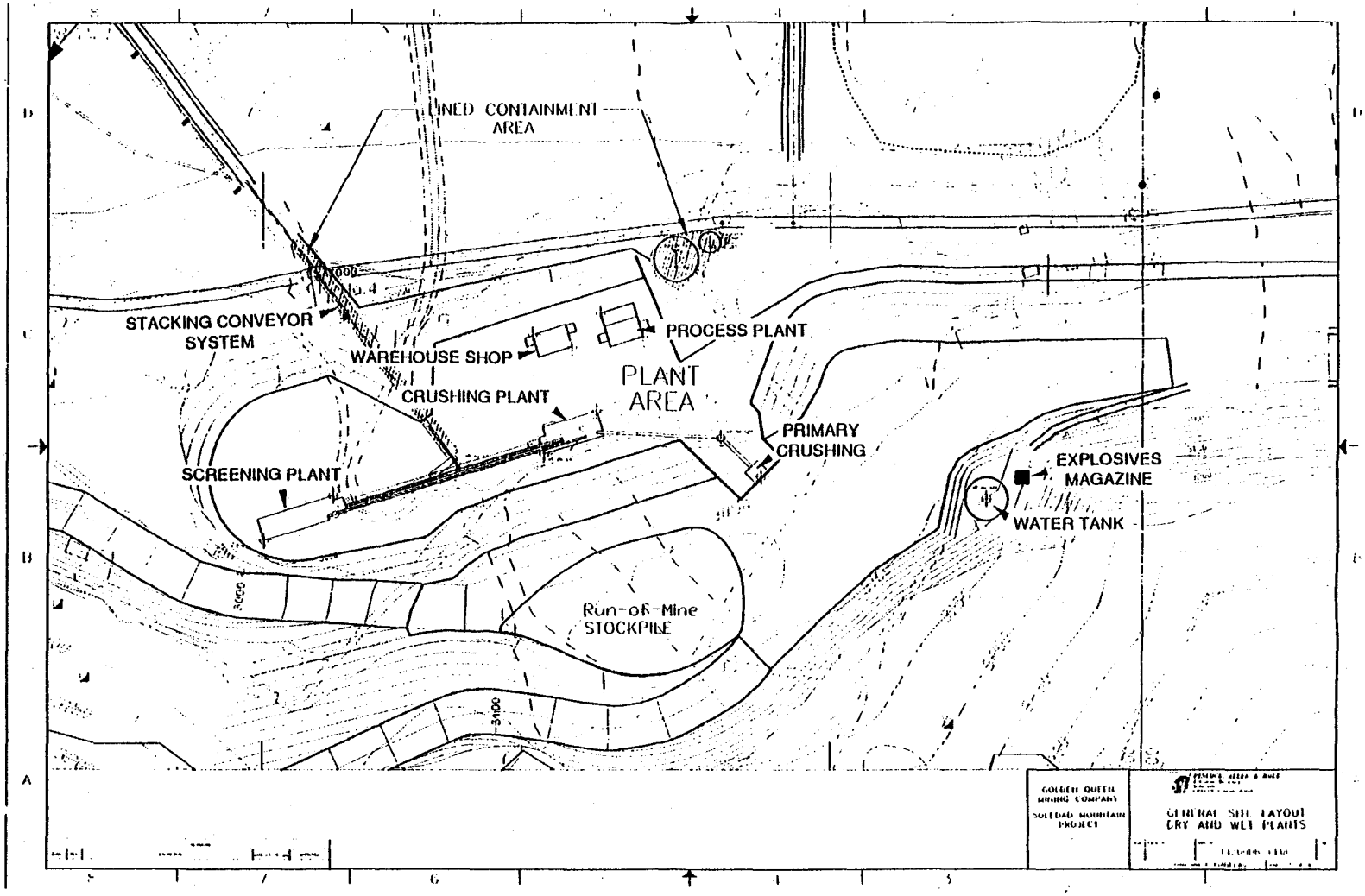
The ore processing facilities will be located directly south of cell number 2 of leach pad number 1. Exhibit 2.2-8 presents the general arrangement of the facilities.

2.2.2.2.1 Crushing and Agglomeration

Mining operations will haul and deposit ore at the jaw crusher dump pocket or at the ore stockpile which will be located adjacent to the crushing facilities. This stockpile, which will contain up to 80,000 tons, provides for the continuous processing of ore independent of mining operations. It is expected that greater than 75 percent of the ore will be unloaded directly to the jaw crusher dump pocket.

The crushing facility will be a four-stage process designed to reduce the run-of-mine ore to nominally minus 10 mesh (approximately one-sixteenth inch) particles. This process exposes precious metals mineralization at the surface of the particles and in newly created fractures so that efficient mineral recovery can be effected. The crushing facility will utilize proven processing equipment and procedures.

Following crushing, the particles will be agglomerated using a binder, such as cement or lime, and barren process solution. This process forms relatively uniform particles with an approximate diameter of one-eighth to three-eighths inch. Agglomeration is also a conventional, proven process. It assures percolation of solutions within the heap for maximum



See Exhibit 2.2-2 For Location Within Project Area

N

0 300' 600'

SCALE IN FEET

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

ORE PROCESSING AREA

DATE		EXHIBIT
11/96	0733.0010	2.2-8

precious metals recovery rate and efficiency, provides dust control during transfer and placement of ore to and on the heaps and allows for timely and efficient neutralization and reclamation of the heap. Agglomeration also helps to assure that ponding of process solution, which may be attractive to wildlife, will not form on the top surface of the heap leach pad.

Finally, the agglomeration binder provides protective alkalinity to the process solutions which is the chemical mechanism that maintains cyanide in liquid solution.

Incorporated into the design of the crushing facility will be the use of water sprays for dust suppression and three baghouses for dust collection. At the ore dump pocket, dust suppression will be accomplished by the use of water sprays. To affect dust collection, process equipment feed and transfer points are swept by the baghouse dust collectors. The conveyors are hooded to prevent wind from entraining dust. Dust collected from the baghouses will be returned into the process.

The crushing facility, as well as the remainder of the processing and project facilities, will be constructed under an Authority to Construct and operated under a Permit to Operate. Both of these documents are issued by the Kern County Air Pollution Control District after examination of the project and demonstration of its ability to meet air pollution control requirements. The agglomeration process does not require dust suppression or collection equipment because of the water added to and contained within the process.

The crushing facility will process an average of 800 tons of ore per hour and operate 24-hours per day, seven-days per week, with seven to 10 people assigned to each crew. This crushing plant area will be the major power consumer for the project. The power supply for all equipment will be commercial electric power.

Equipment maintenance will generally be done in place, with occasional component parts being repaired or refurbished at the maintenance shops or offsite at a contractor.

Exhibit 2.2-9 presents a generalized flowsheet for the crushing and agglomeration facilities. A listing of the crushing and agglomeration equipment is shown in Table 2.2-2.

GENERALIZED CRUSHING and SCREENING FLOW DIAGRAM

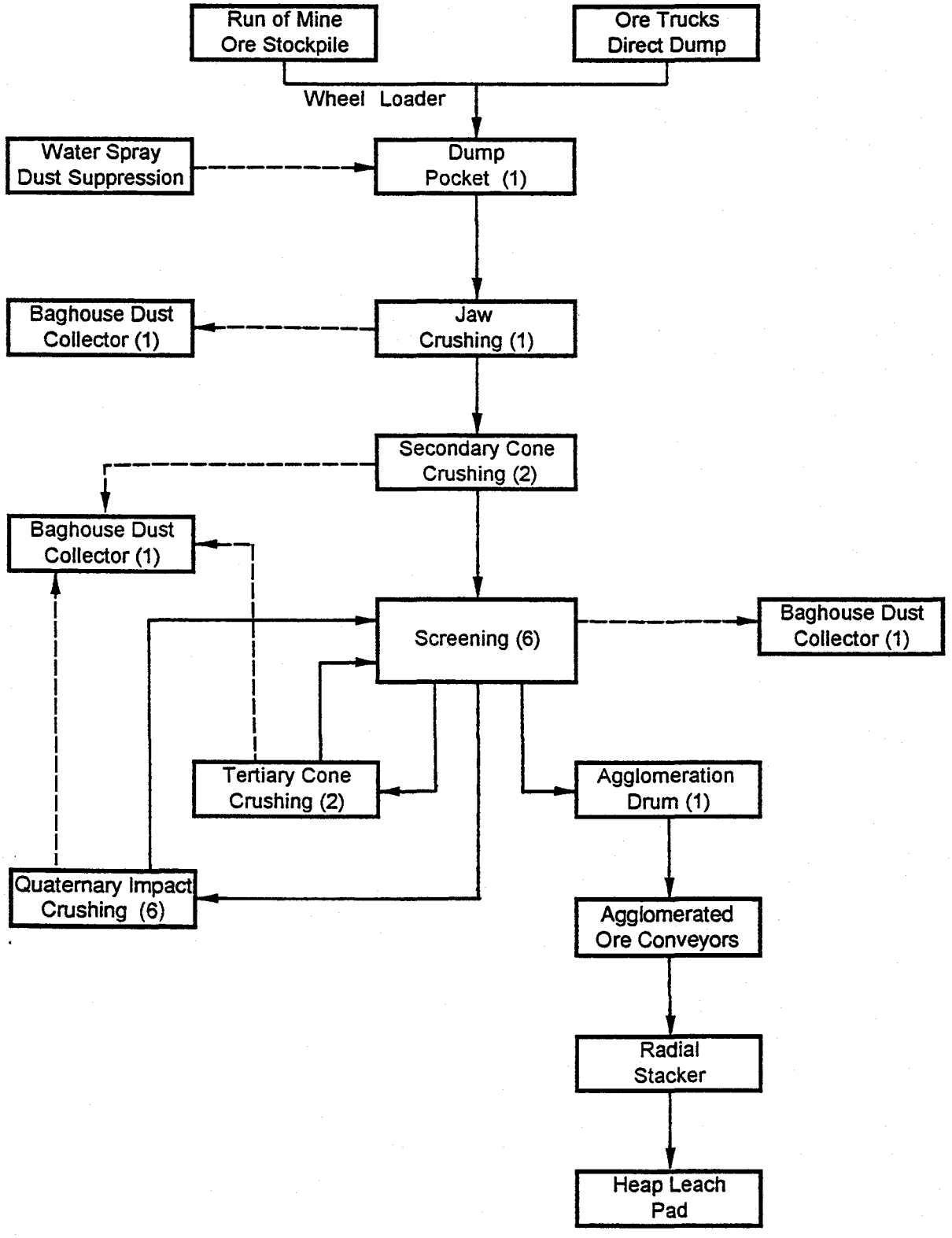


EXHIBIT 2.2-9
0733.0010

TABLE 2.2-2

Crushing and Agglomeration Equipment

Item	Quantity
Apron feeder	1
Vibrating grizzly feeder	1
Jaw crusher, 42 in. x 48 in.	1
Secondary 7 ft. standard cone crushers	1
Tertiary 7 ft. shorthead cone crushers	2
Quaternary vertical impact crushers	7
Vibrating double deck screens	16
Conveyor belts	8
Feeders	26
Agglomeration drum	1
Cement storage silo	1

Ore will normally be fed to the system by direct dumping of haul trucks into a dump pocket built over the vibrating grizzly. Alternatively, wheel loaders will feed the system from an ore stockpile. Using the variable feed rate provided by the vibrating grizzly feeder, ore will be withdrawn from the ore dump pocket. Ore less than five inches in size will pass through the grizzly to a belt conveyor. The larger than five-inch pieces of ore will be discharged from the grizzly into the jaw crusher, where they will be crushed to less than five inches in size. After passing under a magnet, where tramp metals will be removed from the process stream, ore will be weighed using a belt scale, and screened at the primary screen. From the primary screen, the oversize, pieces larger than one and one-quarter inches, will be fed to the standard cone crusher. Product from the standard cone crusher will return to the primary screen for removal of the newly crushed particles. The smaller than one and one-quarter inch ore will continue to the primary storage bin.

From the primary storage bin, ore will be withdrawn by feeders to the secondary screens. At the secondary screens the ore will be divided into three fractions: a smaller than 10 mesh (approximately one-sixteenth inch) product, which will meet the final product sizing criteria; a size fraction between five-eighths inch and 10 mesh, which will be fed through surge bins to the tertiary impact crushers; and a size fraction between one and one-quarter inches and five-

eighths inch which will be fed through surge bins to the shorthead cone crushers. The entire crushing system will be in a closed circuit, meaning that all final product will pass through the secondary screens prior to leaving the crushing and screening circuit for the secondary storage bin that feeds the agglomeration system.

Movement of the ore in process between the various crushers and screens will be accomplished using conventional-covered belt conveyors. Following final sizing, the ore will be fed from the secondary storage bin to a conveyor belt, onto which cement, or other binders will be added in controlled amounts to the ore. The ore will be conveyed over a scale and through a sampling system to the agglomeration drum.

The agglomeration process consists of adding controlled amounts of barren process solution to the ore and feeding it into the drum, which rests horizontally and rotates on its long axis. The rotation of the drum induces the ore to roll within the drum. This, in combination with the solution and the binder, tends to adhere the fine particles together and coat the more coarse particles with fine particles so that one-eighth to three-eighths inch sized spherical particles emerge from the discharge end of the drum. As these agglomerated particles cure, that is as the binder sets up, a porous particle with good integrity will be produced that provides structural stability to the heap, allows for good solution permeability within the heap, and provides for contact between the process solutions and the gold bearing surfaces of the particles.

Because barren process solution will be used in the agglomeration process, the agglomeration facilities and all downstream conveyor transportation equipment will be placed over a containment structure or liner. This containment, which will meet State Water Resources Control Board requirements, will prevent discharge to the environment of any solution bearing material.

2.2.2.2.2 Conveying and Stacking

Agglomerated ore will be transported from the agglomeration drum to the heap leach pads, for leaching of precious metals from the ore, utilizing a system of fixed and portable "grasshopper" conveyors. Agglomerated ore for leach pad number 2, may be loaded and hauled by truck. The conveying systems will be placed upon and over lined areas between

the agglomeration area and the heap leach pads. The lined areas are designed to contain spills and prevent the agglomerated ore from contacting the ground surface. Ore conveyed across the leach pads will be located above the leach pad containment system. At appropriate points, ore will be transferred from the main transport conveyor(s) to grasshopper conveyors that cross the heap leach pad and discharge to a radial stacker. The radial stacker will provide final placement of ore on the heap.

Placement of the agglomerated ore in this manner will reduce the need for the use of heavy mobile equipment on the heap and allow for improved structural integrity of the agglomerates. It also reduces the potential for natural segregation of particles by size, improving permeability of the heap and percolation rates.

Dust collection and suppression will not be required in this system due to the agglomeration of fines and the moisture content of the material.

Ore will be stacked in horizontal lifts from 30 to 35 feet in height, up to a final height of 180 feet. The down slope portion of the heap will be constructed at 2.5:1.0 (horizontal to vertical) and the perimeter slopes will be constructed at a slope of 2.0:1.0 (horizontal to vertical). Geotechnical analyses of the heap have shown this configuration to be stable under static and earthquake induced loads.

Equipment maintenance will generally be done in place, with occasional component parts being repaired or refurbished at the maintenance shop.

2.2.2.2.3 Leach Pads and Leaching

Two heap leach pads are proposed for construction at the site. The planned locations for both are shown in Exhibit 2.2-2. Leach pad number 1, located to the north of the mining area, will be the first to be constructed. Leach pad number 2, located to the west of the mine, will be built as leach pad number 1 reaches capacity.

Both pads will be constructed sequentially as required to meet mining and processing demands. Both heap leach pads will be designed and constructed in conformance with requirements of the Lahontan Regional Water Quality Control Board. For general reference

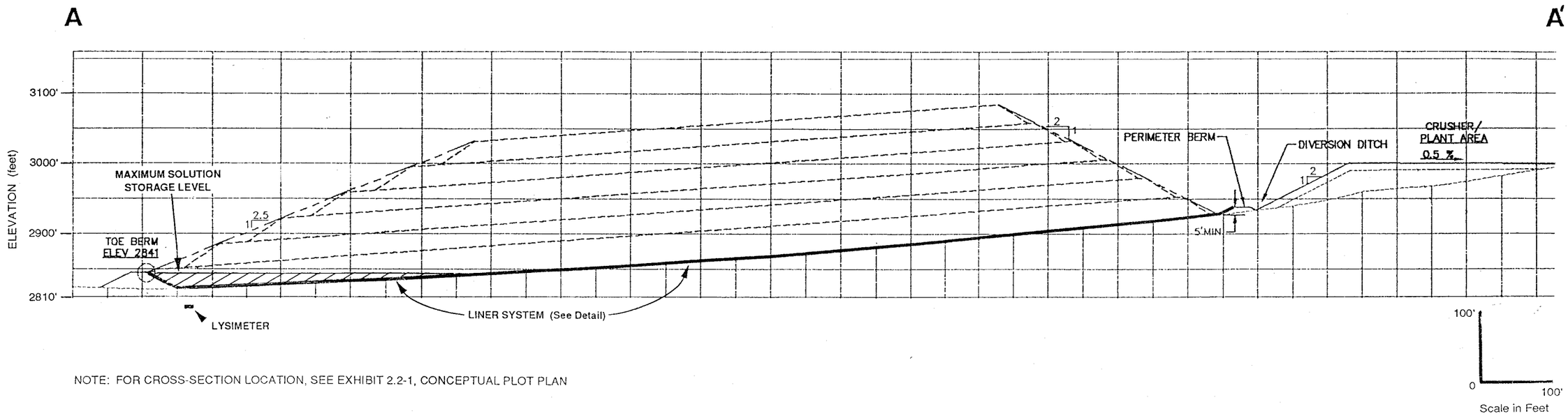
to the design concept of the proposed pads, the term modified valley-fill heap leach can be used to describe them as dedicated heap leach pads with internal solution storage. Each pad will consist of cells which will have internal dividers or berms to control solution flows and solution storage. Perimeter berms support the toe of the heaps and form the sides of each cell. The berms will also provide solution storage capacity, eliminating the need for conventional process surge ponds (Exhibit 2.2-10). The perimeter berms and internal dividers will be constructed of overburden material from the open pit mine and/or surplus alluvial materials generated from grading the heap leach pad sites.

The toe berm portion of the pads will be designed to allow for a 100-year, 24-hour storm event, and will be no more than 25 feet in height. The crest of the toe berm will serve as an access road. The storage capacity of the individual cells will be less than 50 acre-feet prior to the stacking of ore.

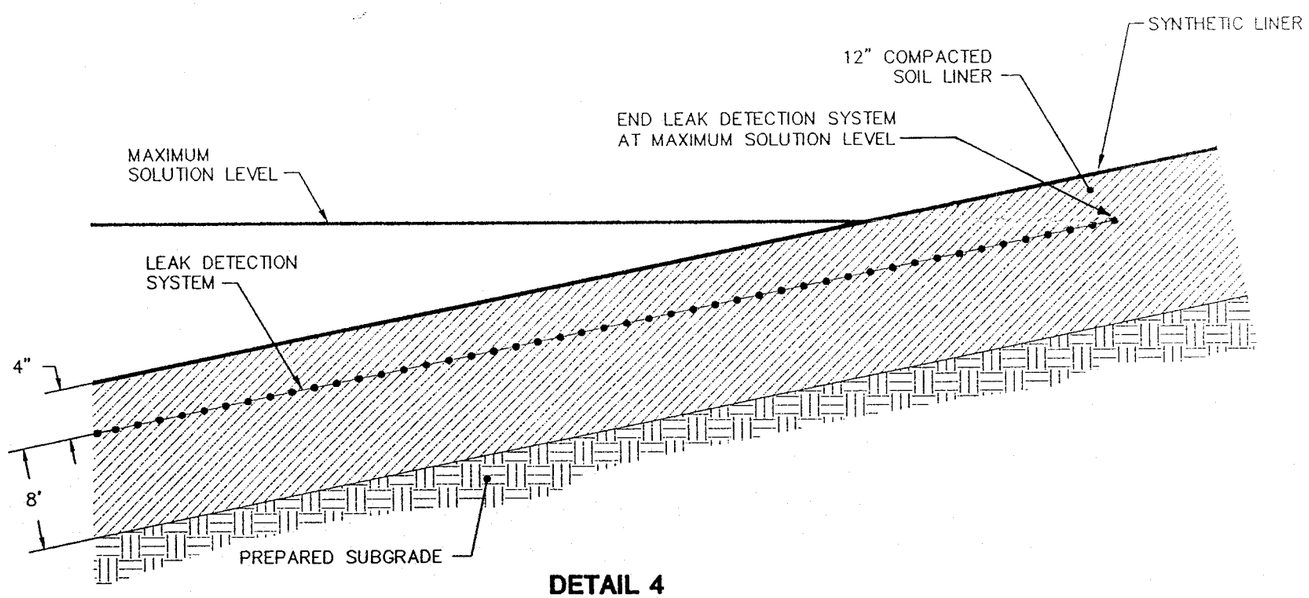
Based upon these criteria, the toe berm will not be subject to the jurisdiction of the State of California Department of Water Resources, Division of Safety of Dams (DSDD).

This design was selected for several reasons. The modified valley-fill heap is the preferred design to create a flatter area for a freestanding pad on steep slopes. The toe berm supporting the heap enables the heap to be constructed over the natural topography rather than having extensive earthwork to reduce the pad grade for a stable unsupported heap. One of the important attributes of the valley fill concept is the lack of solution ponds exterior to the leach pads. The toe berm creates a pond area for in-heap management of leach solutions, runoff from precipitation and retention of the design storm event. Also, the lack of barren and pregnant solution ponds minimizes evaporation of water and hazards to wildlife. The pad liner in the area of solution storage of the heap is more difficult to repair than a leak in a separate solution pond. Discontinued use of a cell within the heap may be required, in the event a leak is detected in the liner, as directed by the Regional Water Quality Control Board. The cells are designed as separate containment units within the heap leach pad and can be drained separately.

The pad liner system will be a composite liner. The top liner will consist of 80 mil High Density Polyethylene (HDPE) and the bottom liner will consist of 12 inches of bentonite amended soils installed with a permeability no greater than 10^{-6} cm/sec (Exhibit 2.2-10). The existing tailings piles will be the source of some of the soil for the bottom liner.



NOTE: FOR CROSS-SECTION LOCATION, SEE EXHIBIT 2.2-1, CONCEPTUAL PLOT PLAN



DETAIL 4

TYPICAL LINER SYSTEM TRANSITION DETAIL

NOT TO SCALE

MODIFIED FROM: POULTER, DON A., SOLEDAD MOUNTAIN PROJECT
HEAP LEACH FACILITIES GEOTECHNICAL DESIGN REPORT, JANUARY 24, 1997

WZI INC. BAKERSFIELD, CALIFORNIA		
GOLDEN QUEEN MINING COMPANY INC. Soledad Mountain Project		
HEAP LEACH PAD AND LINER SYSTEM SCHEMATIC		
DATE 4/97	0733.0010	EXHIBIT 2.2-10

In the down slope portions of the heap leach pad which will contain standing process solutions, a leachate collection and recovery system (LCRS) will be installed within the amended soil layer. The LCRS will consist of a continuous layer of geotextile connected to a geotextile wick drain system that will direct any intercepted liquid to a sampling sump located at the lowest portion of the leach pad cell.

The LCRS serves two purposes: 1) it provides a detection method in the event there is a leak in the upper liner and 2) it removes any liquid which may pass through the upper liner to prevent the liquid from potentially passing through the lower liner. Any liquid which collects in the LCRS is collected and analyzed to determine if it contains liquid from the heap leach pad.

This liner system will be in compliance with design requirements for a Group B waste under Title 23 CCR, Chapter 15 guidelines. Based on test data, the ore placed on the pads will be classified as a Group B waste during the operations phase of the project and declassified at closure. Group B wastes are defined as mining wastes that pose a low risk to water quality. The Regional Water Quality Control Board determines if the waste can be declassified (no longer considered Group B waste) after the waste is neutralized, tested and proven that any potential future discharge (such as, storm water) would be in compliance with water quality objectives.

The synthetic pad liners will be installed by experienced contractors with quality assurance being provided by an independent engineering firm. Seams and joints will be inspected and tested during construction to ensure liner integrity. Prior to release for operation, the liner will undergo a final inspection and any imperfections corrected. Similarly, base materials and the clay portion of the composite liner will be constructed and inspected according to engineered specifications.

Existing tailings will be used in the construction of the amended solid portion of the composite liner, and for other liner base and bedding materials to the maximum extent feasible.

Vadose zone monitoring will be done using lysimeters. The vadose zone is the area of soil and alluvium between the ground surface and the groundwater which is aerated and does not contain free water. Lysimeters are soil pore water collection devices. The lysimeters will be

placed under the fluid storage portion of the cells to detect any potential leakage through the liner system. They will be placed 25 feet below the solution control portion of the liner deep enough to exclude condensation or moisture resulting from the weight of ore being stacked on the leach pads.

Lysimeters are designed to allow the collection of liquids which occur within the unsaturated zone between the liner and groundwater. If the lysimeters collect a sample, it will be analyzed to determine if any solution is being released from the leach pad. In the event analyses indicate the presence of sodium cyanide in the vadose zone, the Lahontan Regional Board will be notified immediately. An action/response plan, based on calculated flow rates, will include weekly monitoring, identification of the problem area and, for higher flow rates, a shutdown of activity in the problem cell and development of a remedial action plan. The action/response plan will be established as part of the Monitoring and Reporting Program set up by the Lahontan Regional Board.

Initially, three groundwater monitoring wells will be located near the berm outside of leach pad number 1, cell numbers 1 and 2. The monitoring wells, which will be installed with approval from the Lahontan Regional Board, will provide for statistical sampling comparisons of groundwater for any constituents of concern. One of the wells will be "up-gradient" from the leach pads, providing for sampling of water that cannot be affected by the mining operation. The remainder of the wells will be "down-gradient," allowing for monitoring for any potential releases. Regionally, "up-gradient" is northwest of Soledad Mountain. Monitoring wells for leach pad number 1 will be added as the heap leach cells are extended to the east. Leach pad number 2 will be designed and constructed with similar monitoring systems.

Precious metals will be leached from the ore using an alkaline, 10.5 pH or greater, dilute sodium cyanide solution (containing up to 300 ppm of cyanide). This solution will be applied on a controlled basis using drip irrigation methods (emitters) at a rate of up to 5,400 gallons per minute. As the solution percolates through the heap, it contacts the precious metals and dissolves them. The enriched solution (pregnant solution) is intercepted at the top liner by a network of solution collection pipes. These pipes carry the solution to the solution storage portion of each pad cell, where it will be stored for either recirculation to the heap or pumping to the process plant for recovery of the contained metals. The piping system also reduces the

static solution head on the composite liner, reducing the potential for significant leakage and improving the rate of process solution recovery.

Single steel pipe solution lines located within the heap leach pad will rest directly on ore, or be buried in the ore. For steel pipe solution lines located over, but near the edge of the liner, the steel pipes will be within corrugated polyethylene piping. This double pipe system may be placed directly on HDPE-lined areas as no steel/HDPE contact exists and contraction/ expansion of the steel pipe is accommodated within the corrugated polyethylene.

Pregnant solution stored within the heap will be extracted, for processing and recovery of metals, by pumps placed in pipes laid down on the inside slope of the berm. This prevents liner penetration and associated leakage potential. Booster pumps will move the solution to tankage at the process plant. No open ponds will be required with this arrangement.

Within the leaching process, sodium cyanide will be lost through chemical complexing with minerals within the ore and through natural degradation due to exposure to oxygen and sunlight. Following processing of the pregnant solution for the recovery of precious metals, concentrated sodium cyanide solution will be added, as required, to the barren solution to maintain the design leaching solution strength.

Sodium cyanide will be received in either solid or liquid form in tanker trucks. If received in solid form, a batch of alkaline solution (barren) will be circulated between the tanker truck and a storage tank to dissolve the sodium cyanide. The concentrated solution in the storage tank will be added to the barren solution stream using metering pumps. If liquid sodium cyanide solution is received, the solution will be transferred directly to the sodium cyanide storage tank upon receipt. In either case, the delivery truck, the storage tank and the transfer system will be located on a spill containment system. Spill containment may consist of any of the following: concrete-bermed areas, synthetically-lined areas and double-walled pipes.

Although there will be no discharge from the process, water will be held within the heap as residual moisture and will be lost from the processing solutions through evaporation. Fresh water will be continually added in order to maintain the necessary volume of the process solution.

Access to the heap leach pads by wildlife or public will be restricted by the construction of a fence around the perimeter of the leach pad sites.

History of Heap Leaching

The first use of cyanide solution for gold extraction occurred in the late 1800's. Until the 1970's, gold extraction by cyanidation was primarily limited to conventional milling operations where ground ore particles are slurried with cyanide solution in tanks or vats. The ore must be finely ground (generally to sand, silt or clay-sized particles) because the retention time in the extraction process is short; usually hours to days. After the gold is removed from the ore particles, the barren ore particles or "tailings" are disposed of as slurry or a dried filter cake in specially designed impoundment areas. Ore processing using this milling procedure is capital intensive, costly to operate and is usually economical only for higher grade ores.

It was not until 1969 that large-scale heap leaching began to be considered, based on the work of the United States Bureau of Mines.[47] Commercial implementation of the process occurred shortly thereafter at a mine in northern Nevada, to extract gold from mineralized rock that was below the current economic cut off grade for milling. Since the early 1970's, heap leaching facilities have been developed that have ranged from small, intermittent, one-man operations to large, well-capitalized operations capable of average processing rates of 20,000 tons of ore per day and more.

The heap leaching method is suitable for extracting free, disseminated, submicron particles of gold and/or silver in pervious host rock. The heap leaching process can make gold deposits economic that could not be developed using conventional milling due to its substantially lower capital requirement and operating costs. The average ore grade processed by heap leaching is about 0.05 ounces of gold per ton of rock, compared to an average grade of 0.09 ounces for conventional milling.[48]

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47 EPA, *Gold/Silver Heap Leaching and Management Practices that Minimize the Potential for Cyanide Releases*, EPA Document 600/2-88-002, January 1988.

48 Ibid.

Heap leaching became well established through the 1970's and 1980's due to rising gold prices and its suitability for low grade ore deposits. The engineering design of heap leach operations has been refined over the years to optimize gold recovery and improve environmental protection. Along with the development of heap leaching technology has been the promulgation of laws and regulations to assure that mining companies complete comprehensive engineering designs and adopt operating procedures that minimize the potential for impacts to the environment.

Examples of the technical and regulatory improvements in heap leaching that have occurred over the years include the following:

- Increased sophistication of the engineering and construction of impervious liner systems to prevent gold solution loss and protect the underlying soil and groundwater resources. Coupled with this has been a substantial increase in available synthetic liner and drainage systems. Synthetic liners are generally manufactured from plastic and are referred to as flexible membrane liners. They can be used in place of the more traditional clay liners, or in conjunction with clay liners to construct composite liners, which provide a high level of assurance against leakage.
- Development of engineered drainage systems (e.g., gravel layers and/or perforated piping systems) on the tops of pad liners in order to quickly drain off the solution after it percolates to the bottom of the ore pile. These drainage systems reduce the time required for leaching and reduce the depth of solution (hydraulic head) over the liner, thereby minimizing the potential for leakage. They also increase the stability of the leach pad slopes by minimizing hydrostatic pressures in the stacked ore above the liner.
- State regulations require modern leach pad liners to meet design requirements for low permeability and for drainage systems that minimize the hydraulic head on liners. Agency requirements also include extensive quality assurance and quality control checks during construction to assure that liner systems meet the design specifications.
- Regulatory requirements for monitoring systems in the soil under the liner and in the groundwater to confirm that the process solution containment systems are functioning as designed, and that leakage, which could degrade the environment, is not occurring.
- Reductions in the concentration of cyanide in the leaching solution, and improvements in process facility design and operation that maximize the recycling of solution reagents within the process circuit. These developments reduce the potential to impact the

environment, and allow more efficient operations due to reduced reagent handling requirements and costs.

- Development of measures that minimize the amount or surface area of solution that is exposed. This reduces the potential for wildlife to be exposed to process reagents, and also reduces evaporation and reagent consumption. Such measures include: 1) designing solution holding ponds as integral, internal features of the leach pads or covering and/or netting the process water ponds; 2) using drip emitters to apply process solution to the top of the leach pads instead of spray systems and 3) configuring the solution collection ditches around the edges of the heap leach pads to avoid exposed liquid.
- Rinsing of ore piles after leaching to reduce soluble cyanide and any associated metal concentrations to very low residual levels prior to closure.

Sodium cyanide, used to create the cyanide pulp,[49] is a hazardous material for which procedures have been developed for its handling and use. Cyanide is routinely used in metallurgical operations in the major gold mining areas of the world.[50]

2.2.2.2.4 Solution Processing

The precious metal recovery process plant and its associated reagent storage area will be located up-slope from heap leach pad number 1 and will be constructed with a designed containment system. The spill containment may consist of concrete-lined bermed areas, synthetic liners and double-walled pipes. This system will allow the recovery of any spill, and its return into the gold recovery process at the appropriate point in the process.

Two precious metal recovery processes may be used at the project. The Merrill-Crowe zinc precipitation process will be used throughout the majority of the operating period and early into the reclamation portion of the project. For the completion of heap neutralization and reclamation, a carbon adsorption process may be required. If the change is necessary, it will occur when the tenor of the pregnant solution becomes low in gold content, making the Merrill-Crowe process inefficient. Also, the carbon adsorption process will assist in the removal of

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49 Cyanide pulp is the mixture obtained by grinding crude gold and silver ore and dissolving the precious metal content in sodium cyanide solution. Condensed Chemical Dictionary, 10th edition.

50 DuPont, *Facts About Sodium Cyanide.*

other metals, such as copper, which may be found in the process solutions during neutralization. Since neutralization of the heaps will proceed on a phased plan, the two processes would operate in parallel for a portion of the life of the project.

Both precious metal recovery methods process pregnant solution for the recovery of gold and silver leached from the ore. Both will be closed circuit systems which recirculate all solutions. The only water lost in these processes will be through evaporation and that which will be tied up as moisture within the ore.

The Merrill-Crowe zinc precipitation process is a common, widely used method for gold and silver recovery. This process is based upon the ability of gold and silver to precipitate from a cyanide complexed state by replacement with zinc. The zinc cyanide complex released to solution later precipitates within the heap as part of insoluble compounds, namely calcium zincate and zinc sulfides. The resultant gold and silver precipitate sludge is smelted with common fluxes to produce dore' bullion, a metallic mixture of gold and silver. Trace amounts of lead, used in the precipitation reaction as a catalyst, are fixed as insoluble in the smelting slag.

The generalized precipitation reaction is written as:

$$2Au\ (CN^-)_2 + Zn \Rightarrow 2Au + Zn\ (CN^-)_4$$

In a carbon adsorption process, the pregnant solution is introduced to a series of tanks in which activated carbon is held. As the pregnant solution flows through the carbon, gold, silver and other metals such as copper and zinc, are adsorbed from solution and held by the carbon. When the carbon reaches its precious metals holding capacity, it is transferred from its column to a stripping vessel.

In the stripping cycle, a hot caustic soda and sodium cyanide solution is circulated at a low flow rate through the carbon, resulting in the precious metals being released from the carbon to the caustic solution. This solution is passed through an electrowinning cell where the precious metals are recovered electrolytically from solution to cathodes. The cathodes are processed to produce a gold-silver sludge, which is then smelted in a manner similar to that used in the Merrill-Crowe process.

Exhibit 2.2-11 presents a process flow diagram showing both processes and how one may replace the other. Table 2.2-3 presents a listing of the major process equipment components used in the process.

The feed solution to either process will be the pregnant solution stored within each cell of the heap leach pads. This solution will be pumped from the cells to the plant through the use of submersible pumps located inside pipes which run from the top of each cell embankment into the solution holding portion of the cell. The submersible pumps deliver the solution to a booster pump and piping system, which transports the solution to the process plant by way of the pregnant solution holding tank.

Barren solution, that solution from which the precious metals have been recovered, flows directly to barren solution surge tanks for recirculation back to the heap leach pads.

All cyanide solution storage tankage, pumps, piping, equipment, transfer and handling systems are designed with secondary containment for protection of the environment. Varied forms of secondary containment are utilized, including synthetic liner, concrete slabs, curbed concrete containment areas and piping within piping systems.

Incidental concentrations of mercury, generally less than one ppm, are expected to occur in the ore. As mercury will be leached and precipitated with gold and silver, mercury removal from the precipitate sludge will be accomplished using a mercury retort. The retort removes mercury from the precipitate sludge by heating to volatilization where, by means of a vacuum pump, the mercury vapor is drawn through a water-cooled condenser from which the mercury is collected as the liquid metal. The recovered mercury will then be sold to the commercial market. Off gases from the condenser will be scrubbed using activated carbon. No other mineral, metal or organic vapors are expected to result from the retort process.

2.2.2.3 Building Structures

Five existing structures are located on the project site. Two of the structures were residences. One of the residences has been converted for use as an office by the applicant. The other residence will be converted to office, laboratory or workshop space at a later time. A former workshop will be used for storage. The remaining two structures will be demolished.

GENERALIZED PROCESS PLANT FLOW DIAGRAM

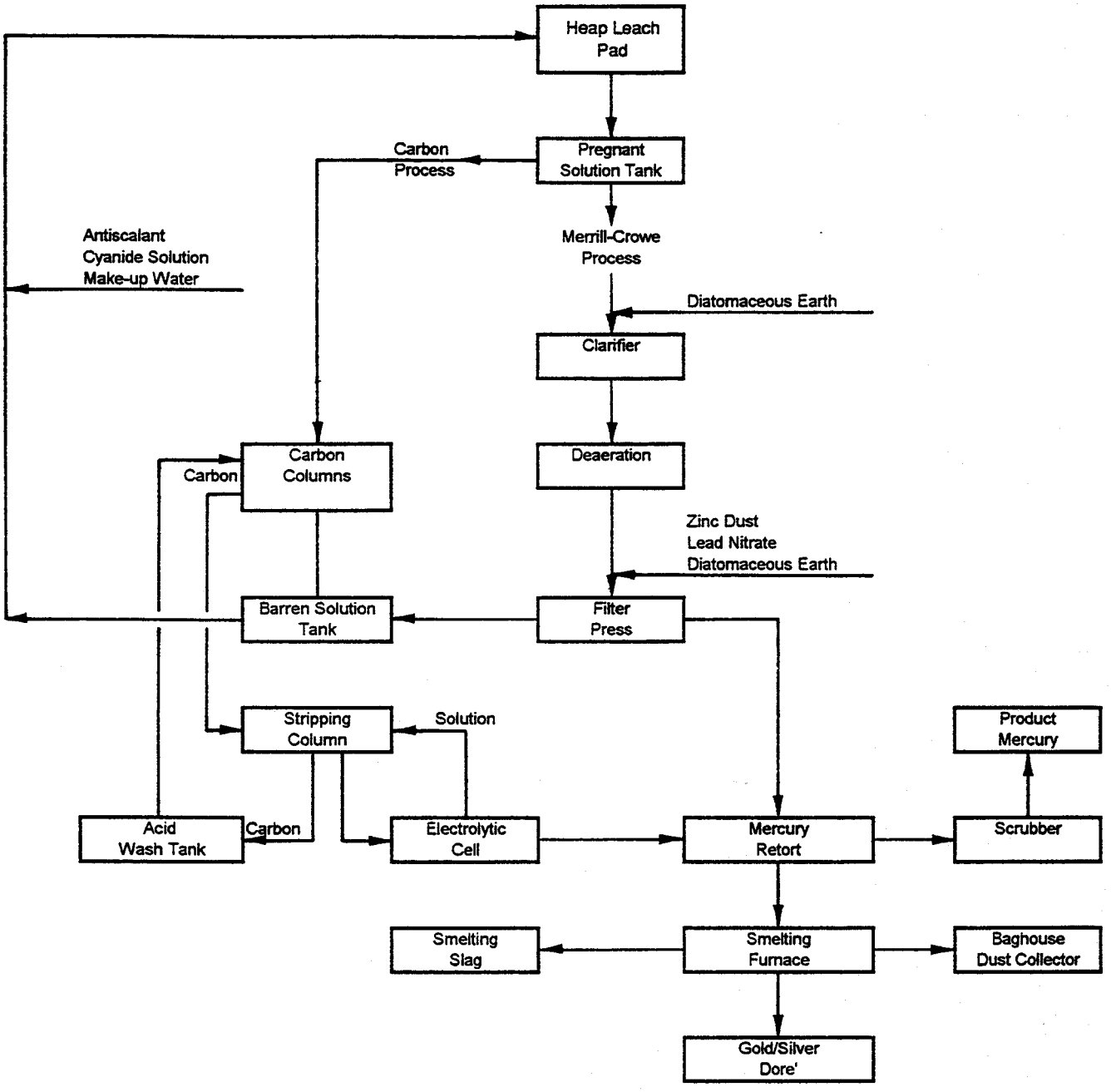


EXHIBIT 2.2-11
0733.0010

TABLE 2.2-3

Process Plant Equipment List

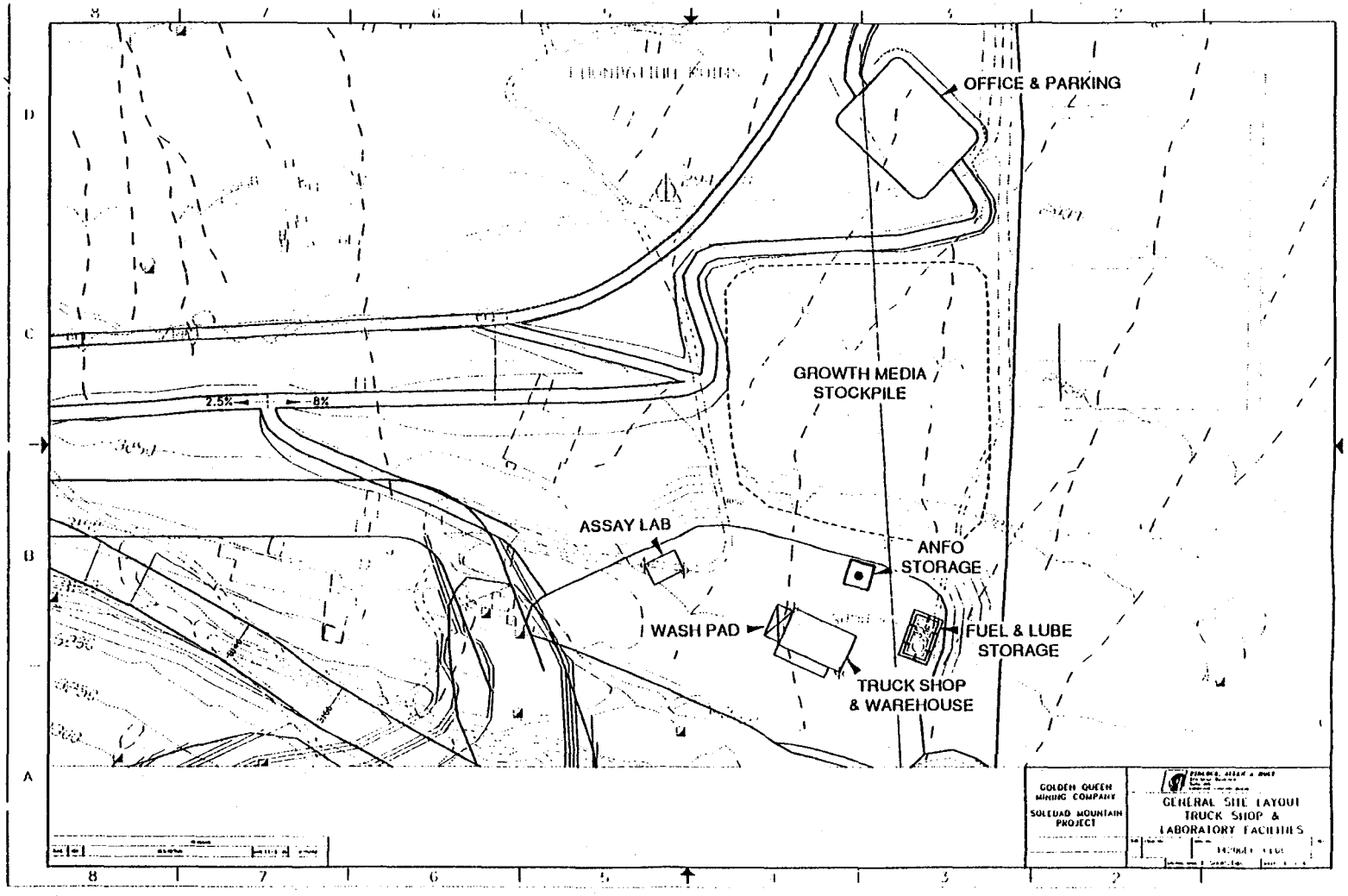
Item	Quantity
Merrill-Crowe Processing	
Pregnant solution tank pump	1
Solution clarifier	2
Deaeration column	1
Filter press	2
Mercury retort and scrubber	1
Smelting furnace	1
Barren solution tank and pump	1
Carbon Adsorption Processing	
Carbon adsorption columns	5
Carbon stripping column	1
Acid wash tank	1
Electrolytic cell	1

Two combination maintenance shops/warehouses will be constructed in which repair and maintenance of project equipment will be done. One will serve the mining and mobile equipment for the project; the other will serve the crushing, agglomeration and process plant needs. Each shop will be located as shown in Exhibits 2.2-8 and 2.2-12.

2.2.2.3.1 Truck Shop/Warehouse

The truck shop/warehouse facility will consist of a 100-foot by 70-foot steel building with a concrete floor and a concrete apron at the front of the building (Exhibit 2.2-12). It will contain two "high bays" (designed with door openings and a roof height such that a mine haul truck could enter the building and raise its bed), two "low bays" (which will essentially be a typical garage-sized bay for the repair of smaller equipment and vehicles) and a repair parts storage area. Outdoor work will be done on equipment parked on the apron.

The warehousing portion of the mine maintenance facility will provide for the receipt, storage and disbursement of operating and maintenance supplies and for outside storage of bulk fuels,



See Exhibit 2.2-2 For Location Within Project Area

N

0 300' 600'

SCALE IN FEET

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

MINE SHOPS AND OFFICE AREA

DATE		EXHIBIT
11/96	0733.0010	2.2-12

lubricants and replacement parts. Used materials planned for rebuild, reuse or disposal will also be stored at this facility, both inside the building and in the outdoor storage area.

This facility, which will include offices, lockers and sanitary facilities, will be designed and constructed to meet the Uniform Building Code and the fire and safety requirements of Kern County.

Fuels and lubricants will be stored in approved tanks, above ground, within containment structures designed to contain the quantity of materials stored with adequate freeboard. Provision will be made for the collection and disposal of used lubricants and filters. All hazardous materials will be received, stored, dispensed and recovered in compliance with applicable rules and regulations.

Blasting agents and explosives received by the warehouse will be placed in separate storage facilities and magazines located as shown in Exhibits 2.2-8 and 2.2-12. These facilities will be designed, permitted and maintained according to the rules, regulations and standards of the California Occupational Health and Safety Administration (Cal OSHA), the Federal Mine Safety and Health Administration (MSHA) and the Bureau of Alcohol, Tobacco and Firearms (ATF).

Adjacent to the truck shop/warehouse will be an equipment wash down facility, as shown in Exhibit 2.2-12. High pressure water, combined with biodegradable detergent, will be used to clean vehicles and equipment. Steam cleaning will also be done in the wash down area.

The equipment wash down facility will comprise a curbed concrete slab with sumps for containment and recycling of wash water. Oil or grease will be recovered and disposed of according to the applicable regulations. Soils recovered will be placed on a containment structure (e.g., the heap leach pile or the wash down pad), allowed to drain, and transported to an overburden pile.

2.2.2.3.2 Process Shop/Warehouse

The process shop/warehouse facility will consist of a 60-foot by 40-foot steel building with a concrete floor and a concrete apron at the front of the building (Exhibit 2.2-8). It will contain

equipment repair areas and a repair parts storage area. Outdoor work will be done on the apron.

The warehousing portion of the process shop/warehouse will provide for the receipt, storage and disbursement of operating and maintenance supplies and for outside storage of bulk fuels, lubricants, reagents, chemicals and replacement parts. Used materials planned for rebuild, reuse or disposal will also be stored at this facility, both inside the building and in the outdoor storage area. Some supplies, such as process reagents, small parts and lubricants, will be stored at the location where their use will take place.

This facility, which will include offices, lockers and sanitary facilities, will be designed and constructed to meet the Uniform Building Code and the fire and safety requirements of Kern County.

Provision will be made for the collection and disposal of used lubricants and filters. All hazardous materials will be received, stored, dispensed and recovered in compliance with applicable federal and state laws and regulations.

2.2.2.3.3 Analytical Laboratory

The analytical laboratory will provide a facility for the analytical and metallurgical testing needs of the project. The laboratory will comprise a new 60-foot by 40-foot steel building, or be located in one of the existing buildings on the project site. In either case, the laboratory building will contain offices, sample preparation and analytical equipment laboratories, lockers, sanitary facility space, storage and work areas. It will be designed and constructed to meet the Uniform Building Code and the fire and safety requirements of Kern County. Exhibit 2.2-12 presents the tentative location of this facility. Activities within the laboratory will include sample reduction and preparation, fire assaying of mine samples, digestion of solid samples for analysis by chemical and atomic absorption techniques, analysis of solution samples by chemical and atomic absorption techniques and metallurgical process testing of mine materials and process technology. Hazardous waste materials will be accumulated and transported to licensed offsite waste disposal facilities.

Emissions control equipment will be provided as required by and in accordance with permit provisions issued by the Kern County Air Pollution Control District.

2.2.2.3.4 General Offices

Initially, existing site buildings will be used for the project offices. These buildings will eventually be removed from the site as the project proceeds. At that point, a new office building will be constructed near the new entrance to the project. Exhibit 2.2-12 presents the location of this facility.

The new office will house offices for management, operations and engineering, meeting rooms and sanitary facilities. It will be designed and constructed to meet the Uniform Building Codes and the fire and safety requirements of Kern County. Included will be an adjacent parking lot for employees and visitors.

2.2.3 Ancillary and Public Service Facilities

The proposed project will require auxiliary services to support operations of the mine. These services include electrical power, process water, chemical storage, sewage treatment, trash disposal, roads and hazardous material storage. Each of these ancillary services is discussed more fully in the following sections.

2.2.3.1 Electrical Power

The mining operations will use publicly available electrical power. An existing Southern California Edison Company 64 KV line runs adjacent to the proposed project and will feed the project substation (shown on Exhibit 2.2-2) from which power will be distributed to operating facilities. Both overhead and underground power distribution will be used. For backup power, in case of a commercial power outage, diesel powered electric generators will be maintained, primarily to provide power to the heap leach pumping operations.

2.2.3.2 Water

Two sources of water will be used. Bottled water will be supplied for drinking. Well water will be used for all other operating needs.

The project will require water for makeup to heap leach solutions and for dust control in the mining and crushing/conveying operations. Water will be obtained from up to three

groundwater supply wells planned to be installed in Section 32, Township 11 North, Range 12 West, SBBM, north of Silver Queen Road. From the wells, water will be pumped under Silver Queen Road to the project site. Water requirements for the project are estimated to average 750 gallons per minute. Existing water wells located on the site will be used to supply water at startup, until project production wells are complete. If water drawdown exceeds projected levels by 200 percent, the applicant will obtain additional supplies from AVEK to supplement supplies from wells.

2.2.3.3 Chemical Storage

Chemicals will be stored in closed, appropriately designed, weatherproof containers in secured, open air or well-ventilated storage areas. All containers will be properly labeled and stored in conformance with state and federal regulations and the Spill Prevention Control and Countermeasure Plan. Containment structures will be constructed and used in the storage of liquids.

The storage of hazardous chemicals will comply with the spill control and secondary containment provisions found in Section 8003.1.7 of the 1994 Uniform Fire Code. The general requirements for spill control are a minimum of four inches of raised sill or recessed floor. The general requirement for secondary containment in areas exposed to rainfall is a system designed to hold the contents of the largest container plus the volume of a 24-hour rainfall as determined by a 25-year storm.

Employees will be trained in proper handling, storage and use of all reagents and chemicals. Trained employees will be the only people with direct access to reagents and chemicals.

Sodium cyanide may be received in solid form (briquettes) or as a 30 percent liquid solution. If sodium cyanide is received in solid form, it will be received in truckload quantities contained within a sealed tanker truck, or in sealed 3,000 pound tote bins. The dry bulk solid reagent will be off-loaded from a tanker truck by circulating an alkaline solution through the truck tank and into a solution storage vessel until all the solid sodium cyanide is dissolved and removed from the tanker. Sodium cyanide will be delivered to the site by a vendor or the manufacturer. Drivers will be trained in the safe handling of both solid and liquid cyanide shipments.

Alternately, if sodium cyanide is delivered in tote bins, it will be received on a flat bed truck. The tote bins will be removed from the truck using a forklift and stored in the reagent storage

area. The sodium cyanide solution will be made from the tote bins by emptying the tote bins into an agitated mixing tank containing alkaline water solution. The mixed solution will then be transferred to the solution storage vessel for use.

If received in liquid form, the sodium cyanide will be off loaded from the truck by pumping the solution from the tanker into the solution storage vessel. All additions of sodium cyanide to the process solutions will be made using the stored solution. No other sodium cyanide will be kept onsite except for small quantities needed by the laboratory for analytical purposes.

Other fuels, reagents or chemicals will be received in bulk (primarily fuels and lubricants) or in steel or plastic drums. The bulk materials will be transferred to storage vessels. Other materials will be stored in their shipping containers, over containment structures, such as concrete-lined bermed areas. Table 2.2-4 in Section 2.2.3.7 presents a listing of the hazardous materials that will be stored and the amounts that will be expected to be onsite.

2.2.3.4 Sewage Treatment

Permitted sewage (septic system) facilities will be provided in a number of operational areas, including the general office, the maintenance shops/warehouses, the laboratory and the process plant. People in areas not directly served by these facilities will have access to portable toilets placed at their work sites. Permits for the septic systems will be obtained from the Kern County Environmental Health Services Department.

2.2.3.5 Trash Disposal

The existing Gold Fields mill and other miscellaneous structures in the number 1 heap leach pad area will be demolished during the construction effort. All debris will be disposed of in accordance with applicable local, state and federal laws and regulations.

Non-mining waste, such as office and lunchroom waste, will be removed from the site by a contract hauler for disposal in an approved landfill. The quantity of this waste will be expected to be 10 to 12 cubic yards per week (six to eight tons per month).

Regulated wastes, such as used oil, spent solvents and laboratory wastes, will be manifested and transported from the site by authorized haulers. All wastes will either be recycled or disposed of in accordance with applicable local, state and federal laws and regulations.

2.2.3.6 Roads

Exhibit 2.1-3 shows the location of area roads and those which will be used for access to the project site. Access is via Mojave-Tropico/Silver Queen Road, an existing paved road. Mojave-Tropico Road runs north/south on the west side of the project. Mojave-Tropico Road turns east just north of the project and the name changes to Silver Queen Road. Silver Queen Road intersects State Route 14 approximately two miles east of the project site. State Route 14 is the major highway connecting Mojave, Rosamond, Lancaster and the Los Angeles area. The 1995 level of traffic on State Route 14 at the Silver Queen Road interchange was approximately 15,000 average daily trips (ADT). The 1995 Annual Traffic Census prepared by Kern County states that the ADT on Silver Queen Road is 410.

The entrance road to the project site will be south from Silver Queen Road directly opposite the intersection of Silver Queen Road and Gold Town Road. The entrance to the site, off Silver Queen Road, will be paved within the right-of-way of Silver Queen Road pursuant to an Encroachment Permit issued by the County of Kern. The remainder of the entrance road, parking and maneuvering areas will be surfaced with rock aggregate to minimize fugitive dust.

Silver Queen Road is a county road and is constructed to accommodate trucks as well as automobiles. Silver Queen Road is maintained by Kern County. The project is not expected to result in a pivotal increase in the amount of truck traffic, but may result in the need for a slight increase in road maintenance on Silver Queen Road. However, any increase in maintenance costs is expected to be mitigated by increased taxes such as fuel tax and property tax. An analysis of fiscal impacts associated with this project is contained in the socioeconomic analysis, Section 3.11 of this document. The analysis indicates that the project is expected to generate a positive cash flow to Kern County by providing taxes in excess of costs that will be incurred for county services.

Haul roads will be constructed on the project site to move the ore and overburden. Water and/or approved chemical treatments will be used on the haul roads to control fugitive dust. Ore will not be transported on public roads. Overburden will not be transported on public roads unless it has been sold as aggregate or construction materials. Transport of overburden materials for sale may add up to 140 ADT's to traffic on State Route 14 and Silver Queen Road.

New Eagle Road, a county road, currently extends into the project area in the northwest one-quarter of Section 6, Township 10 North, Range 12 West, SBBM (Exhibit 2.2-4). It cannot be used by the general public to travel past its terminus in Section 6. The Soledad Mountain project includes vacating that portion of New Eagle Road within Section 6, Township 10 North, Range 12 West, SBBM. Silver Queen Road and New Eagle Road are clearly visible in the lower left portion of the oblique aerial photograph (Exhibit 2.2-1).

2.2.3.7 Hazardous Materials

The project requires the use of materials which are classified as hazardous.[51] A Hazardous Materials Business Plan will be prepared and filed with the Kern County Environmental Health Services Department and the Minerals Branch of the BLM Ridgecrest office. The Hazardous Materials Business Plan will contain an inventory of all hazardous materials that exceed the threshold limits of 500 pounds of a solid, 55 gallons of a liquid or 200 cubic feet of a compressed gas, as well as a list of the quantity and storage location of the hazardous materials. All materials will be handled, stored and used in conformance with local, state and federal regulations and company safety policy. Where appropriate, Proposition 65 notices will be posted.

The storage of hazardous materials will comply with the requirements of the 1994 Uniform Fire Code including the requirements for spill control and secondary containment found in Section ~~80.301~~ 8003.1.7. In addition, the storage of oil and petroleum products will comply with the requirements of the California Above Ground Petroleum Storage Act and the requirements of a Spill Prevention, Control and Countermeasure Plan found in 40 CFR, 112. The California Above Ground Petroleum Storage Act requires the preparation of a Spill Prevention, Control and Countermeasure Plan for facilities that have the storage capacity of 10,000 gallons or more of petroleum. The requirements found in 40 CFR, 112 include the preparation of a Spill Prevention, Control and Countermeasure Plan for facilities that store more than 1,320 gallons or have a single container in excess of 660 gallons located in areas that could spill to navigable water of the United States. Spill Prevention, Control and Countermeasure Plans require secondary containment systems, such as a cement-lined bermed area sized to hold the contents of the largest tank plus sufficient freeboard for precipitation.

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[51] California Health & Safety Code §25500 et. seq.

The hazardous materials expected to be used onsite and the anticipated maximum daily inventory is shown in Table 2.2-4.

2.2.3.8 Buildings

Project related buildings, including offices, shops, warehouses, laboratory, storage and process buildings, will be designed and constructed in accordance with Uniform Building Codes and other state and local building regulations. Required building and occupancy permits will be obtained. Buildings will be furnished, where appropriate, with water, electricity, heat, air conditioning and sanitary facilities. Vehicle parking lots will be located near to or adjacent to most buildings.

2.2.3.9 Communications

Commercial telephone service is available onsite and will be extended to numerous facilities within the project. Areas which will have telephone service will include: the general offices, the laboratory, the maintenance shops/warehouses, the process plant and the crusher control room.

Mobile FM band radio, licensed by the Federal Communications Commission, will provide for local two-way radio communications between people, equipment and areas without ready access to telephone service. A solar powered radio repeater will be located at an appropriate site within the project boundary to assure radio signal coverage.

2.2.4 Environmental Monitoring and Protection

Measures for environmental protection, based on regulatory requirements, have been incorporated into the design and operations plans for the Soledad Mountain project.

Monitoring will occur throughout construction, operation and reclamation to assure these measures achieve the results intended. Performance evaluation will occur on a routine basis to assure compliance with regulatory standards and to serve as an early warning system. An onsite employee will be assigned to coordinate the monitoring program.

The Mitigation Monitoring Program in Section 7.0 describes additional monitoring required to ensure specified mitigation measures resulting from the permitting process are adequately implemented and effective.

TABLE 2.2-4

List of Hazardous Materials

Hazardous Material	Use	Estimated Maximum Daily Inventory
Sodium Cyanide, 30% solution	Gold/silver recovery	40,000 gallons
Sodium Hydroxide, 25% solution	pH control	10,000 gallons
Sulfuric Acid	Assay reagent	220 gallons
Nitric Acid	Remove metals from carbon	220 gallons
Calcium Hypochlorite	Cyanide neutralization	2,000 pounds
Lead Nitrate	Catalyst in gold recovery system	4 tons
Mercury (approximately one year production)	Possible byproduct	1,000 pounds
Zinc metal	Precipitate gold/silver from solution	6 tons
Propane	Heat/smelting	10,000 gallons
Diesel fuel	Heavy equipment fuel/blasting	40,000 gallons
Unleaded gasoline	Small equipment fuel	6,000 gallons
Refined motor oil, gear oil, transmission fluid, etc.	Equipment lubrication	23,000 gallons
Solvents	Equipment maintenance	5,000 gallons
Greases	Equipment lubrication	3 tons
Acetylene	Assaying and maintenance	15 - 390 ft^3 cylinders
Oxygen	Maintenance	30 - 249 ft^3 bottles
Calcium Oxide (Lime)	pH control	10 tons
Borax	Smelting flux	1 ton
Fluorspar (fluorite)	Smelting flux	500 pounds
Activated carbon	Gold/silver recovery	10 tons
Anti-scalants	Prevent pipe and tubing scaling	5,000 gallons
Ammonium Nitrate	Blasting	80 tons
Blasting emulsion	Blasting	2 tons
Cast boosters	Blasting	4,000 each
Detonation cord	Blasting	80,000 feet
Silica sand	Smelting flux	1,000 pounds
Portland II cement	Agglomeration/pH control	60 tons
Diatomaceous earth	Leach solution clarification	5 tons

An overview of planned environmental protection measures and monitoring is provided in this section. It is anticipated that some of the measures described will be modified and that additional measures may be added during the permitting process.

2.2.4.1 Water Quality Protection and Monitoring

The Proposed Action will comply with all applicable regulations relating to hydrology and water quality. Water quality protection and monitoring is accomplished through cooperation with the Lahontan Regional Water Quality Control Board. The Lahontan Regional Board regulates all project systems with the potential to impact water quality of surface or sub-surface waters. The project review and permitting process will follow requirements of Title 23 CCR, Chapter 15, Article 7 (Mining Waste Management), the California Health and Safety Code, Chapter 6.67 (Above Ground Storage of Petroleum), the California Porter-Cologne Water Quality Act of 1985 and other applicable laws and regulations.

In compliance with applicable regulations, the Lahontan Regional Board will require the use of materials and procedures to safely contain ore and ore processing solutions, in order to achieve the closed, zero-discharge system proposed for the project. These requirements include:

- Low permeability liner systems for solution and reagent containment within the heap leach pads, the process plant, the agglomeration and conveyor system and the solution storage tanks.
- A leachate collection and recovery system (LCRS) designed to monitor and collect any solution which may pass through the upper liner.
- A perimeter berm around the heap leach pads designed to contain solution from the leach pads and the 100-year, 24-hour storm event.
- Drainage or diversion ditches outside the processing solution area to preclude entry of storm runoff into the system.
- Monitoring of storm water runoff, the vadose zone (the unsaturated zone between the liner and groundwater) and groundwater for potential contaminants.
- Quarterly reports on monitoring results and the current status of operations.
- Neutralization of the heap leach pile at the time of closure.

The Lahontan Regional Board will implement these requirements through detailed design review, issuance of waste discharge requirements and yearly inspections.

The Lahontan Regional Board requirements will also include posting of financial assurance by the project proponent. Financial assurance for neutralization and closure of the heap leach pile will be posted in accordance with Title 23 CCR, Section 2580(f). An amount sufficient to

initiate and complete corrective actions for any reasonably foreseeable potential release to the environment will be posted in accordance with Title 23 CCR, Section 2550.0(b).

The overburden piles will be regulated by the Lahontan Regional Board. It has been demonstrated that the acid generation potential of the overburden material is low and does not constitute a threat to surface or sub-surface water.

The Lahontan Regional Water Quality Control Board regulates storage of petroleum products in above ground tanks exceeding 660 gallons in capacity. Requirements for bulk oil storage facilities include:

- Development of a detailed Spill Prevention Countermeasure and Control Plan prepared in accordance with the guidelines of 40 CFR, Part 112;
- Frequent visual inspections for leakage or deterioration of tanks, fittings or containment facilities; and
- Secondary containment for the entire contents of the largest tank, plus adequate freeboard.

A General Construction Activity Storm Water Permit will be obtained from the Lahontan Regional Board to regulate storm water flows at the site during construction. Erosion and sedimentation will be minimized by the use of best management practices during construction.

During operation, flows upstream of the open pit area will be diverted by a series of channels, culverts and ditches designed in accordance with Kern County regulations for the Site Drainage Plan. Surface flows upstream of the heap leach pads and waste rock piles will be diverted around the facilities by contouring, drainage ditches and culverts. Since the facility is designed as a zero discharge facility, a General Industrial Activities Storm Water Permit will not be required during the mine operation.

In addition, the BLM will ensure compliance with 43 CFR, 3809 regulations and surface management policies for mining to avoid unnecessary or undue degradation by regulation of surface drainage modifications and erosion control measures implemented during site construction, operation and reclamation. The BLM requirements will include minimizing surface disturbance, use of riprap, water bars and other stabilization measures as necessary to control erosion and reseeding of areas not subject to additional disturbance. The BLM will

exercise authority through review and approval of the project design and operations in conjunction with issuance of the Plan of Operations. The Plan of Operations will include stipulations under which the project will be required to operate. The BLM will also perform quarterly inspections.

Kern County will regulate reclamation activities related to stabilization of drainages and erosion control to assure consistency with SMARA requirements. This authority will be implemented through Reclamation Plan review and approval. Kern County will conduct inspections annually to assure compliance.

2.2.4.2 Air Quality Protection and Monitoring

Pursuant to requirements of the Kern County Air Pollution Control District and the California Air Resources Board, extensive controls and operational features are incorporated into the project design to minimize impacts to air quality. Key features include:

- Appropriate dust suppression techniques used on roads and disturbed surfaces, including water spray and chemical suppressants.
- Crushing, screening and conveying equipment will employ Best Available Control Technology, including water spray, covered conveyors and transfer points with baghouse dust collectors.
- Onsite vehicles and equipment maintained on a regular basis.
- Monitoring of cyanide concentrations at leach pads and process facilities.
- Minimizing hydrogen cyanide emissions by controlling pH of sodium cyanide solution.
- Monitoring mercury concentrations in retort facility.
- Record keeping of tons of rock moved, amount of fuel used, amount of water used and crusher system throughput.
- Road maintenance on a routine basis.

Golden Queen intends to establish a meteorological monitoring station and PM_{10} upwind and downwind monitoring stations to ensure that the ambient air quality standard in the vicinity of the project site is maintained in accordance with federal and state ambient air quality standards. Data collected will be reported to the Kern County Air Pollution Control District and will be used to verify that impacts do not exceed those predicted by modeling and to document compliance with air quality permit restrictions.

2.2.4.3 Biological Resources Protection and Monitoring

Surveys of the biological resources, plant and animal life have been conducted on the site. No listed, that is endangered, threatened, candidate, proposed or rare, plants or animals have been observed on the project site. ~~Golden Queen~~ BLM has conducted an informal consultation with the United States Fish and Wildlife Service (the Service) and Golden Queen consulted with the California Department of Fish and Game (CDFG) with regard to the findings of the wildlife surveys.

A preconstruction survey for desert tortoise was conducted in April 1997, the optimum time for desert tortoise sighting due to increased levels of activity. No desert tortoise or evidence of desert tortoise was identified by the survey.

The boundaries of the area required for construction and operation will be clearly marked to prevent unnecessary disturbance. Off-road vehicle traffic will be restricted. The heap leach pads and process facilities will be surrounded by a chain-link fence designed to exclude people and ~~large animals~~ wildlife.

Employee training will include a wildlife education program. During employee orientation, employees will be trained on wildlife awareness, recognition and avoidance. This will include speed limits, trash control, no firearms allowed, no pets, no off-road vehicles and access limited to disturbed areas only. Employees will be acquainted with procedures to follow should wildlife be encountered. Project waste and garbage will be controlled in closed containers and regularly removed so as not to attract wildlife and discourage scavengers, such as ravens.

The sodium cyanide solution will be applied to the top of the heap by drip emitters. The agglomeration of the ore particles and grading of the top of the heap will decrease the potential for localized ponding of solution on the heap. The solution will be contained in a solution storage area covered by ore within the heap and in closed tanks and piping to prevent animal contact. Animal mortalities within the project area are required to be reported to the BLM. Should an animal death occur, measures will be taken to prevent a recurrence.

Reclamation to restore natural vegetation and wildlife habitat on the project site will take place according to SMARA as described in Section 2.2.5.

2.2.4.4 Visual Resource Preservation

Measures that will be implemented to reduce the visual impacts of the project include the following:

- Neutral colors will be used on the structures and stationary equipment to blend with the surrounding natural materials and minimize visual impacts;
- Areas around office buildings will be landscaped with native plants which will reflect the surrounding vegetation; and
- High intensity lighting around operating and maintenance areas will be shielded and directed toward the work area to reduce offsite glare at night.

Dust generation will be controlled as discussed in Section 2.2.4.2.

2.2.4.5 Reclamation Progress Monitoring

The reclamation plan[52] will be approved and monitored by Kern County through the Surface Mining and Reclamation Act of 1975. A description of the reclamation procedure is in Section 2.2.5.

During operation, reclamation activities will include grading and seeding of pre-project mining disturbance areas adjacent to the project area, onsite seed collection and test plots to evaluate reclamation methods. Topsoil with potential for use as growth media will be salvaged and stored for use as cover during reclamation. Not all top soil is suitable for growth media (see discussion of soil types in Section 3.3). Annual reporting will include total acreage newly disturbed, total acreage reclaimed, total acreage unreclaimed, estimated amounts of growth media salvaged and reused and the progress and evaluation of revegetation test plots.

Final reclamation will include removal of structures and facilities, grading and contouring of the heap leach and overburden piles, placement of growth media, seeding and control of noxious weeds. After termination of operations and subsequent to implementation of final reclamation measures, a report of the reclamation efforts will be provided to Kern County and the BLM.

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52 Bamberg Associates, *Reclamation Plan and Revegetation Procedures for Soledad Mountain Project, County of Kern*, January 1996, included as Appendix III, Attachment B.

Conformance with the final reclamation plan will be evaluated in this report.
The site will be inspected annually by Kern County and the BLM until reclamation is deemed complete.

A vegetation baseline study has been completed. The Reclamation Plan recommends that the standards for revegetation be set at 35 percent of the vegetative cover (amount of surface covered by plant canopies), 20 percent of the density (number of perennial plants per unit area) and 30 percent of diversity (number of different species in a sample area) as compared to the baseline study results. The revegetation success monitoring will utilize sufficient sample sizes to determine an 80 percent confidence level.

Golden Queen will be required to provide financial assurance for the successful completion of reclamation. The bond will be released when reclamation is deemed complete by Kern County and BLM.

2.2.4.6 Noise Protection and Monitoring

A baseline ambient noise level study and calculations of projected noise levels have been completed for the proposed project showing that noise levels will remain within the guidelines of the Noise Element of the Kern County General Plan.

Measures which will minimize the effect of noise as a result of the project are:

- Construction activities will take place primarily during the day.
- Internal combustion engines will be equipped with mufflers.
- Blasting will occur during daylight hours, usually once per day, five days per week, generally on weekdays.

2.2.4.7 Cultural Resources Protection

The entire project site has been surveyed for sites and items of archaeological interest and value according to the requirements of the state (private land) or federal (BLM land) governments. The initial surveys, designed to identify areas of interest, were completed on the entire property. Areas of interest were subject to a second survey which consisted of test excavations and determinations of site significance.

Four sites on private land were found to have significance. Two of the sites are in the area of the number 1 heap leach pad and two of the sites are in the area of a proposed haul road between the pit and the processing facilities. Architectural recording and salvage excavations were undertaken at these sites as an alternative to avoidance and site preservation. In addition to the four sites which have undergone salvage excavating, the Echo Mill Site (CA-KER-4450H) and two identified prospecting areas (CA-KER-4695H and CA-KER-4693H), and one prehistoric site (CA-KER-4694) will have an archaeological monitor review the areas during grading activity to record and collect any additional archaeological information that may be uncovered during such activity.

A visitor outlook and display area will be established to provide information to the public concerning historical mining activities onsite and in the surrounding areas. Artifacts from the four sites may be included in the displays.

2.2.5 Reclamation Plan

2.2.5.1 Proposed Actions

Federal and state regulations require reclamation as part of all mining projects. The reclamation activities are defined in Title 14 CCR, 3500 and 43 CFR, 3809.1-3(d). The reclamation plan, presented in Appendix III, addresses the disturbance which will result from the Proposed Action as well as the existing disturbed areas within the project boundary. The goals of the proposed reclamation plan are consistent with the land use goals contained in the Specific Plan for Soledad Mountain - Elephant Butte and Vicinity - South of Mojave, including future mining, wildlife habitat and open space.

The goals of reclamation according to state regulations as defined in the Surface Mining and Reclamation Act of 1975 are:

(a) To assure that adverse environmental effects are prevented or minimized and that mined lands are reclaimed to a useable condition.
(b) To encourage the production and conservation of minerals while giving consideration to values relating to recreation, watershed, wildlife, range and forage and aesthetic enjoyment.
(c) To assure that residual hazards to the public health and safety are eliminated.

One goal of federal regulations is to prevent unnecessary or undue degradation of federal lands during operations. Unnecessary or undue degradation is defined as: surface disturbance greater than normal as a result of the project; failure to initiate and complete reasonable mitigation measures including reclamation of disturbed areas; and failure to comply with environmental protection statutes and regulations. Reclamation as defined in 43 CFR, 3809.1-3(d) includes:

(1) planning access routes of a minimum width following natural contour lines where possible;
(2) disposal of waste produced by the operations in such a way as to prevent unnecessary or undue degradation;
(3) beginning reclamation at the earliest feasible time;
(4) saving topsoil for final application after reshaping of disturbed areas;
(5) measures to control runoff and water erosion;
(6) measures to isolate, control or remove toxic materials;
(7) revegetation of disturbed areas where reasonably practicable; and
(8) rehabilitation of wildlife habitat.

The proposed Reclamation Plan will return the land to a post mining land use similar to the pre- mining land use, ensure public safety and prevent unnecessary or undue degradation of the land. The proposed Reclamation Plan includes measures for:

- protection of wildlife and the public;
- minimization of erosion and minimization of the potential for slope failure in the pit, overburden piles and heap leach;
- demolition and removal of structures;
- heap leach pile neutralization;
- salvage and storage of topsoil for growth media;
- revegetation with seeds collected from the site and vicinity;
- reduction of the slope on overburden piles;
- contouring and surface preparation of top horizontal surfaces of overburden piles;
- contouring and surface preparation of the top and sides of the heap leach pads;
- contouring and surface preparation of exploration roads and drill areas and production support facilities sites; and
- revegetation of the prepared surfaces of the overburden piles, heap leach pads and support facilities sites.

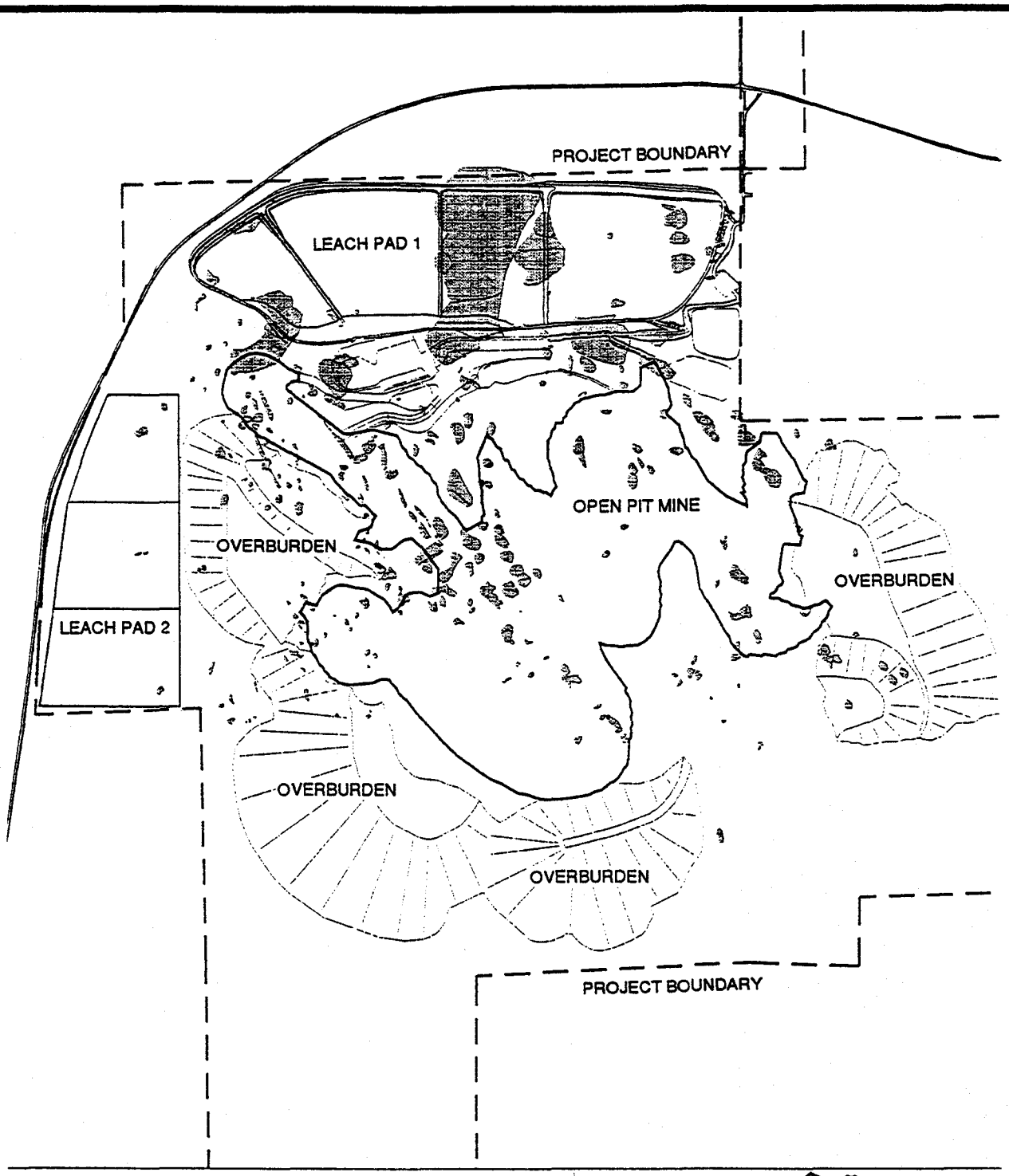
The objective of the reclamation activities is to establish a productive ecosystem through revegetation and wildlife habitat development and to achieve visual harmony with the surrounding area. Reclamation activities at the proposed project will be initiated concurrently with the operation when individual sites or facilities are no longer required. Removal of facilities, rough grading and scarifying activities may occur at any time during the project. Mining operations will stop when ore reserves are exhausted. Operation of the heap leach and recovery process will continue beyond the end of mining operations and will cease upon reaching uneconomic recovery rates.

Approximately 215 acres of the project area have been disturbed as a result of previous mining, milling and exploration activities as shown on Exhibit 2.2-13. Previously disturbed land directly affected by the Proposed Action will be reclaimed consistent with the reclamation plan. The remainder of the previously disturbed areas near or adjacent to the Proposed Action will also be reclaimed in a manner consistent with the reclamation plan where possible. Each of these sites will be reviewed on a case by case basis, since access to some of these areas may create more disturbance than would be reclaimed.

Golden Queen will provide financial assurance to guarantee that reclamation activities can be completed at no public expense in the event the sponsor does not complete all required reclamation activities. The acceptable financial assurance mechanisms include surety bonds, irrevocable letters of credit and trust funds.

2.2.5.2 Impact on Future Mining

Implementation of the proposed reclamation plan will not limit future development of mineral resources in the area. Currently sub-economic precious metal resources contained in the walls and floors of the open pit mines will remain accessible for future development. Future advancements in knowledge and understanding may result in additional discovery and development. Permanent project structures, such as heap leach pads and overburden piles, have been located where it is unlikely that additional mineral resources will be discovered.



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APPROXIMATE SCALE IN FEET

Golden Queen MINING CO. INC.

PRE-EXISTING DISTURBANCE

LEGEND

DISTURBED AREAS

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

PRE-EXISTING DISTURBANCE

DATE		EXHIBIT
11/96	0733.0010	2.2-13

2.2.5.3 Equipment and Structures

All portable and salvageable structures will be relocated or removed from the site. Permanent structures constructed for the project will be dismantled and removed or converted to another approved continuing use. All foundations will be broken up and buried under at least one foot of clean fill material. All surplus materials and storage containers will be recycled or disposed of offsite. Trash will be transported to a landfill. The remaining waste products and all fuel and similar materials will be removed from the site and disposed of according to state and federal regulations. Any soil material contaminated by regulated waste materials will be disposed of in accordance with state and federal requirements.

All water wells and monitoring wells, if and when abandoned, will be abandoned according to the state and county requirements as specified in the California Well Standards, Bulletin 74-90, or other regulations in force at the time of abandonment.

2.2.5.4 Overburden Piles

Upon final mine closure, the tops of the overburden piles will be graded to control erosion, break up compaction and form shallow basins to stimulate natural revegetation. Edges will be rounded and straight lines will be smoothed to provide contours which are visually and functionally compatible with the surrounding terrain. The sides of the overburden piles will be graded to a final slope of 1.8:1.0 (horizontal to vertical). Revegetation of the flat surfaces will be accomplished as described in Section 2.2.5.6.

2.2.5.5 Heap Leach Pads

Industry experience with heap leaching has demonstrated that the spent ore can be neutralized by washing in place with water at the end of the leach cycle. Spent ore, which will be left on the heap leach pads, will be rinsed until the following general requirements of the Lahontan Regional Board have been met:

- Weak Acid Dissociable (WAD) cyanide in effluent rinse water less than 0.2 mg/l;
- Contaminants in any effluent from the processed ore which will result from percolating meteoric waters will not degrade surface or groundwater.

Detailed requirements will be issued by the Lahontan Regional Board as part of their Waste Discharge Report, which will be issued prior to the commencement of mining activities.

The spent ore remaining on the heap leach pads will be reclaimed by neutralization, grading and seeding. Neutralization of the heap leach piles will be accomplished by rinsing with fresh water and through natural degradation to reduce cyanide levels to meet Report of Waste Discharge requirements. With agreement from the Lahontan Regional Board, the time required for neutralization may be reduced by supplemental destruction of cyanide achieved by chemical, biological or other acceptable and demonstrated technologies. The supplemental technology that may be best suited for use at the Soledad Mountain Project will depend upon specific site conditions at the time of neutralization. Sampling and laboratory testing will be conducted to evaluate the neutralization process at the conclusion of heap rinsing.

The design of the heap leaching pads and facilities at the Soledad Mountain Project allows for neutralization of the spent ore concurrent with the operation of the mine. The leach pads will be built in discrete, self-contained sections called cells. Each of the seven planned cells will be operated and neutralized in sequence.

In general, a given cell will have ore placed upon it in 30-foot high lifts and each lift will be leached for precious metals recovery. This sequence will continue in cycles until the ore holding capacity of the cell is reached. At that point, ore stacking will commence using the same procedures on the next cell.

As the operating transition is made from one cell to the next, leaching will take place on both cells until precious metal recovery from the first cell reaches its economic cut-off grade, which is expected to take about six months. After that, the leached cell will enter the neutralization phase.

The fresh water will be applied directly to the ore being neutralized through the same emitter systems that are used for leaching. When recovered in the cell sump, it will be transferred to the cell that is under active leaching for use as process solution makeup.

Periodically, a cell being rinsed will be allowed to "rest," which allows air to circulate within the heap and promotes continued degradation of cyanide. This rinse-rest cycle will continue until

the ore is neutralized such that it meets the Lahontan Regional Board criteria. This process may go on for an extended period of time, depending upon the rate of neutralization that occurs and the fresh water makeup requirements of the process.

During the neutralization process, effluent waters from the portion of the heap being neutralized will be sampled and analyzed to determine the pH and free cyanide content. When these samples indicate that neutralization is complete, contact will be made with the Lahontan Regional Board and a solids sampling protocol will be presented for approval.

This protocol will include a program to recover representative samples of the rinsed, spent ore for analysis, a listing of elements for which the samples are to be analyzed, sample analysis procedures, the basis upon which the data will be compiled and conclusions formed and any other criteria that are relevant at that time.

Once neutralization of the heap leach piles has been completed, all remaining process waters and rinse solutions will be neutralized, if necessary, and disposed of by evaporation or by application to land, in accordance with Lahontan Regional Board requirements.

After rinsing and neutralization is complete, the top of the heaps will be graded with a slight crown to reduce the amount of precipitation which will be retained on the heaps and percolate through the spent ore. The down slope of each heap leach pile will be finished to a 2.5:1.0 (horizontal to vertical) and the side slopes will be graded to 2.0:1.0 (horizontal to vertical). Some benches may be retained on the slope faces to facilitate drainage and erosion control.

2.2.5.6 Revegetation

Revegetation and contouring procedures have been prepared for the Soledad Mountain Project and are included as Appendix III, Attachment D. The plan focuses on establishing a productive ecosystem through revegetation, wildlife habitat development and attainment of visual compatibility with the surrounding landscape.

Revegetation testing programs at other mining sites in southern California have confirmed that revegetation of mined lands in the desert can be successful. The testing programs are discussed in greater detail in the reclamation plan.[53]

The results of these testing programs form the basis for the general approach to reclamation at Soledad Mountain. This approach entails the following elements.

1. The project will be revegetated by establishing surface drainage control and small catchment basins that will capture drainage and are capable of sustaining vegetation without artificial irrigation. Revegetation will use seeds contained in the growth media supplemented by local seeds collected from the immediate areas.

2. A reclamation standard for vegetation on the reclaimed surfaces will be established by appropriate sampling of adjacent vegetation types and habitats. The goal is a productive self-sustaining ecosystem consistent with the altered soil and slope conditions at the reclaimed sites.

3. The project will be returned to open space as the primary land use objective, as defined in the Specific Plan for Soledad Mountain.

4. The reclamation plan proposes to revegetate 419 acres of the total 930 acres disturbed. Portions of the project site will not be revegetated due to steep slopes with poor soil substrate conditions. The 419 revegetated acres includes the heap leach pads, plant facilities, unnecessary roads, top horizontal portions of overburden piles, a portion of the pit haul road, the pit bottom and other flat surface areas (Exhibit 2.2-14). The surface disturbance and reclamation areas are summarized by project component in Table 2.2-5.

The reclamation standards for bond release will be tied to the completion of reclamation activities, such as recontouring, reapplication of top soil and reseeding, and to actual revegetation success. Revegetation standards will be based on a percentage of the cover

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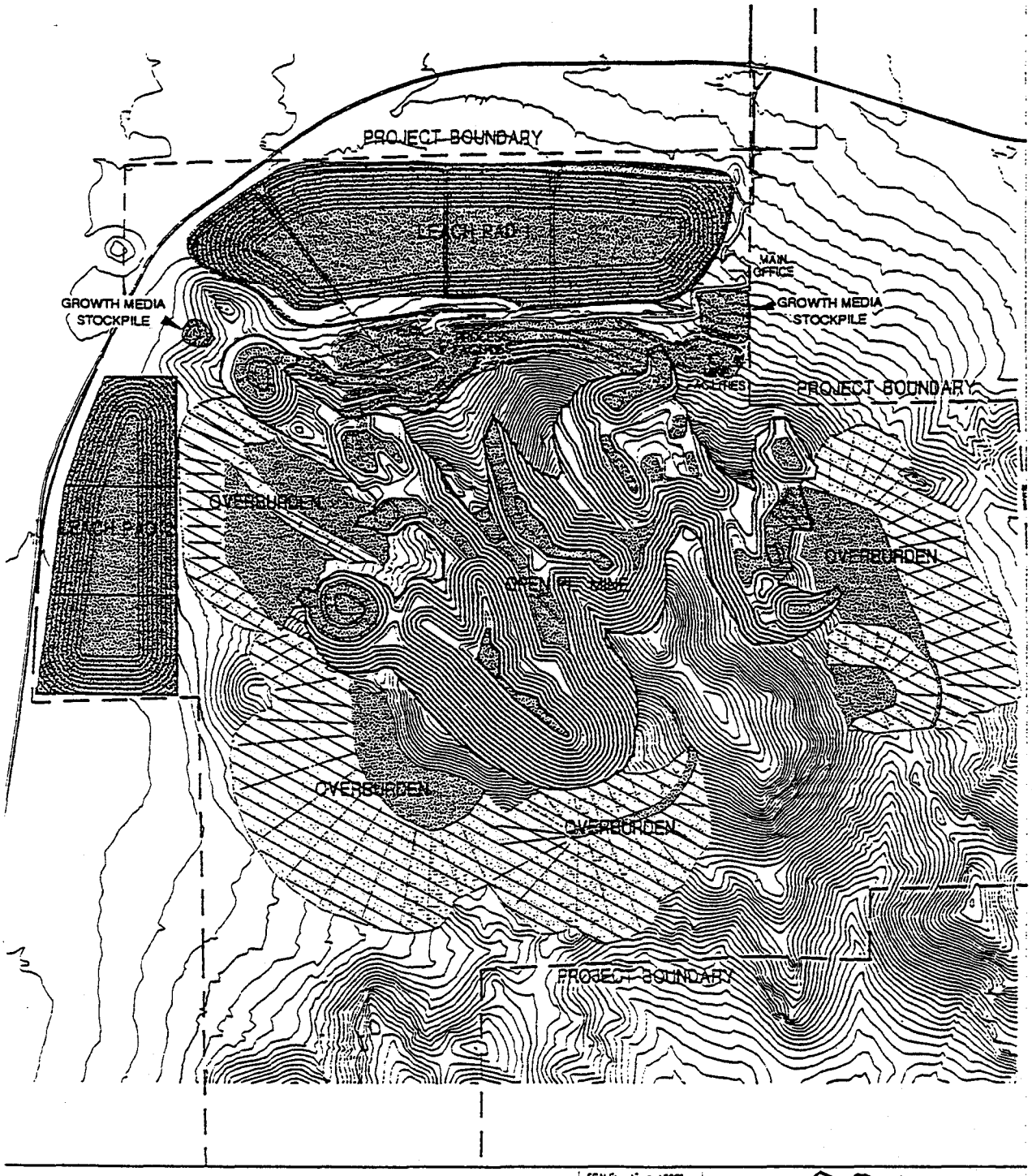
53 Bamberg Associates, *Reclamation and Revegetation Procedures for Soledad Mountain Project, County of Kern*, January 1996, included as Appendix III, Attachment D.



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APPROXIMATE SCALE IN FEET

Golden Queen MINING CO. INC.

SOLEDAD MTN. PROJECT
GENERAL FOOTPRINT MAP

LEGEND

RECLAMATION AREAS SUBJECT TO A REVEGETATION PROGRAM

RECLAMATION AREAS SUBJECT TO GRADING AND NATURAL REVEGETATION

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

RECLAMATION AREAS

DATE		EXHIBIT
3/97	0733.0010	2.2-14

TABLE 2.2-5

Surface Disturbance and Reclamation by Project Component

Project Component Area	Acres Disturbed	Acres Reclaimed	Acres Active Revegetation	Acres Natural Revegetation
Heap leach				
North pad	166	166	166	-
West pad	77	77	77	-
Overburden pile				
Northwest	73	73	32	41
Southwest	92	92	17	75
South	86	86	2	84
East	93	93	26	67
Facilities and Roads	69	69	46	23
Open pit	265	44	44	-
Growth media stockpiles				
East	6	6	6	-
West	3	3	3	-
TOTALS	**930**	**709**	**419**	**290**

present on corresponding natural vegetation types. Reclamation implementation is discussed in greater detail in the Reclamation and Revegetation Procedures report.[54]

The baseline studies on which the revegetation standards are based, document cover, density and species richness. These studies are presented in Section 4.0 of the Biological and Soil Resource Evaluation attached as Appendix III, Attachment B. A preliminary seed mixture for revegetation has been developed as a result of the baseline documentation and results of the existing test plots in the Mojave Desert. Revegetation is expected to include a seed mixture similar to that shown in Table 2.2-6.

Reseeded areas will be monitored for revegetation success based on baseline standards for each area. Monitoring of reclaimed areas will occur following reclamation efforts. The Reclamation Plan recommends that the standard for vegetative cover for this project be set at 35 percent as compared to baseline test plots. Monitoring will include comparison of revegetation in reclaimed areas with data collected concurrently on vegetation in adjacent undisturbed areas. The revegetation success monitoring will utilize sufficient sample sizes to determine an 80 percent confidence level.

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[54] Ibid.

TABLE 2.2-6

Preliminary Plant Seed Mixture for Revegetation

Shrubs	
Acamptopappus sphaerocephalus	goldenhead
Ambrosia dumosa	burrowbush
Atriplex confertifolia	shad scale
Atriplex polycarpa	cattle spinach
Chrysothamnus nauseous	rubber rabbitbrush
Encelia virginensis	acton encelia
Ericameria cooperi	goldenbush
Eriogonum fasciculatum	California buckwheat
Eriogonum plumatella	flat-top buckwheat
Grayia spinosa	spiny hop-sage
Hymenoclea salsola	cheesebush
Krascheninnikovia lanata	winter fat
Larrea tridentata	creosote bush
Xylorhiza tortifolia	mojave-aster
Grasses	
Poa secunda	bluegrass
Pleuraphis rigida	big galleta grass
Trisetum canescens	trisetum
Herbaceous Perennials and Annuals	
Camissonia brevipes	evening primrose
Chaenactis fremontii	fremont's pincushion
Dalea mollis	soft indigo
Eriogonum trichopes	little trumpet
Lupinus brevicaulis	sand lupine
Malacothrix californica	desert dandelion
Phacelia glandulifera	tackstem phacelia
Platystemon californicus	cream cups
Salvia carduacea	thistle sage

Noxious weeds are not expected to be a problem, however, weeds will be controlled if the revegetation efforts are threatened. The most likely weed species is the Russian thistle (*Salsola australis*). The Russian thistle often establishes for four or five years during early stages of revegetation. The plant acts as a nursery plant or successional plant which dies as revegetation occurs.

Previous tests in similar desert conditions have determined that the optimal time to plant is immediately after the surface has been prepared for revegetation. Seeds sown shortly after surface preparation, while the soil is loose, are easily covered and will remain dormant until sufficient rainfall is received. Therefore, planting will occur immediately after surface preparation (irrespective of the season) to enhance revegetation efforts.

2.2.5.7 Erosion

Slopes will be shaped for reclamation depending on the type of material, erodibility, and configuration left by the mining process. The slopes of the final pit wall will be 55 to 63 degrees as appropriate for the area. The down slope portions of the heap leach will be 2.5:1.0 (horizontal to vertical) and the side slopes will be 2.0:1.0 (horizontal to vertical). The slopes of the overburden piles will be graded to 1.8:1.0 (horizontal to vertical). After closure, the pit high walls will be left in a safe and stable configuration, subject to natural processes. The growth media stockpiles will contain seeds which may produce vegetation, depending upon climatic conditions, thereby protecting stockpiles from erosion. Other factors, such as large rocks, natural soil crusts formed after precipitation and contouring the growth media pile will also reduce erosion.

Storm water surface flows will be routed away from the heap leach facilities. Methods to be employed, if necessary, will include berms, sediment ponds, check-dams composed of rice straw bales, sand bags, silt fences or other temporary techniques to minimize impacts. Erosion control methods will be designed to handle a 100-year, 24-hour storm event, greater than the standard of 20-year, one-hour intensity established by Title 14 CCR, 3706(d) (SMARA regulations), and deliver diverted storm waters to natural drainages at velocities that minimize erosion.

If excessive erosion and sedimentation are observed during the mining operations, modifications to the erosion control methods will be made to ensure that land and surface

water will not be adversely impacted. At all times erosion and sedimentation control will be performed as per the directions of the Lahontan Regional Board in the Waste Discharge Requirements (WDR) and the Site Drainage Plan approved by Kern County.

2.2.5.8 Financial Assurance

The Soledad Mountain Project will be bonded, as required by SMARA, the BLM and the Lahontan Regional Board, to assure that all proposed reclamation activities and those required as conditions of permit approval can be completed at no public expense in the event that the project sponsor does not meet this obligation. Golden Queen will post a bond, an irrevocable letter of credit or another acceptable financial instrument which will be sufficient to guarantee the completion of reclamation. The bond amount will be subject to an initial regulatory approval and subsequent annual review by Kern County in accordance with SMARA requirements.

2.2.6 Project Staging

Based upon the currently available exploration data and land and mineral rights under the control of Golden Queen, the full scope and capacity of the proposed project, including that which is reasonably foreseeable, is addressed in this document.

Mining will follow an engineered sequence of extraction based on depth, accessibility, grade of ore and other engineering and economic considerations. Development of overburden piles will occur as mining progresses.

The heap leach pads will be constructed in stages until the maximum final dimensions are reached. Ore transportation and conveying systems from the agglomeration facility to the heap leach pads will be constructed and extended as required by heap leach pad expansion.

The process plant, maintenance shops, offices and other support and ancillary facilities will be constructed as part of the initial project development effort, either in part or in whole, and expanded to final dimensions as necessary.

2.2.7 Permit Requirements

Golden Queen will be subject to numerous local, state and federal permit requirements. The lead agencies and required permits for the project are shown in Table 2.2-7.

TABLE 2.2-7

Permits Required for the Soledad Mountain Project

Agency/Department	Permit/Approval
Federal Agencies	
Bureau of Land Management	Plan of Operations
	Cultural/Paleontological Resource Permit (National Historic Preservation Act, 16 USC 470)
Fish and Wildlife Service	Informal Consultation
Bureau of Alcohol, Tobacco and Firearms	Purchase, Storage or Transportation of Explosives Permit
Environmental Protection Agency	Toxic Chemical Release Inventory System
Mine Safety and Health Administration	Mine Identification Number
State Agencies	
State Water Resources Control Board Regional Water Quality Control Board	General Construction Activity Storm Water Permit
	Waste Discharge Permit
	~~Spill Prevention, Control and Countermeasure Plan~~
California Department of Fish and Game	Informal Consultation
State Office of Historic Preservation (SHPO)	Section 106, (National Historic Preservation Act, 16 USC 470): Designation, survey, determination of effect
California Occupational Safety and Health Administration (Cal OSHA)	Construction Permit
	Explosive Blaster's License
	Process Safety Management Program
Kern County	
Planning Department	Environmental Report
	Mitigation Monitoring Plan
	Mining/Reclamation Plan and Financial Assurance
	Conditional Use Permit
Roads Department/Planning Department	Road Encroachment/Road Vacation
Engineering and Survey Services Department	Grading Permit
	Building Permit
Environmental Health Services Department	Sewage Disposal System Permit/Water Well Drilling Permit
	Hazardous Materials Business Plan
	Hazardous Materials Inventory
	Risk Management Plan
Fire Department	Fire Protection Plan
Air Pollution Control District	Authority to Construct
	Permit to Operate

2.3 Alternatives

2.3.1 Objectives of Alternatives Analysis

NEPA and Council of Environmental Quality (CEQ) regulations, 40 CFR 1502.14, require that an EIS include analysis of alternatives to the Proposed Action. The BLM's *National Environmental Policy Act Handbook*[55] requires that an EIS describe the No Action (No Project) Alternative and all reasonable alternatives identified by the BLM to the same level of detail as the Proposed Action, and how each alternative, with the exception of the No Action Alternative, will generally accomplish the purpose and need of the proposed project. For NEPA purposes, reasonable alternatives include those that are practical or feasible from technical and economic standpoints and meet the Purpose and Need.[56] The NEPA Handbook requires that an EIS describe alternatives considered but eliminated from detailed analysis and provide a brief rationale for their exclusion from consideration.

CEQA requires an EIR to describe a reasonable range of alternatives to the project, or to the location of the project, which could feasibly attain the basic project objectives, and evaluate the comparative merits of these reasonable alternatives.[57] This discussion must focus on alternatives capable of eliminating any significant adverse environmental effects or reducing them to a level of Less Than Significant. An EIR need not consider alternatives whose effect cannot be reasonably ascertained and whose implementation is remote and speculative.

The primary objective of the requirements for evaluation of alternatives is to allow informed decisions for discretionary actions (e.g., permit approvals) related to the proposed project. Review of available alternatives allows evaluation of other methods of operation or locations of facilities that may be technologically and economically feasible and, if such alternatives are available, evaluation of whether or not their implementation would be capable of significantly reducing or eliminating adverse effects of the Proposed Action.

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55 United States Department of the Interior, Bureau of Land Management, *National Environmental Policy Act Handbook*, BLM Handbook H-1790-1, Release 1-1547, October 25, 1988.

56 46 FR §18026 (March 23, 1981), as amended by 51 FR §15618 (April 25, 1986).

57 CEQA Guidelines §15126(d)

2.3.2 Range of Alternatives

A range of alternatives was considered in accordance with NEPA and CEQ (40 CFR 1502.14) during the preliminary project design and the preparation of this document. These alternatives, which are consistent with the Purpose and Need, addressed changes that might be made to the Proposed Action to eliminate or reduce environmental impacts of the Proposed Action. Alternatives reviewed for potential feasibility and/or comparative environmental effects include:

- No Action Alternative.
- Alternative mining and ore processing rates.
- Reduced project size.
- Alternative mining techniques.
- Mine backfilling alternatives.
- Alternative gold extraction techniques.
- Alternative project location and configurations.
- Alternative power supply.

An environmental analysis of alternatives to the Proposed Action is contained in Section 4.0.

2.3.3 Alternatives Considered and Eliminated

This section describes alternatives that were considered but were eliminated from further evaluation because they were determined infeasible, not capable of substantively reducing or eliminating environmental impacts, or not capable of satisfying the Purpose and Need. Each of the alternatives evaluated is discussed in the following sections. The discussion of each alternative includes a brief description of the comparable aspect of the Proposed Action to provide a basis for comparison.

2.3.3.1 Alternative Mining Techniques

2.3.3.1.1 Proposed Open Pit Mining Technique

The configuration and character of the Soledad Mountain Project mineral resource was evaluated to determine the optimal technique for the Proposed Action. The resource occurs as mineralization in a series of veins, filled faults and shear zones which vary in width up to fifty feet. Ore occurs to a depth of hundreds of feet. Overlying and interspersed with the ore is non-goldbearing overburden material that must be removed to access the ore.

The proposed open pit mining method will consist of excavating the ore and overburden material required to access the ore. The ore material will be processed and the overburden material will be placed adjacent to the open pit mine. Strip mining and underground mining were evaluated as alternatives to the proposed open pit method.

2.3.3.1.2 Strip Mining Alternative

Strip mining is a linear method of removal that is typically applied to shallow deposits of minerals, such as coal, potash or uranium which occur in horizontal seams. Such deposits are usually flat-lying sedimentary formations that extend over a substantial area. Strip mining is practical for such deposits because their recovery generally requires shallow excavation over a relatively large and contiguous area. In strip mining, only a portion of the waste rock and ore is initially mined. Then, as mining advances to the adjacent portion of the ore body, the waste rock excavated during the advance is permanently disposed of by placing it in the excavated area created during the earlier stage of mining. In this manner, the mining process acts as a moving trench that is filled in behind the area of active extraction.

This method is physically impossible for deposits such as those at the Soledad Mountain site, which have a relatively limited surface extent in comparison to their depth. Because of the configuration and depth of the project ore body, there is insufficient space within the open pit to dispose of overburden material from a portion of the open pit being actively worked into an area where mining has been completed. Instead, all of the overburden must be removed from the pit in order to expose the ore.

2.3.3.1.3 Underground Mining Alternative

Underground mining is typically suited to deep mineral deposits of high-grade veins or seams. Such deposits generally require removal of a relatively small volume of host material in order to recover the mineral values. In the case of high-grade veins, values are typically confined to discrete structural discontinuities, such as joint or fractures in a competent host rock. Underground tunnels can be excavated along these deposits, leaving most of the host rock in place to support the overburden. This method of mining was utilized by earlier mining operations at the Soledad Mountain site, but is not applicable to the remaining low-grade disseminated ore bodies, which are not economic to mine underground. The large volumes of low grade ore could not be safely or efficiently extracted by underground mining methods.

2.3.3.1.4 Alternate Overburden and Processed Ore Disposal

An estimated 290 million tons of ore and overburden will be removed from the open pit in the Proposed Action. Overburden material will be deposited in the overburden piles adjacent to the mine. Crushed and leached ore will be deposited at the heap leach pile and remain there.

Some of the overburden may be sold as aggregate, depending upon market conditions. The processed ore will remain on the heap leach pads. After processing and neutralization, the processed ore may not present a risk to water quality and could be considered for backfilling. Due to the volume of material, the only potential alternative to the permanent placement of the overburden, not sold as aggregate, and the neutralized processed ore will be backfilling into the mine. Offsite hauling of either or both materials to another location will not positively affect the surface area requirements for placement of the materials, reclamation requirements or the environmental impact of waste rock and ore disposal.

2.3.3.2 Backfilling Alternatives

2.3.3.2.1 Background

The Proposed Action is designed for the permanent disposal of overburden and ore from the mining operation to surface overburden piles and the heap leach pads, respectively. An alternative to this permanent surface disposal would be to backfill the overburden material and

possibly the processed, neutralized ore to the open pit. Overburden sold as aggregate would not be available for backfilling. Processed and neutralized ore would be used for backfill providing it was proven that there was no potential impact to water quality.

Backfilling could reduce some of the long-term visual, biological and land use effects of the Proposed Action. The actual mechanics of a backfilling operation are dependent on the specifics of the type of ore body, sequencing of mining and movement of overburden, the mining method, and the physical characteristics of the area. Backfilling of a previously mined area is typically used, as discussed earlier, at strip mines, where the mineral (frequently coal) exists in relatively well defined horizontal or semi-horizontal zones or layers. Overburden can be removed from one area and immediately deposited in an adjacent mined area which contains no residual mineral potential, thereby minimizing costly double handling of the overburden material. The geometric relationship between ore and overburden in strip mines generally favors placing overburden material into the shallow cuts of areas previously mined. Backfilling of conical, open pit mines is more constrained by the logistics of the mining operation and physical characteristics of the materials mined. For example, open pit mines usually cannot be backfilled until all of the material has been mined out.

Backfilling only makes sense when there is a depression to fill. Much of the rock excavated from the pit will be taken from elevated areas on ridge lines. There will be some depressions left at the end of mining which could potentially be backfilled. The environmental and economic impacts of backfilling will increase operational and capital costs, increase energy consumption, increase water consumption, and extend the period during which noise will be generated. Also, the period during which air quality is impacted by combustion pollutant emissions and fugitive dust would be extended. The increase in operational and capital costs would make the project noneconomic.

The potential environmental advantages of backfilling would be a reduction of the long-term visual contrast of the project and that the open pit area might be usable for recreational activities not otherwise possible. The pit bottom would be revegetated in the Proposed Action. Backfilling would expand the bottom area, which could be potentially revegetated.

Three backfilling alternatives were considered. The sequential and complete backfilling alternatives are discussed below. The partial backfilling alternative is explained in Section 2.3.4.4 and analyzed in Section 4.5.

2.3.3.2.2 Sequential Backfilling

In the event that a mined area is considered to have no further mineral potential and the material being considered for backfill has no potential as aggregate, sequential backfilling may be possible in some areas. Sequential backfilling places overburden from an active area to a previously mined inactive area. In the Soledad Mountain Project, backfilling, concurrent with operations, is made difficult, if not impossible, because of the long and narrow depressions which would be created along vein systems and the fact that haul roads must be placed through these depressions to the active areas of the open pit. These haul roads cannot be cut off during operations. Given these technical constraints, sequential backfilling is not deemed a reasonable alternative to the Proposed Action.

2.3.3.2.3 Complete Backfilling

This alternative would propose that the project fill the open pit to the greatest degree possible with material mined under the Soledad Mountain Project activities. This would essentially be a large earth moving project which would commence following the cessation of mining operations of the Soledad Mountain Project. Rock that had been removed from the open pits during mining would be reloaded into trucks and returned to the open pit. It is assumed that backfill material will include the overburden not sold as aggregate and, possibly, the neutralized ore mined as part of the Proposed Action, but not include materials mined by previous operations.

Assuming the mine was refilled, approximately 145 million cubic yards (237 million tons) of material would be moved back to the open pit. At the planned mining rate of 30 million tons per year, this would require nearly eight additional years of loading, hauling, and dumping, as well as continued use and disturbance of the overburden piles, heap leach pads, open pit, access roads and mine support facilities. There would be continued consumption of water (approximately 3,300 additional acre-feet), fuel (approximately 23 million gallons) and electricity. Noise, dust (approximately 93,000 pounds of PM_{10} per year) and internal combustion engine emissions would continue to be generated over this period. Additional solid waste, such as tires, oil, filters, etc., would also continue to be generated. There would be eight additional years of operations until most reclamation activities could begin and almost no concurrent reclamation activity would occur.

Backfilling of the pit could reduce the visual impact of the Soledad Mountain Project area as a whole, as the open pit is located in the upper reaches of Soledad Mountain and is visible from State Routes 14 and 58; the principal visual observation points for the Soledad Mountain Project. However, given the steep topography of Soledad Mountain it is unlikely that a return to the original topography and vegetative state of the mountain is technically possible.

Assuming a cost of $0.80 per ton[58] for maximum backfilling the mined material, the total cost for complete backfilling as part of the Soledad Mountain Project would be approximately 190 million dollars. Golden Queen has indicated that this will make the Soledad Mountain Project no longer economically feasible. This conclusion is supported by an analysis for the backfilling of the Castle Mountain Mine, an open pit gold mine located in San Bernardino County, California. Both mines have similar characteristics, with the exception that the grade of the ore at Castle Mountain Mine is higher than at the Soledad Mountain Project, presumably allowing the Castle Mountain Mine project a greater ability to support the cost of backfilling. The analysis indicated that the project would have had a negative net present value when the cost of backfilling was included.[59]

An additional report, prepared by the Bureau of Mines, Western Field Operations Center, utilized a generic cost model which used a 0.055 ounce per short ton (oz/st) grade, a 2:1 strip ratio, 2,500-foot average haul distance, 75 percent gold recovery and 65 percent backfill. Backfilling costs were estimated at $0.84/st in 1990 dollars for ore and overburden, plus a 25 percent markup to allow for contractor's costs, for a total cost of $1.05/st. A cash flow analysis was then performed which used a $400/oz gold price and 15 percent rate-of-return compared to net present value. The results indicated that backfilling will render an otherwise profitable operation unprofitable which will produce a negative socioeconomic effect as compared to the Proposed Action.

Based upon these considerations, the potential loss of natural resources and economic disadvantages of maximum pit backfilling would be substantially greater than the potential environmental advantages. Replacement of the overburden in the mined-out open pit would

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58 United States Department of the Interior, Bureau of Land Management, *California Desert District, Needles Resource Area, Castle Mountain Project, San Bernardino County, California, Final EIR/EIS Master Summary and Response to Comments*, 1990.

59 Ibid.

require many years of economically unproductive activity and energy use, with related environmental impacts that would not otherwise occur. In consideration of these factors, this alternative is not judged to be a reasonable alternative to the Proposed Action.

2.3.3.2.4 Effect of Backfilling on Mineralization and Potential Reserves

Complete or partial backfilling may be in conflict with objectives of federal and state mining policies, if additional minerals could be extracted from the open pit in the future. The Specific Plan for Soledad Mountain - Elephant Butte and Vicinity - South of Mojave recognizes gold and silver mining operations as important past land uses. SMARA states that "...the reclamation of mined lands....will permit the continued mining of minerals and will provide for the protection and subsequent beneficial use of the mined and reclaimed land."[60] The protection of remaining mineralization at a reclaimed mined site is also incorporated into federal regulations, such that "reclamation may not be required where the retention of a stable highwall or other mine workings is needed to preserve evidence of mineralization."[61]

The pit design is optimal, based on the current geological, engineering and economic data. The configuration of the open pit is designed using a number of factors: grade of the mined material, precious metal recovery rates, precious metal prices, mining costs; processing costs, pit wall slope stability and physical and legal boundary constraints. Based on systematic evaluation of these factors, the current pit design will allow for the extraction of at least 60 million tons of ore.

Precious metal mineralization extends beyond the planned limits of the open pit floors and walls. The walls and floor of the open pit contain gold mineralization which appears to be unfeasible to mine with current economic conditions and technology. However, changes in external conditions, such as fluctuating metals prices and improvements in technology, may result in revised open pit designs which increase the amount of economically extractable ore. If these materials left behind in the open pit floor and walls are buried due to backfilling requirements, the cost of recovering them in the future may be so high that they become entirely lost as a resource. In addition to the loss of potentially recoverable ore, geologists rely

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60 SMARA §2711(b)

61 43 CFR §3809.0-5(g); 3809.1-3(d)(2)&(5)

on rock exposures, especially with evidence of mineralization, as a primary source of information to guide their search for additional mineralization. Backfilling will preclude or seriously hamper geologists' ability to use the information in the open pit walls in their search for additional mineralization.

2.3.3.3 Alternative Gold Extraction Techniques

2.3.3.3.1 Proposed Heap Leach Method

The proposed method for recovering precious metal from the ore is heap leaching, using dilute cyanide solutions, with Merrill-Crowe processing being used for recovery of precious metals from leach solutions. This is a conventional process that has been used for decades at other commercial gold producing operations with similar low-grade, disseminated ore bodies.[62]

In the proposed heap leaching method, the ore will be crushed to reduce the particle size to a nominal minus 10 mesh (approximately one-sixteenth inch), exposing precious metals in the ore for leaching. To provide for increased recovery and solution percolation rates, the crushed ore is then agglomerated using cement and barren leach solution to form pellets approximately 0.10 to 0.40 inches in diameter. The agglomerates are placed on the heap where dilute cyanide solution is applied to the ore using drip emitters. Gold is dissolved by the solution and travels to a piping system at the base of the heap.

The precious metal containing solution is collected in a sump internal to the heap and pumped to the Merrill-Crowe process plant where it is clarified, deaeriated and, using zinc dust, precipitated from solution as a precious metal sludge referred to as cyanide pulp. This sludge is smelted to produce a gold and silver doré, which is shipped to a refiner for further processing.

Ore from which the precious metals have been recovered remains in place on the heap, where, at closure, it is neutralized, reclaimed and revegetated.

Alternative gold extraction methods could include conventional milling, vat leaching, and in situ leaching.

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62 EPA, *Gold/Silver Heap Leaching and Management Practices that Minimize the Potential for Cyanide Releases*, EPA Document 600/2-88-002, January 1988.

2.3.3.3.2 Conventional Milling

Conventional milling generally consists of reducing the ore particles to a very small size (usually very fine sand and silt size particles) using capital intensive crushing and grinding equipment. This process further liberates minute precious metal particles and maximizes the exposed mineral surface area. Gold extraction is then accomplished in tanks by extracting the gold from the resultant slurry of the finely ground particles mixed with water and chemical reagents. Total precious metals recovery for milling processes is generally higher than for heap leach processes and is completed in hours rather than in months as in heap leaching.

Two basic methods of gold recovery are normally used to extract the precious metals from the slurry:

- Flotation utilizes surfactant reagents in specially designed, agitated cells, to form a froth to which the gold and/or precious metals bearing sulfide particles attach. This method is generally suited for some ores that contain appreciable quantities of sulfide minerals. Since the Soledad Mountain ores contain few sulfide minerals, it will not be a satisfactory method for use at the project and should be eliminated from consideration on a mineralogical basis.
- Leaching methods utilize free cyanide to dissolve gold in large agitated tanks. The precious metals are then recovered from solution using carbon adsorption technology, or sometimes Merrill-Crowe processing, followed by electrowinning of the recovered metals and smelting to produce a doré product.

Due to the need for substantial grinding facilities, the conventional milling process requires considerably greater energy (from five to 10 times) than the heap leach process, with its associated impacts of increased electrical consumption.

The milling process is a larger consumer of water, since the waste products from milling (tailings) are normally disposed of at 35 to 50 percent water by weight, after water reclamation, while the heap leaching process will ultimately consume about 12 to 20 percent by weight. Thus the milling process could consume up to three times the water required for a heap leach operation.

The tailings also require the construction and maintenance of suitable tailings containment facilities and requires the continuous neutralization of any free cyanide that may be contained in them. Because these tailings are stored as a slurry, they cannot be stacked, as in a heap leach, but must be contained in an impoundment. This requires the construction of a much larger storage area, impacting significantly more surface lands. It is estimated that from 325 to 450 acres could be required to store the same amount of tailings from the milling method as opposed to the 245 acres necessary for the proposed heap leach. This additional amount of land, with topographic suitability, is not available at the project site.

At reclamation, the slurried tailings would be dried and revegetated. Due to the fine particle size, this material will be much more susceptible to erosion from wind and water than would be a comparable reclaimed heap leach pile.

The conventional milling alternative has no environmental advantage over the proposed heap leach process that will compensate for the disadvantages discussed above. It should be eliminated from consideration.

2.3.3.3.3 Vat Leaching

The vat leaching process is similar to heap leaching, but is conducted in large, shallow tanks. Ore is prepared in much the same manner as for the heap leach process, except that it is placed in the vats for leaching with dilute cyanide solution, followed by either Merrill-Crowe or carbon adsorption recovery processes. When ore in the vat has been leached, it is rinsed, removed from the vat and disposed of, after which the vat is reloaded and the cycle repeated. It is an appropriate technique to employ with ores having rapid dissolution rates or for sites with constraints that prohibit leach pads (e.g., weather or steep topography).

The Soledad Mountain deposit has a moderate dissolution rate and moderate constraints for leach pad construction.

Typically, the precious metals from such ores will be extracted within days or weeks compared to heap leach extraction which can occur over a period of months to years. The same amount of leached ore residue is produced as in heap leaching. However, double-handling of material is required with associated increases in fuel consumption and associated fuel-burning

emissions. It may also, in some locations, require the treatment and release of process waters.

This alternative does not present any significant environmental advantages over the proposed method and is not suited for the Soledad Mountain deposit.

2.3.3.3.4 In Situ Leaching

In situ leaching involves the injection of leaching solution directly into an ore body while it is still in place in the ground, and then recovering the enriched solution by pumping from extraction wells. The method requires suitable geologic formations that will confine the solution in the ground until it could be recovered. In the absence of such formations, the potential for adverse effects to groundwater and soils could be substantial.

In situ leaching is typically used for minerals, such as salt, borates, copper, uranium and other minerals that are readily dissolved by water or acid solutions as opposed to cyanide leaching solutions typically used to dissolve gold.

While this alternative would not involve open pit mining methods with associated ore and overburden material removal, the risk of solution escape and groundwater and soil contamination will preclude its use for the Soledad Mountain deposit.

2.3.3.4 Alternative Project Location and Configurations

The location of project facilities for the proposed project is largely constrained due to the fixed location of the ore body. The proposed layout has been designed to minimize surface disturbance and energy consumption and to maximize project efficiency in consideration of the given constraints to project development. The facilities and structures proposed for use at the project site are limited to that necessary for efficient operation. Options for relocation of the primary project facilities that were considered, but found not to be acceptable, are described in the following sections.

2.3.3.4.1 Alternative Open Pit Mine Location

Section 15126 of the CEQA Guidelines requires that an EIR address alternative locations for the proposed project. Under this Alternative the proposed project would be developed at another location within Kern County utilizing the same development parameters as the proposed project (i.e., the same tons of ore, the same processing facilities, generally the same acreage).

Forty mining districts were evaluated for an alternative precious metal ore body within a 100-mile radius around Soledad Mountain.[63] Any known districts located within or adjacent to state or federal land designated as Primitive or Wilderness Areas were eliminated from consideration. Of the mining districts reviewed, the Loraine District appears to be the best possible alternative. The District covers approximately 60 square miles and is centered approximately 12 miles north of Tehachapi in the southern end of the Sierra Nevada. The principal period of mining activity occurred between 1894 and 1912.[64] The District was active again in the 1920's and 1930's, and there has been intermittent prospecting since. Approximately 92,000 ounces of gold has been produced from this District.[65] Exploration for precious metals has occurred in this district during the past 10 years. The Zenda Mine Project has been evaluated by Claim Staker Resources and gold ore reserve/ resource estimates of approximately 920,000 tons of ore at an average grade of 0.057 oz/ton, or approximately 52,000 contained ounces of gold, are present.[66]

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63 WZI Inc., *Mineral Resource Evaluation of Alternative Project Sites, Soledad Mountain Project, Mojave California*, included in Appendix IV.

64 Tucker W. B. and Sampson, R. J., *Gold Resources of Kern County, California*: California Journal of Mines and Geology, vol. 29, P. 271-334, 1933.

65 WZI Inc., *Mineral Resource Evaluation of Alternative Project Sites, Soledad Mountain Project, Mojave California*, March 1997, included in Appendix IV.

66 Ibid.

Silver and gold are present in quartz veins commonly within or along the walls of the rhyolite berms.[67] The veins also extend from the rhyolite into schist or diorite. Wall-rock alteration is pronounced in most of the silver and gold mines in the District.

The topography is rugged, with variation in elevation from approximately 5,500 feet to 2,600 feet.[68] Soils are fairly well developed sandy loams, shallow on the ridgetops and more deep in the valleys and northerly slopes.[69] The major access to the area is Caliente Creek Road, a paved two-lane winding road adjacent to Caliente Creek. Dirt roads provide access to the former mine sites. Several earthquake epicenters with recorded 4.0 and 4.9 magnitude earthquakes are located within the District. The major drainage, Caliente Creek, discharges into the southern San Joaquin Valley, providing recharge to the groundwater basin. Springs are present throughout the area. Limited groundwater is present in the fractured and decomposed bedrock. The area receives annual average rainfall of 16 inches and 33 inches of snow. The District is within the southern portion of the San Joaquin Valley Unified Air Pollution Control District, which is in nonattainment for ozone and PM_{10} (particulate). The area is characterized by Douglas oak woodland plant association, with some chaparral and live oak woodland also present. The ground surface is covered by 62 percent low shrubs and 42 percent trees. The State-listed threatened Tehachapi slender salamander (*Batrachoseps stebbinsi*) is known to inhabit moist habitats in this area. The Year 2000 General Plan Master Environmental Assessment has designated the area as a Class I Visual Space. Presently the area is used for cattle grazing.

There are no known alternative ore bodies which are equivalent to the Soledad Mountain Project. Exploration would be required, possibly in previous mine sites, to determine if an ore body suitable for heap leaching is present. The known ore body, under claim as the Zenda Mine, is estimated to be less than 10 percent the size of the Proposed Project. The alternative open pit location would result in similar impacts as the proposed location to mineralogy, physiography and geology, soils, air quality, cultural and historical resources, noise, land use and socioeconomics. The remote location and the lack of existing infrastructure would result in the formation of new disturbance in the form of roads and utilities (water, electricity).

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67 Troxel, B. W. and Morton, P. K., *Mines and Mineral Resources of Kern County, California*: California Division of Mines and Geology, County Report 1, 370 p., 1962.

68 U. S. Geological Survey, Loraine Quadrangle 7.5 Minute Topographic Map, 1972.

69 Kern County Planning Department Initial Study, CUP 4, Map 129, 1989.

Because of the undefined nature of the ore body and the potential to disturb previously undisturbed areas, the alternative open pit location is not a reasonable alternate.

2.3.3.4.2 Offsite Ore Processing

The Proposed Action includes onsite location of all facilities required for self-sufficient ore mining and processing including the open pit mine, overburden piles, heap leach pads, gold recovery facilities, maintenance and administration facilities, etc. An offsite ore processing alternative would consist of extracting ore at the proposed mine site and trucking the ore to a new or existing ore processing facility at an offsite location. For this alternative, the Soledad Mountain Project site would include the open pit mine, overburden piles, an ore stockpile and ancillary maintenance, administration and truck loading facilities. There would be no need for heap leach pads or gold recovery facilities.

There are two existing facilities in the vicinity that might be capable of processing the ore under contract, however, both have reached full capacity and are in the detoxification/closure stages and will require repermitting to process the Soledad Mountain ore. Furthermore, trucking of ore offsite would require approximately 550 round trips per day (based on 30-ton truck and trailer rigs hauling on a seven-day per week schedule). Environmental impacts of this alternative are substantially greater than for the Proposed Action due to increased fuel consumption, increased emissions from truck haulage and traffic related impacts.

There are no alternative sites nearby that offer substantive environmental advantages and there would still be increased impacts of fuel consumption, dust and fuel burning emissions.

2.3.3.4.3 Heap Leach Pad Alternatives

The Proposed Action is designed to treat ore from the open pit on single-use heap leach pads located near the ore body. It is reasonably foreseeable that up to 60 million tons of ore will be developed for processing. The proposed pad configurations will allow for the treating of this quantity of ore. The heap leach pad capacities and configurations are appropriate to assure that project environmental impacts are adequately assessed.

The proposed location of the heap leach pads were determined after consideration of operational and environmental factors. These include proximity of the open pit mine, efficiency of construction and operation, minimizing land use and potential for the discovery of additional mineral reserves.

Examination of the layout of the Proposed Action relative to the property boundaries makes it apparent that there are no alternative locations that will provide for the necessary capacity while reducing any environmental impacts associated with the proposed pads. Regardless of the location, the design of any other single heap or multiple heaps will result in a similar amount of surface disturbance and visual effect.

2.3.3.4.4 Alternative Solution Storage Configuration

Proposed Configuration

For general reference to the design concept, the term modified valley-fill heap leach can be used to describe a heap leach pad with internal solution control. The heap leach pads are designed as side hill leach pads with a perimeter berm supporting the toe of each heap. The berm also provides solution storage capacity. One of the important attributes of the valley-fill concept is the lack of solution ponds exterior to the leach pads. The toe berm will create a pond area for in-heap management of the solutions, runoff from precipitation and retention of the design storm event. The lack of barren and pregnant solution ponds minimizes hazards to wildlife.

All solutions on the pads will be contained inside the heap. Pregnant solution will be extracted by pumps placed in pipes installed on the inside slope of the berm. This prevents liner penetration and associated potential leakage problems. Booster pumps will move the solution to tankage at the process plant. No open ponds are necessary with this arrangement. The pregnant solution will be circulated through the process plant and recirculated to the heap. The pad liner in the area of solution storage of the heap is more difficult to repair than a leak in a separate solution pond. Discontinued use of the heap may be required in the event a leak is detected in the liner, as directed by the Regional Water Quality Control Board.

Open Solution Storage Ponds

Many heap leach gold mining projects utilize open solution storage ponds for pregnant and barren solution management. These ponds must be designed for the containment of process solution flows, the design storm event, and include additional freeboard for a safety factor allowance. Open solution storage ponds have large surface areas which result in increased water losses due to evaporation and represent a threat to wildlife. Suitable locations for open solution storage ponds are not readily available at the Soledad Mountain Project site.

Because of the increased solution losses, wildlife hazards and lack of available sites, the open solution storage ponds alternative should be eliminated from further consideration as an alternative to the Proposed Action.

2.3.3.5 Alternative Power Supply

Electrical power requirements for the proposed project will be approximately 5,000 kilowatts. The starting and stopping of the large motors and the fluctuating power needs of the crushers will require that the electrical system be able to make rapid responses to avoid unplanned equipment shutdowns or electrical system failures. The problem of this fluctuating load can be dealt with if a sufficient supply of power is made available, such as from a public utility, or by installing onsite generation equipment with a rapid response time to fluctuating load conditions.

Based upon these peak energy and steady load considerations, the following alternatives were considered for power supply to the proposed project:

Utility power from Southern California Edison (SCE)
Onsite power generation/commercial power consumption

2.3.3.5.1 Proposed Southern California Edison Connection

The closest power lines that are capable of satisfying site power requirements are located at the northeast corner of the project site. A new substation and circuiting equipment will be constructed on the project site with overhead and underground distribution to serve the various locations on the project site.

2.3.3.5.2 Onsite Power Generation/Commercial Power Consumption

Diesel or natural gas-fueled power generators could be installed onsite to meet the power requirements of the Proposed Action. Low sulfur diesel fuel could be used for power generation, but operation of these engines may contribute to emissions of carbon monoxide, sulfur oxides and nitrogen oxides. Natural gas fueled generation will reduce emissions in comparison to diesel fueled generators. It is anticipated that sufficient power generation capacity could be designed and constructed such that the environmental impacts would be Less Than Significant in all respects, including noise generation, and this alternative is feasible.

Due to the electrical restructuring, opportunities to purchase commercially available non-utility power will emerge that the project proponent may wish to pursue at a later date. These options, however, would be pursued after the project is developed and the electrical market is better defined. There are commercial quantities of electrical power available in proximity to the project site. Consumption of commercially available power will have identical impacts to those of the proposed project, which relies on publicly available power. Therefore, this alternative is feasible.

2.3.4 Alternatives to the Proposed Action Reviewed and Evaluated

This section presents those alternatives to the Proposed Action listed above which were reviewed and found to be sufficiently feasible for evaluation. These alternatives include:

- No Action alternative.
- Alternative Mining and Ore Processing Rates (increased and decreased).
- Reduced Project Size.
- Partial Backfilling.

Each of these alternatives are analyzed in detail in Section 4.0. Table 4.0-1 presents a summary of the environmental impacts of each alternative in comparison to the proposed action.

2.3.4.1 No Action Alternative

Implementation of the No Action Alternative will mean that the Soledad Mountain Project will not be developed. Golden Queen's exploration disturbances at the site will be reclaimed and no potential for increased environmental impacts due to the Proposed Action will exist. Surface disturbances that have been created by historical non-project related mining events will remain, and the present land uses will continue. The recent levels of commercial activity at Soledad Mountain will diminish or disappear, and deterioration of significant cultural and historical resources will continue without preservation.

2.3.4.2 Alternative Mining and Processing Rates

This section describes two alternative approaches to the project that will consider the impacts associated with mining and processing ore at rates 20 percent higher and 20 percent lower than the six million tons per year in the Proposed Action. These alternatives provide a basis for comparing the environmental impacts that could result from a change in project scale and duration.

2.3.4.2.1 Increased Mining and Processing Rate Alternative

For purposes of analysis, the following assumptions are made regarding the increased rate alternative.

The total amounts of ore and overburden mined over the life of this alternative will be the same as for the Proposed Action, but the mining and ore processing rates will be increased by 20 percent to produce and process 7.2 million tons of ore per year. This will decrease the mining and processing period of the project to about eight years, for a total period of 13 years, based upon the foreseeable (60 million tons) ore reserve.

Total surface disturbance and the site layout for this alternative will be the same as for the Proposed Action. Excavation of the same total tonnage of ore and overburden, but over a different period of time, will require the same mine, overburden and heap leach pile configurations. Surface disturbances for onsite roads and ancillary facilities will be similar because the same basic transportation and access needs and supporting activities will occur.

While individual buildings or pieces of equipment may be sized differently, for example, a larger crushing circuit might be used, most physical differences in disturbances will be negligible.

There will be a significant change in the employment level at the project, although any increase in employment will be less than 20 percent.

The changes in environmental impact that could occur due to an increased mining and processing rate are primarily related to the duration of activities and the consumptive uses associated with project operations.

2.3.4.2.2 Decreased Mining and Processing Rate Alternative

For purposes of analysis, the following assumptions are made regarding the reduced rate alternative.

The total amounts of ore and overburden mined over the life of the alternative will be the same as for the Proposed Action, but the mining and ore processing rates will be reduced by 20 percent to produce and process 4.8 million tons of ore per year. This will increase the mining and processing period of the project to about 13 years, for a total period of 18 years, based upon the foreseeable (60 million tons) ore reserve.

Total surface disturbance and the site layout for this alternative will be the same as for the Proposed Action. Excavation of the same total tonnage of ore and overburden, but over a different period of time, will require the same mine, overburden and heap leach pile configurations. Surface disturbances for onsite roads and ancillary facilities will be similar because the same basic transportation and access needs and supporting activities will occur. While individual buildings or pieces of equipment might be sized differently, for example, a smaller crushing circuit might be used, most physical differences in disturbances will be negligible.

There will be a significant change in the employment level at the project, although any decrease in employment will be by less than 20 percent.

The changes in environmental impact that could occur due to a reduced mining and processing rate are primarily related to the duration of activities and the consumptive uses associated with project operations.

2.3.4.3 Reduced Project Size

This alternative evaluates the changes that will be made to the Proposed Action if it were to be designed to avoid impacting the topographic and visual resources at the project site. It is based upon the avoidance of mining in areas that will affect the primary ridge lines of Soledad Mountain, thus maintaining the basic silhouette of Soledad Mountain and reducing any impact on the visual character of the mountain.

This alternative also illustrates the effect of a general reduction in size of the project proposed for any other purpose.

In this alternative the amount of ore mined will be reduced to 17.4 million tons, a reduction of 70 percent from the foreseeable reserve. Overburden mined in conjunction with this amount of ore will total 44 million tons, also a reduction of 70 percent. Based upon a mining rate that will produce six million tons of ore per year (the same as for the Proposed Action), the mining life of this alternative will be about three years.

The potential environmental impacts resulting from this alternative will be primarily related to the change in area of disturbance and the reduced mine life.

The percentage reduction in total tonnage mined will not be reflected in a corresponding reduction in the surface area disturbed. This is because the volume to surface area relationship of the overburden piles and the heap leach pads tend to become less efficient with decreasing size and because the same basic amount of area is needed for facilities such as the process plant, offices, maintenance shops and other ancillary and support requirements.

The annual operating requirements for this alternative will be similar to the Proposed Action with regard to the number of employees, the scale of the operation, and consumption of reagents, water, operating supplies and maintenance supplies. The other operating impacts on the environment will also be similar to the Proposed Action, but the total effect of some, such as total water consumed, will be reduced due to the short project life.

2.3.4.4 Partial Backfilling

This alternative evaluates the changes that would be made to the Proposed Action if it was designed for partial backfilling of the depressions created by the open pit mining activities. Under this alternative, overburden, and possibly processed and neutralized ore would be backfilled into the open depressions after the mine pit had been fully excavated.

The construction and operational phases of this alternative would be the same as the Proposed Action; the same amount of ore and overburden would be extracted and mining and processing rates would be identical to the Proposed Action. During the reclamation phase overburden would be removed from the overburden piles and replaced into the mine depressions, filling the depressions to the top of the low-side of the rims.

Partial backfilling would extend the duration of earthmoving activities by about two years.

3.0 AFFECTED ENVIRONMENT, ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES OF THE PROPOSED ACTION

3.0.1 Introduction

Section 3.0 and Section 4.0 form the scientific and analytic basis for the analysis of the Proposed Action and alternatives. They discuss potential effects on the existing environment that could occur from implementation of the Proposed Action or its alternatives and have been prepared in accordance with Federal regulations (40 CFR 1502.16) and State regulations (14 CCR 15126).

This section describes the affected environment and the effects of the Proposed Action on the environment. Mitigation measures, whether incorporated by regulatory requirements or project design, will be addressed in this section. Additional mitigation measures, recommended by the Bureau of Land Management (BLM) and Kern County, resulting from residual impacts, not mitigated by project design or regulatory requirements, will be outlined. Unmitigatable impacts (irreversible/ irretrievable commitment of resources and significant and unavoidable adverse) also will be discussed in this section.

This section addresses the environmental effects which may occur during and after the life of the Proposed Action.

Impact analysis is formulated on the basis of available information, using reasonable projections of the possible consequences of the Proposed Action. For the purpose of this document, an environmental impact is defined as a change in existing conditions that would be affected by the Proposed Action. The effects can be direct (primary), which are caused by the project and occur at the same time and place, or indirect (secondary), which are caused by the project and are later in time or further in distance, but are still reasonably foreseeable. The duration of the effect can be short-term (e.g., several years following project operations) or long-term (much longer than the operational life of the project). Anticipated effects are assessed quantitatively and/or qualitatively. In addition, assessment of overall effects to the environment of other past, present and reasonably foreseeable actions, including cumulative impacts, will be outlined.

This Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/EIS) utilizes the California Environmental Quality Act (CEQA) guidelines regarding significance of impacts. The CEQA Handbook[70] recommends the use of the following categories when reaching conclusions regarding the significance of impacts.

No Impact: Those impacts determined to have no environmental impact, or analyzed in the EIR/EIS and determined to be of no impact. No mitigation measures will be associated with these topics.

Less Than Significant: Results in no substantial adverse change to existing environmental conditions.

Significant: Constitutes substantial adverse change to existing environmental conditions that can be mitigated to Less Than Significant levels by implementing specified mitigation measures. These mitigation measures can be legal/regulatory and EIR/EIS proposed.

Significant and Unavoidable Adverse: Constitutes substantial adverse change to existing environmental conditions that cannot be fully mitigated by implementing all feasible mitigation measures, which could be either legal/regulatory or EIR/EIS proposed.

This section assesses the impacts to mineral resources, physiography and geology, soils, hydrology, air quality, biology, cultural and historical resources, visual resources, noise, land use, socioeconomics, health hazards and public safety, and traffic and transportation.

In addition to anticipated impacts of the Proposed Action and project implementation, as discussed in this chapter, assessment of overall effects to the environment requires consideration of other past, present and reasonably foreseeable actions.

3.0.2 Potential Future Projects

General Plan Amendments and Conditional Use Permits have resulted in several projects which may be developed during the operation of the Proposed Action. These projects are

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70 California Publications, *CEQA Handbook, A Practical Guide to Implementing the California Environmental Quality Act*, 1994.

summarized in this section and are considered under cumulative impacts for specific resources. The projects south of Oak Creek Road (shown on Exhibit 3.0-1) and north of Backus Road are identified in this document. The majority of the projects are for residential developments, however, some mining/commercial projects have also received approval from Kern County or are currently under CEQA review.

The cumulative analysis includes past, present and reasonably foreseeable actions. Past and existing effects are considered under the setting for each resource. Cumulative impacts consist of the setting, the proposed action and any foreseeable actions. The geographical area considered for the analysis of cumulative impacts varies in size and shape with each environmental resource (surface disturbance), groundwater quality, air quality and traffic. The area south of Oak Creek Road and north of Backus Road was used to evaluate potential impacts associated with topography and traffic. Potential sources of air emissions were investigated within a 15 kilometer radius of the Soledad Mountain project. Potential impacts to groundwater were investigated within the groundwater basin.

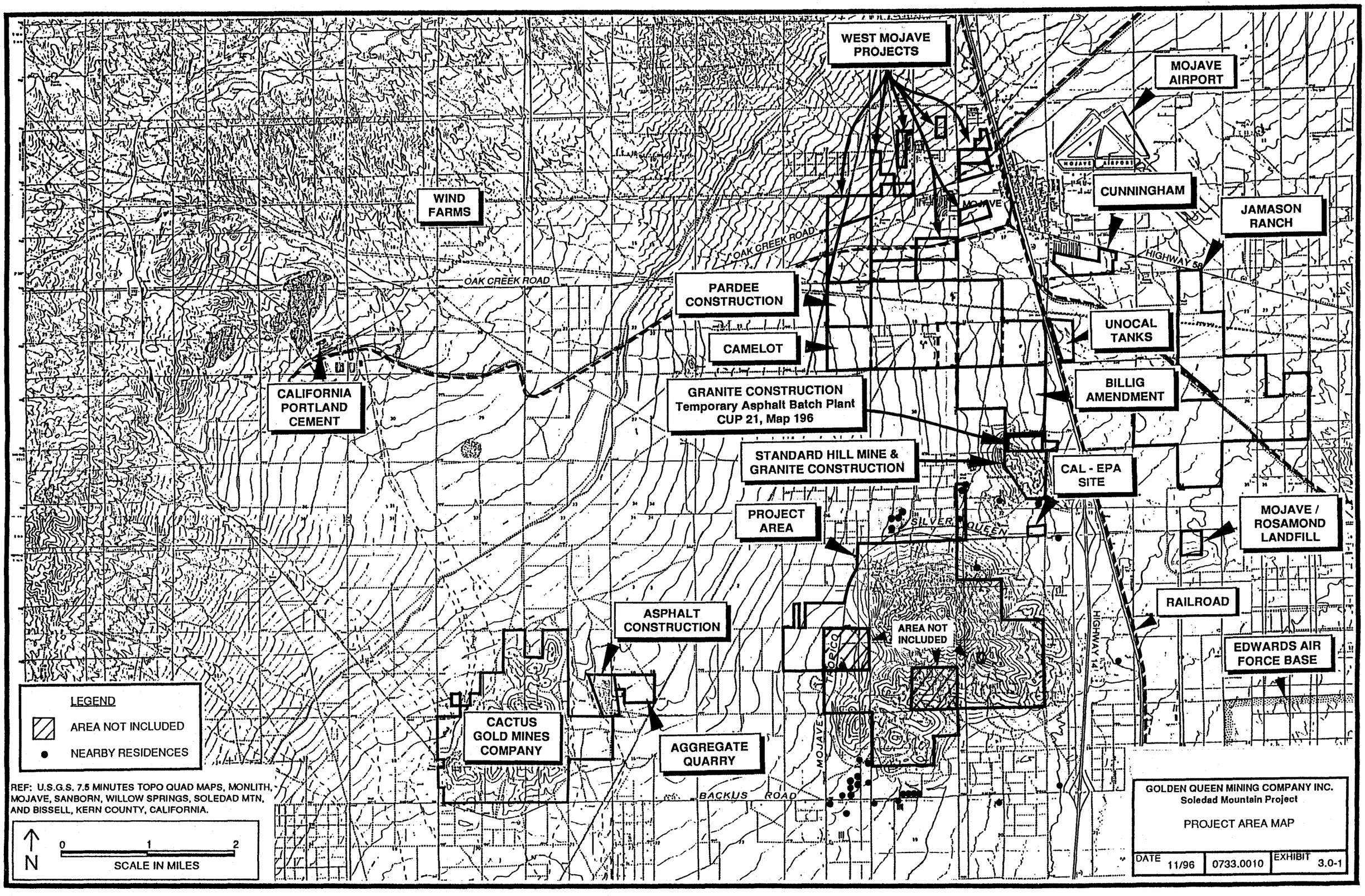
The impacts to resources resulting from each future project at full development are summarized in Table 3.0-1. The information was obtained from permit documents for each project. If the future project activity does not affect a particular resource, it is shown as no change. For example, if the future action occurs on a previously disturbed area, there is no change in land area disturbed.

The industrial projects are assumed to occur during the Proposed Action project life as discussed in Section 3.0.2.1. Partial build out of the residential projects and, therefore, partial impacts are evaluated based on a projection of population growth, as discussed in Section 3.0.2.2. A description of each residential project at build out is presented for completeness.

3.0.2.1 Mining/Industrial

<u>California Portland Cement Company</u>

The California Portland Cement Company is located approximately eight miles west of Mojave and six and one-half miles northwest of the Soledad Mountain Project. Permit to Operate 1003026(J), issued by the Kern County Air Pollution Control District, allow tires to be burned



REF: U.S.G.S. 7.5 MINUTES TOPO QUAD MAPS, MONLITH, MOJAVE, SANBORN, WILLOW SPRINGS, SOLEDAD MTN, AND BISSELL, KERN COUNTY, CALIFORNIA.

TABLE 3.0-1

Cumulative Project Summary

Project Name (type)	Water Demand (ac-ft/yr)	Water Source	Geology Seismicity	Air Quality	Traffic (average daily trips)	Biological Resources	Land (acres)
California Portland Cement (Industrial)	No change	No change	Insignificant	No change in criteria pollutants	4	No change	No change
Granite Const. (Industrial)	Not identified	AVEK	Insignificant	Particulates	36	No change	No change
Hemperly/Wa mack Quarry (Industrial)	1.1	Offsite well	Insignificant	Particulates	25	Mitigated Less Than Significant	100
West Mojave (Residential)	1,861	MPUD	Insignificant	Construction particulates & mobile	38,651	Mitigated Less Than Significant	2,366
Camelot (Residential)	2,920	MPUD	Insignificant	Construction particulates & mobile	74,111	Mitigated Less Than Significant	1,699
Jamason Ranch (Residential)	4,465	MPUD	Insignificant	Construction particulates & mobile	103,613	Mitigated Less Than Significant	1,496
Cunningham Ranch (Residential)	397	MPUD	Insignificant	Construction particulates & mobile	4,553	Less Than Significant	86.6
Pardee Construction (Residential)	Unknown	Unknown	Unknown	Construction particulates & mobile	7,940	Unknown	Unknown

AVEK: Antelope Valley-East Kern Water Agency
MPUD: Mojave Public Utilities District

as a supplemental fuel source to replace a portion of the coal. Operational Condition 7 of the Permit to Operate limits the amount of tires burned to "... 3.6 percent by weight of total daily pyroprocessing system fuel..." However, the permit to operate was rescinded by the Kern County Air Pollution Control District by order of the Superior Court of the State of California. The facility will undergo a CEQA review to evaluate the use of tires as a supplemental fuel source at the facility. The application and District's engineering evaluation indicate that this fuel source does not result in an increase in the potential to emit for criteria air pollutants.

A Health Risk Assessment, contained in the air district's files, was prepared to determine if there is an increased health risk associated with burning tires. The Health Risk Assessment concluded that there was no significant change in health risks in the surrounding community. The Health Risk Assessment determined that the peak cancer risk outside the facility is at a point approximately two and seven-tenths miles northeast of the facility. The increased cancer

risk at this point was predicted to be 3.05 E-8 or three cancer cases per 100,000,000 people. The Health Risk Assessment assumed the fuel source was composed of 20 percent tires. The rescinded Permit to Operate limited tires to 3.6 percent of the fuel, therefore, the associated health risks may be less than predicted by the Health Risk Assessment. Other project limitations may be imposed during the CEQA process. No detailed project description is currently available.

The increase in traffic associated with this project for the purposes of the cumulative impact analysis is projected to be four trucks per day, five days per week which is a 5 percent increase in the current facility traffic. There is no reported change in land use or water use.

Granite Construction - Temporary Asphalt Batch Plant

Granite Construction Company has received approval from Kern County to locate a temporary asphalt batch plant on a portion of the inactive Standard Hill Mine. The site location is approximately two and one-half miles south of the town of Mojave and two miles northeast of the Soledad Mountain Project. Conditional Use Permit Case No. 21, Map No. 196, was approved by Resolution No. 96-93 of the Kern County Board of Zoning Adjustment. Operations subject to the Conditional Use Permit are required to commence within one year of permit approval unless extended by Kern County. The commencement deadline for the project has been extended to December 1997. The Conditional Use Permit states that the approval to operate the asphalt batch plant will expire on November 25, 1998, and provides that an extension of time may be requested prior to expiration. The November 25, 1998 expiration date will require this project to terminate prior to the commencement mining activities at the Soledad Mountain Project.

For the purpose of the cumulative impact analysis, the estimated traffic associated with this project was reported as an average of 36 trips per day.[71] An Authority to Construct has not been obtained for this project, therefore, air emissions have not been quantified. All emission sources will need to be equipped with best available control technology to comply with air district regulations. The Kern County Air Pollution Control District will establish emission limits for this facility when an Authority to Construct is issued. The project is located in a previously

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[71] Kern County Planning Department, *Staff Report for CUP 21*, Map 196

disturbed area, so there is no change in land disturbance. The quantity of water use is unknown, but is assumed to be supplied by AVEK.

Hemperly / Warnack Concrete Batch Plant and Aggregate Quarry

The proposed concrete batch plant and quarry are located seven miles southeast of the town of Mojave and three and one-half miles southeast of the Soledad Mountain Project. Conditional Use Permit No. 20, Map No. 214, approved by Resolution No. 62-94 of the Kern County Board of Zoning Adjustment, allows for a Concrete Batch Plant and Aggregate Quarry on 100 acres of land. The project provides for the mining of rock, sand and gravel at a rate of 60,000 tons per year over a 50-year period utilizing open pit mining techniques. The project is permitted to excavate to a depth of 60 feet,[72] therefore, the project will result in surface disturbance.

For the purpose of the cumulative impact analysis, the following information was used. The required water use was estimated at 1,000 gallons per day[73] (1.1 acre/ft/yr). The future water source will be an offsite well; the location of the well has not been identified. This Conditional Use Permit must be activated by August 1997, unless extended. The traffic associated with this project are 25 trucks per day. An Authority to Construct has not been obtained for this project, therefore, emissions have not been quantified. The major criteria pollutant is expected to be particulate matter. All emission sources will need to be equipped with best available control technology to comply with air district regulations. The Kern County Air Pollution Control District will establish emission limits for this facility when an Authority to Construct is issued.

3.0.2.2 Residential Projects

A number of residential projects, which are discussed in more detail below, were permitted between 1991 and 1994 within the Mojave area south of Oak Creek Road and north of Soledad Mountain. The projects have not been developed to date. For purposes of the cumulative impact analysis, the number of new housing units is correlated to projected population growth. The exact location of the housing units within particular developments is

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72 Kern County Planning Department, *Staff Report for CUP 20*, Map 214

73 Ibid.

beyond the scope of this EIR/EIS. It is assumed development may occur in any of the areas discussed below.

The population and housing growth in the town of Mojave have been predicted using historical data (Table 3.0-2). The projected figures assume that the historical average annual growth, as demonstrated from 1980 to 1994, will continue during the life of the Soledad Mountain Project. The population figures are for the Mojave Census Designated Place. A Census Designated Place is an identified town or community which is not legally incorporated.

The population of Mojave is expected to increase by 1,940 between the years 1998 and 2015, based on an annual average growth rate of 2.2 percent (Table 3.0-3). The year 2015 corresponds with the approximate termination of mining activities at the Soledad Mountain project.

TABLE 3.0-2

Historical Population Growth

Year	Mojave Population	Housing Units	People per Unit
1980[74]	2,886		
1990[75]	3,763	1,530	2.46
1991[76]	3,796	1,531	2.48
1992[77]	3,824	1,532	2.5
1993[78]	3,923	1,545	2.54
1994[79]	3,925	1,546	2.54
Average	2.22% Annual Avg Growth Rate 1980-94		2.5 Average 1990-94

74 Kern Council of Governments, *1991 Kern Data Book*

75 Kern Council of Governments, *1993 Kern Data Book*

76 Kern Council of Governments, *1990 Census*, plus yearly updates through July 1994

77 Ibid.

78 Ibid.

79 Ibid.

TABLE 3.0-3

Projected Population Growth

Year	Projected Mojave Population (at an annual growth rate of 2.2%)	Projected Housing Needs at 2.5 People/Unit
1998	4,285	1,714
2000	4,478	1,791
2005	4,998	1,999
2010	5,578	2,231
2015	6,225	2,490

Mojave census data compiled by the Kern Council of Governments indicates that there are two and one-half people per occupied dwelling unit in Mojave.[80] Therefore, an area population increase of 1,940 will require an additional 776 dwelling units by the year 2015, split between the various residential developments and the town of Mojave. The years 1998 to 2015 roughly correspond with the projected life of the project.

The General Plan and Specific Plan amendments identified in this Draft EIR/EIS result in the potential to build 15,800 additional dwelling units (approximately 39,500 people) in the next 50 plus years. This Draft EIR/EIS assumes that the build out of the various projects will correlate with the projected population increase and may occur within any of the residential project areas dependent on market demand. The various residential projects in the area are described below.

West Mojave Project

The West Mojave Project is comprised of 10 separate projects, located west of the town of Mojave, totaling 2,366 acres. An EIR was prepared for this project.[81] The projects consist of single-family units, multiple-family units, mobile homes and limited commercial development. Six of the 10 projects are located north of Oak Creek Road. Complete build out of all 10

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80 Kern Council of Governments, *1993 Kern Data Book*

81 EIP Associates, *Draft Tier 1 Environmental Impact Report, West Mojave Project,* April 1991.

projects would result in approximately 4,571 dwelling units; approximately 3,160 of the units would be located south of Oak Creek Road. The West Mojave EIR estimates domestic water use at 400 gallons per dwelling unit per day or 1,661,200 gallons per day for all 10 projects. This water use rate equates to 1,861 acre-feet per year. The water is expected to be supplied by the Mojave Public Utility District.

The estimated traffic from the projected population of the 10 projects is 38,651 average daily trips. The estimated average daily trips for the West Mojave projects located south of Oak Creek Road is 22,284.

Camelot Specific Plan

The Camelot project is located approximately one mile southwest of the town of Mojave and two miles north of the Soledad Mountain Project. The Specific Plan has been amended several times. The latest amendment was the Billig Amendment (Camelot Phase VI) to the Specific Plan. EIR's have been prepared for the various phases, the latest was for the Billig Amendment.[82]

The total of the Camelot phases consists of 1,266 acres for residential use and an additional 433 acres for commercial, industrial, public and recreational uses. Complete build out would result in approximately 6,516 dwelling units. Assuming water use at 400 gallons per day per dwelling unit results in 2,920 acre feet per year. The water is to be supplied by the Mojave Public Utility District. Approximately 15 acres, containing 109 houses, have been developed. The estimated traffic associated with this project after build out of all phases is 74,111 average daily trips.

Jamason Ranch Specific Plan

The Jamason Ranch project is located approximately two and one-half miles southeast of the town of Mojave and three and one-half miles northeast of the Soledad Mountain Project. The project encompasses 1,496 acres composed of residential, commercial, industrial, recreational

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82 Cornerstone Engineering, Inc., *Final Environmental Impact Report, Camelot Specific Plan-Phase VI Billig Amendment*, May 1994.

and public land uses. An EIR was prepared for this project.[83] The residential portion of the project consists of a probable build out of 3,577 dwelling units on 751.9 acres. Water use at probable build out is estimated to be 3,987,400 gallons per day or 4,465 acre feet per year. The water is to be supplied by the Mojave Public Utility District, Antelope Valley-East Kern Water District and additional wells on the project site. The estimated traffic associated with this project after build out is 103,613 average daily trips.

Cunningham Ranch Specific Plan

The Cunningham Ranch project is located approximately one mile southeast of the town of Mojave and four miles northeast of the Soledad Mountain Project. The project encompasses 86.6 acres of residential and commercial land uses. An EIR was prepared for this project.[84] The residential portion of the project consists of a probable build out of 348 dwelling units on 83.3 acres. The EIR for the Cunningham Ranch Specific Plan and Jamason Ranch specific plan estimates water use at probable build out to be 353,940 gallons per day or 397 acre feet per year. The water is to be supplied by the Mojave Public Utility District. The estimated traffic associated with this project after build out is 4,553 average daily trips.

Pardee Construction

The Pardee Construction project is located approximately two and one-half miles southwest of the town of Mojave and three miles north of the Soledad Mountain Project. This is a proposed residential development with the potential to add 789 dwelling units.

The estimated traffic associated with this project after build out is 7,940 average daily trips.

Residential Cumulative Impact Summary

For purposes of the cumulative impact analysis from residential development during the life of the Soledad Mountain Project to the year 2015, the following assumptions have been made:

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83 Kern County Department of Planning and Development Services, *EIR Cunningham Specific Plan and Jamason Ranch Specific Plan*, February 1992.

84 Ibid.

Projected Population	6,225
Projected Housing Unit Increase	776
Land Disturbance	200 acres
Water Use (400 gallons per day per unit)	348 acre-feet/year

Traffic projections were used from the EIR prepared for the Camelot Specific Plan - Phase VII - Billig Amendment, May 1994. Air emissions were calculated for mobile sources. The cumulative impacts are discussed under each resource setting after the discussion of project impacts.

3.0.3 Potential Future Gold Mining and Exploration Scenario

This section analyzes resource management and development actions planned or projected to occur under each alternative. Projections, which have been developed for analytical purposes only, are based on current conditions and trends and represent a best professional estimate of reasonably foreseeable future actions. Unforeseen changes in such factors as economics, demand and federal, state and local laws and policies could result in different outcomes than those projected for this analysis.

Except for the Proposed Action, there are no known plans for substantive development of gold mining or exploration in the Mojave/Rosamond Mining District. No proposals or consideration of such proposals have been announced. However, to further the cumulative impacts analysis provided in Section 3.0, BLM has developed the gold mining and exploration scenario for the project vicinity that is discussed in this section. BLM has assumed an approximate three year time frame for the definition of "reasonably foreseeable future." In this time frame, BLM expects a high level of gold exploration activity to take place in the vicinity of the proposed project.

Within the next three years, BLM anticipates the potential for one new mine being constructed in the vicinity of the Proposed Action. BLM has estimated that this potential mine would be expected to disturb approximately 300 acres and remove a total of 400 acres from multiple use until reclamation is completed. Approximately 25 percent is expected to be on public land.

The potential mine would use about 300 acre-feet of water per year, and employ about 60 workers (all assumed to live in Mojave, Rosamond and surrounding communities). In addition to this potential mine, BLM anticipates that future gold exploration activities would disturb about 20 acres in the vicinity of the Proposed Action. These disturbances would be in addition to potential future projects discussed in Section 3.0.2, and will require a separate environmental review and approval process.

The primary cumulative impacts caused by the Proposed Action as well as the potential gold mining and exploration scenario developed by the BLM would be to soils, air, vegetation, wildlife habitat, visual resources and socioeconomics. The BLM anticipates that key impacts of this gold mining and exploration scenario would be as follows:

- Soils - The potential mine would displace soil during the mining process. A large percentage of this soil would be stockpiled for use during reclamation.

- Air - The primary emission from these activities would be particulates (dust). Based on EPA estimates, approximately 0.38 tons of particulate matter are put into the atmosphere each year for each acre of surface disturbance. Assuming no reclamation or stabilization of the mining- related disturbance in the three-year period, approximately 114 tons of particulate matter would enter the atmosphere (300 acres x 0.38 tons/ acre/year). The potential future exploration activity, encompassing about 20 acres as described in this scenario, would be expected to put about 7.6 more tons of particulate matter into the atmosphere each year (20 x 0.38 tons/acre/year). Interim stabilization, concurrent reclamation, watering, chemically-treated access roads, etc. would reduce these levels considerably.

- Vegetation - Approximately 300 acres of vegetation would be removed by the potential mine and an additional 20 acres by the potential future exploration. The impacted vegetation community would be primarily creosote bush scrub.

- Wildlife - Cumulative impacts would occur directly to mammals, birds and reptiles, with secondary losses to predators fragmentation of wildlife habitat. Impacts on forage availability would be minor.

- Visual - Cumulative impacts from exploration and mining activity in the area would result in contrast with respect to natural condition. Successful reclamation would ultimately limit these contrasts.

- Socioeconomics - Mine and exploration personnel associated with the potential future activities would be expected to live in Mojave, Rosamond and surrounding communities. Overall, socioeconomic impacts of these potential future activities would be beneficial. Some exploration and construction personnel would be expected to stay in local motels. Exploration, construction and operations personnel would be expected to spend money locally for goods and services, with related increases in local revenue, tax base, etc. The level at which these impacts would occur is unpredictable.

3.0.4 Resources Not Affected by the Proposed Action

The following resources are either not present on the subject lands or, if present, are not affected by the Proposed Action.

- Paleontological Resources
- Recreation Resources
- Public Services and Utilities
- Energy

Paleontological Resources - Soledad Mountain is a silicic volcanic center consisting of felsic flows, tuffs and breccias of Middle to Late Miocene age. The rock types range from rhyolite to quartz latite. The volcanic rocks are overlain by alluvial sediments on the flanks of Soledad Mountain. Fossils do not occur in volcanic rocks and have not been found in the non-marine alluvium.

Sedimentary rocks are exposed as part of the Bissell Formation in the Bissell Hills east of Soledad Mountain, and the Fiss Fanglomerate in the Rosamond Hills south of Soledad Mountain. These formations, approximately Miocene in age, do not contain fossils. The closest exposed fossiliferous sedimentary rocks, part of the Miocene Horned Toad Formation, are located seven miles north of Soledad Mountain and northwest of Mojave in the Horned

Toad Hills, the Horned Toad Formation is not shown to extend as for south as Soledad Mountain.[85,86]

According to Appendix G of the State CEQA Guidelines,[87] a project will normally have a significant effect on paleontological resources if it will:

(g) Disrupt or adversely affect.....a paleontological site except as part of a Scientific Study.

For the purpose of this EIR/EIS, a significant impact would normally occur if implementation of the proposed project would:

- cause the physical disturbance of, or prevent future access to, a unique paleontological site.

No impacts to paleontological resources are anticipated due to the lack of fossils within sedimentary rocks at the site and the distance to the known fossil locality. Therefore, no additional analysis will be conducted in Section 3.0.

Recreation Resources - The BLM manages 195 acres of public lands within the proposed disturbance area. There are no identified BLM routes for off-highway vehicles (OVH) in the project area. There is limited hiking on the BLM managed land and some unauthorized OVH use of the desert lands north and west of the project site. The private lands within the proposed disturbance area are fenced, gated or posted, restricting public access. Hunting, shooting and other recreational uses are restricted in the project area by the private owners.

The proposed project is not expected to result in a population increase or a resulting increase in the demand for neighborhood or regional parks or any other recreational facilities.

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85 Dibblee, T. W., Jr., *Aerial Geology of the Western Mojave Desert, California:* U. S. Geological Survey, Prof. Paper 522, 153p, 1967.

86 Slade, Richard C. and Associates, *Perennial Yield Assessment of Chaffee Subunit in the Fremont Valley Groundwater Basin*, unpublished draft report prepared for Mojave Public Utilities District and California City, 1994.

87 14 CCR §15000 et. seq.

According to Appendix G of the State CEQA Guidelines,[88] a project will normally have a significant effect on recreation resources if it will:

(w) Conflict with established recreation, educational, religious or scientific uses of the area.

For the purposes of this EIR/EIS, a significant impact would normally occur if implementation of the proposed project would:

- increase use of existing park and recreational facilities, or require the creation of new park and recreational facilities, to comply with locally adopted park and recreational service standards.

No impact to recreation resources is identified by the proposed action.

Public Services and Utilities - The proposed project will not result in the need for new electrical transmission systems, communications systems or sewer treatment. New septic systems will be installed for onsite use following the approval by Kern County Environmental Health Services Department. Industrial water will be supplied by onsite water wells and drinking water will be supplied by bottled water. Stormwater drainage will be retained onsite. Non-mining wastes, such as office waste, will be removed from the site by a contract hauler for disposal in an approved landfill. Regulated wastes, such as used oil and laboratory wastes, will be manifested and transported from the site by authorized haulers. The proposed project is not anticipated to increased the requirements for police and fire protection.[89]

According to Appendix G of the State CEQA Guidelines, a project will normally have a significant effect on public services and utilities if it will:

(c) Breach published national, state or local standards relating to solid waste or litter control;

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88 14 CCR §15000 et. seq.

89 Weaver Hawley Mills Consultants, *Analysis of Socioeconomic Impacts of the Proposed Golden Queen Mining Co., Inc., Soledad Mountain Project*, January 1995, included in Appendix XI.

(n) Encourage activities which result in the use of large amounts of fuel, water or energy;

(o) Use fuel, water or energy in a wasteful manner;

(s) Extend a sewer trunk line with capacity to serve new development; or

(z) Interfere with emergency response plans or emergency evacuation plans.

For the purposes of the Draft EIR/EIS, a significant impact would normally occur is implementation of the proposed project would:

- require expansion in existing services to meet project demand.
- results in a violation of state and local requirements relating to source reduction, recycling, litter control and solid waste handling.
- encourages activities which result in the use of fuel, water or energy in a wasteful manner.
- requires the extension of a sewer trunk line with capacity to serve new development.

No impacts to public services and utilities are anticipated from the proposed project.

Energy - The closest power lines capable of satisfying site power requirements are located at the northeast corner of the project site. A new substation and circuiting equipment will be constructed on the project site with overhead and underground distribution to serve the various locations on the project site. Electrical power requirements for the proposed project will be approximately 5,000 kilowatts. Diesel fuel will be used to run the mobile equipment. It is anticipated approximately 20,000 gallons will be used per week.

According to Appendix G of the State CEQA Guidelines, a project will normally have a significant effect on energy if it will:

(n) Encourage activities which result in the use of large amounts of fuel, water or energy; or

(o) Use fuel, water or energy in a wasteful manner.

For the purposes of this Draft EIR/EIS, a significant impact would normally occur if implementation of the proposed project would:

- conflict with adopted energy conservation plans.
- use non-renewable resources in a wasteful and inefficient manner.

The proposed action will not conflict with any adopted energy conservation plans. Equipment will be serviced to maintain operating efficiency and to reduce potential air emissions from mobile sources. No impact is identified.

3.1 Mineral Resources (Natural Resources)

3.1.1 Setting

Soledad Mountain is a silicic volcanic center consisting of felsic flows, tuffs and breccias of Middle to Late Miocene age. The rock types include rhyolite, rhyolite porphyry and quartz latite. Gold was first discovered at Soledad Mountain in 1894. By 1904, three stamp mills were processing ore from the underground veins on the Queen Esther, Karma, Echo, Elephant and Gray Eagle claims. The Silver Queen vein was discovered in 1933, and a 300 ton per day mill was constructed in 1935 by Gold Fields America, a subsidiary of Gold Fields of South Africa, after consolidating various claims on Soledad Mountain.[90] It is estimated that over one million tons of ore at grades of approximately 0.23 ounces of gold and 2.5 ounces of silver per ton were mined by underground methods and processed before the War Production Board Order L208 shut the operation down in 1942. During the 1950's, small tonnages of ore were mined by lessees.

In 1985, Golden Queen began acquiring land in order to evaluate the area for an open pit mining operation. Golden Queen now owns or controls a total of 2,840 acres. Of this total, approximately 1,600 acres are part of this Proposed Action, including 1,165 acres of private land and 435 acres of public land administered by the BLM. Proposed disturbance within the 1,600 acre project would be 930 acres, including 735 acres on private land and 195 acres on public land. Approximately 215 acres within the project area have been disturbed by historical mining and mining related activities.

From 1988 through September 1996, 587 drill holes, totaling 194,630 feet, and sampling of 15,611 feet of underground cross cuts, were completed by Golden Queen and others. The exploratory effort has resulted in the identification of a potential for up to 60 million tons of ore grade material. Exploration and development drilling is continuing with the expectation that additional mineable reserves will be defined.

The historically mined veins at the site include the Queen Esther, Silver Queen, Golden Queen, Starlight, Gray Eagle, Echo and Soledad Extension. The veins outcrop in a northwest-

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[90] Wartenweiler, Otto, *The New Mill of the Golden Queen*: Engineering and Mining Journal, July 1936.

trending belt approximately 2,000 feet wide and 6,500 feet long. The ore deposits occur as a result of mineralization in a series of epithermal veins, filled faults and shear zones which vary in width and often exceed 50 feet. The veins are consistent along strike and down dip, some having been mined to a vertical depth of 1,000 feet. The ore deposit contains finely divided free gold, as well as silver minerals, including cerargyrite and argentite in a gangue of oxidized, brecciated quartz. Pyrite, chalcopyrite and galena are also present in minor amounts.

No petroleum resources have been discovered to date in the western Mojave Desert.[91,92] The potential for petroleum resources in the project area is considered nonexistent because of the presence of the volcanic rocks and the thin cover of sediments on the flanks of Soledad Mountain.

The California Department of Conservation, Division of Mines and Geology, has published information regarding geothermal resources in California. No geothermal resources are known to occur in the vicinity of Soledad Mountain.

The California Department of Conservation, Division of Mines and Geology, has developed various reports and other publications which identify lands with aggregate resources. The Division of Mines and Geology has not identified any lands, nor developed reports which address aggregate potential in the vicinity of the project site. A Conditional Use Permit for a rock, sand and gravel mine was issued by Kern County Planning Department in July 1994. The operation, located three miles west of Soledad Mountain, has not begun construction or operations. Reports have been published which identify aggregate resources in the Bakersfield, Kern River, Saugus-Newhall-Palmdale and San Bernardino County areas.

3.1.2 Direct/Indirect Impacts

For the purposes of this EIR/EIS, a significant impact would normally occur if the proposed project:

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91 Mabey, Don R., *Gravity Survey of the Western Mojave Desert - California*: Geological Survey, Professional Paper 316-D, 1960.

92 Munger, Averill H., editor, *Munger Map Book*, 1994.

- results in the loss of mineral resources or other known resources such as those identified in a Mineral Resource Zone as defined by the California Department of Mines and Geology; or
- would result in the loss of rock/sand/gravel resources identified in the local General or Specific Plan.

Development of the open pit mine will allow access to near surface ores as well as deeper zones of mineralization, which may be amenable to mining using underground mining methods. The development of other mineral resources in the immediate area may be impacted by the placement of overburden piles, the installation of heap leach pads and the construction of other project facilities. However, the possibility of this occurring is remote since exploration has been conducted in these areas and no economic reserves of precious metals have been noted.

The Proposed Action would result in the production of up to 60 million tons of ore material yielding an estimated one and one-half million ounces of gold, and also the production of construction aggregate from the overburden materials. The mining of the ore would result in the removal of the extracted minerals which is a Significant and Unavoidable Adverse impact. Commercial utilization of the geologic resources constitutes a beneficial use of available resources.

3.1.3 Irreversible/Irretrievable Commitment of Resources

Extraction of the ore represents irreversible development of known precious metals reserves.

3.1.4 Cumulative Impacts

There are no other proposed precious mineral projects within the area, therefore, there are no related cumulative impacts.

3.1.5 Summary of Regulatory Requirements

There are no regulatory requirements related to the mineral resources of the project.

3.1.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The following is a summary of design features which are included by the applicant which were considered in the impact analysis of the project on mineral resources.

- Exploration activity, consisting of drilling boreholes and analysis of rock samples, has been conducted to ensure mineral resources will not be covered by overburden or heap piles.

3.1.7 Recommended Mitigation

No mitigation measures are recommended.

3.1.8 Level of Significance After Mitigation (Residual Impacts)

The extraction of gold reserves, estimated at one and one-half million ounces of gold, is a residual impact which is a Significant and Unavoidable Adverse impact, but the commercial utilization of the minerals is beneficial. The gold and silver would be available for use by industry and society.

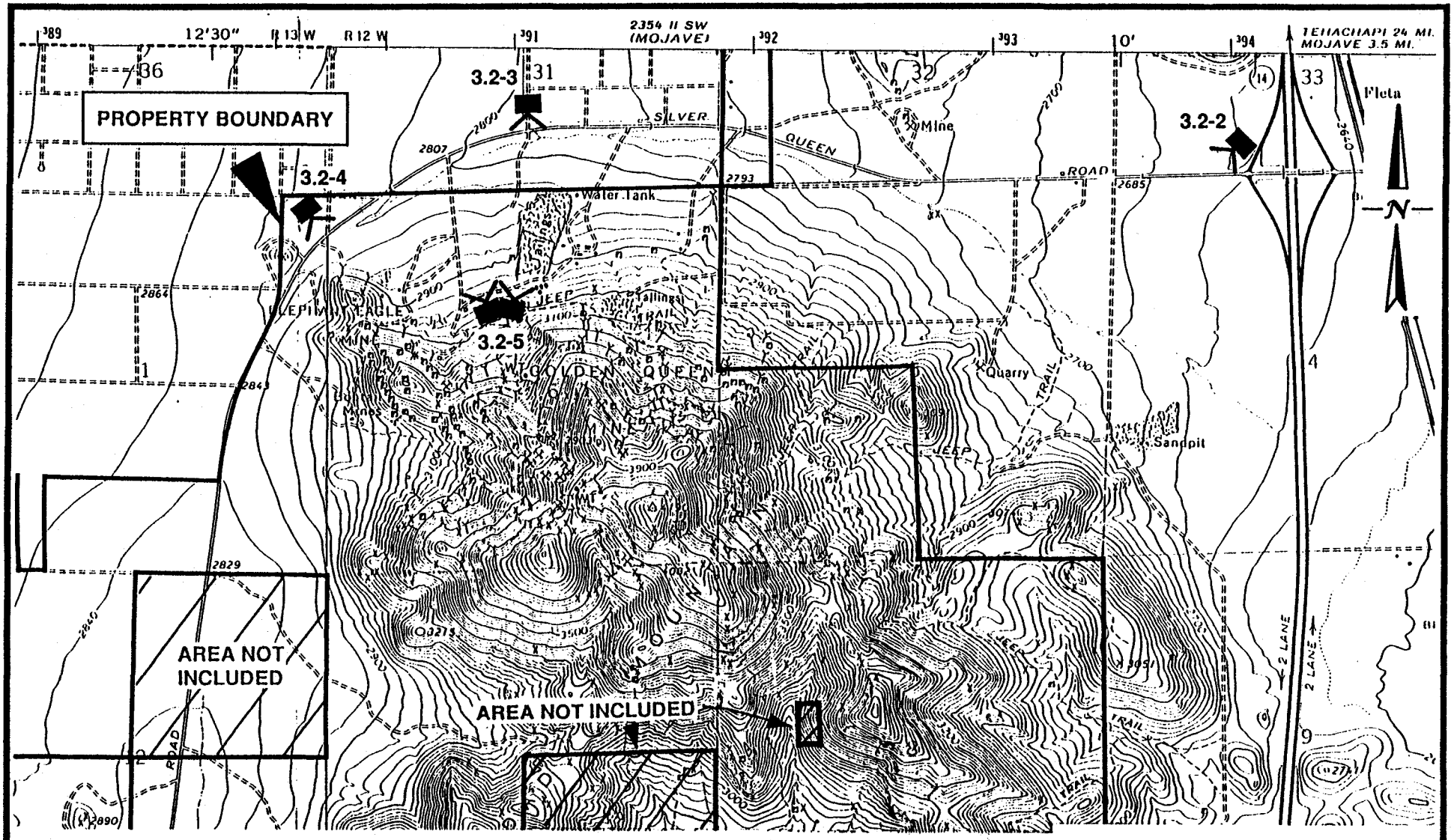
3.2 Physiography and Geology (Earth Resources)

3.2.1 Topography

3.2.1.1 Setting

The topography of the western Mojave Desert in the area of the site varies from relatively flat alluvial areas to steep mountains. Elevations vary from approximately 2,000 feet above mean sea level in the flat alluvial-covered areas to over 5,000 feet in some of the mountainous areas. Soledad Mountain, a volcanic peak approximately three miles in diameter, is considered a major topographic landmark in this area. The topography of the project area consists of rugged outcrops and ridges with intervening drainages which grade to alluvial slopes and flat areas on the flanks of Soledad Mountain. The elevation of the project area varies from 4,190 feet above mean sea level at the peak of Soledad Mountain to approximately 2,700 feet above mean sea level along the northeast flank.

Photographs which illustrate the topography, current land use, and existing disturbance have been taken from Silver Queen Road looking toward Soledad Mountain and on Soledad Mountain looking out across the surrounding lands. The locations where these photographs were taken are shown in Exhibit 3.2-1 and are referenced to the following exhibits which present the photographs. Exhibit 3.2-2 is a view of Soledad Mountain taken from the northeast at the intersection of State Route 14 and Silver Queen Road. Exhibit 3.2-3 is a view of Soledad Mountain taken from the north on Silver Queen Road. The pink mill tailings in this photograph are the material which will be salvaged and amended for use in heap leach pad construction. Exhibit 3.2-4 is a view of Soledad Mountain taken from the northwest on Silver Queen Road. Exhibit 3.2-5 shows two panorama views from Soledad Mountain which combine to present the full north-facing view from west to east. The California Portland Cement Company Mojave Plant and Mine are visible at the extreme western edge of the west to north panoramic view, with various wind farms in the central portion of the view and the Camelot Golf Course and housing area due north of the mountain. The north to east panoramic view overlaps the previous view at Camelot and continues eastward showing Mojave, the Mojave Airport, and the existing Billiton Minerals USA Standard Hill Mine. Also shown in the foreground of this view are the remains of the former Gold Fields milling facility.



LEGEND

3.2-2 PHOTOGRAPH LOCATION

AREA NOT INCLUDED

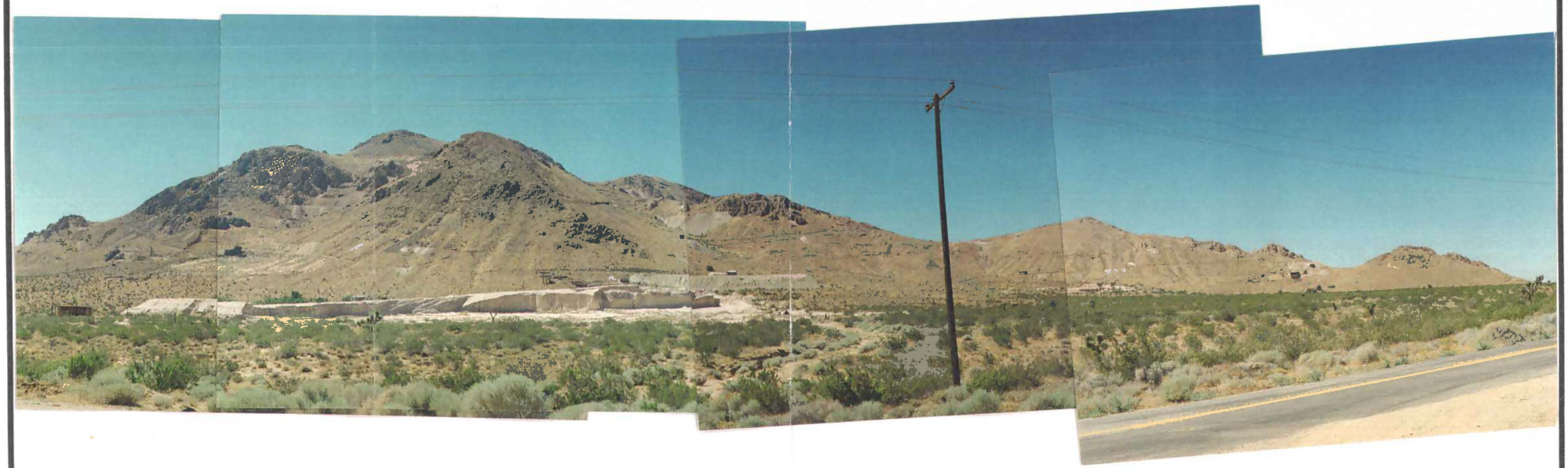
GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

PHOTOGRAPH LOCATION MAP

DATE		EXHIBIT
11/96	0733.0010	3.2-1

VIEW FROM NORTHEAST AT THE INTERSECTION OF STATE HIGHWAY 14 AND SILVER QUEEN ROAD

GOLDEN QUEEN MINING COMPANY INC. Soledad Mountain Project VIEW OF PROJECT SITE		
DATE 11/96	0733.0010	EXHIBIT 3.2-2



VIEW FROM THE NORTH ON SILVER QUEEN ROAD

GOLDEN QUEEN MINING COMPANY INC. Soledad Mountain Project VIEW OF PROJECT SITE		
DATE 11/96	0733.0010	EXHIBIT 3.2-3

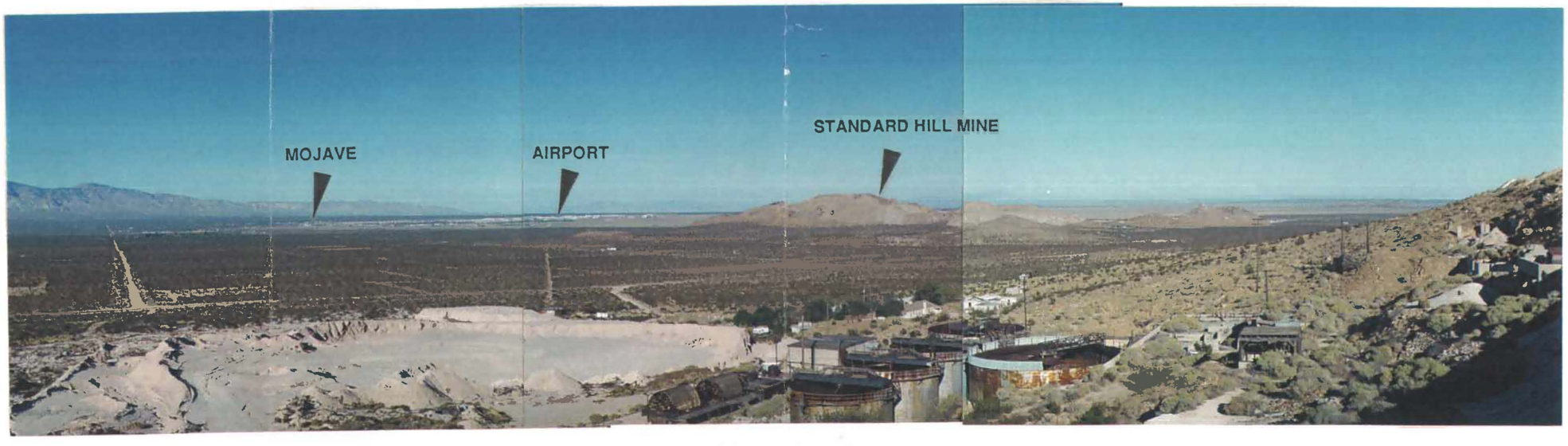
VIEW OF PROJECT SITE FROM NORTHWEST ON SILVER QUEEN ROAD

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

VIEW OF PROJECT SITE

DATE		EXHIBIT
11/96	0733.0010	3.2-4

PANORAMA WEST TO NORTH



PANORAMA NORTH TO EAST

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

VIEWS OF SURROUNDING AREA

DATE		EXHIBIT
11/96	0733.0010	3.2-5

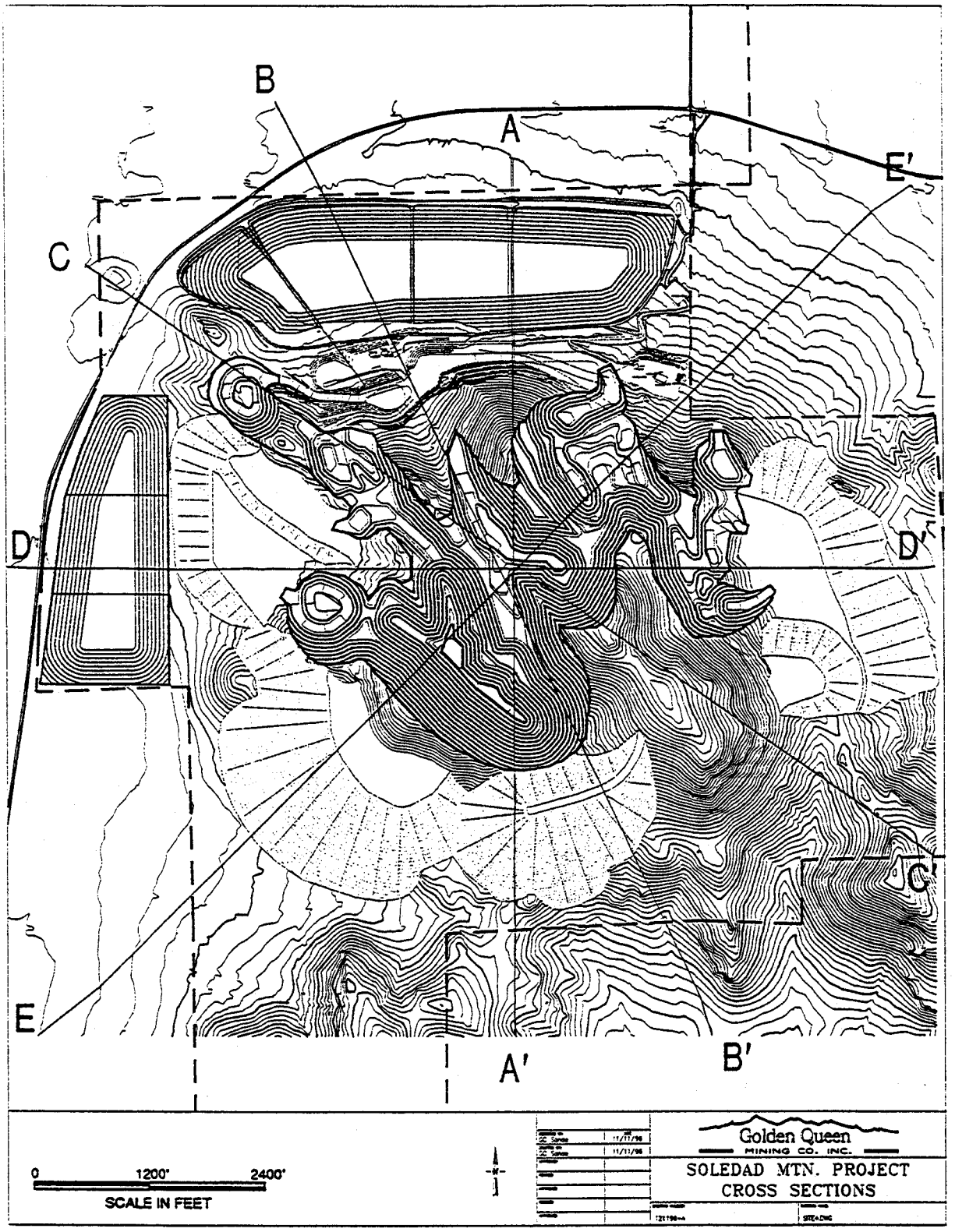
Surface disturbances which predate the proposed project include the original Gold Fields of South Africa mines as well as other shafts, trenches, tailings, dumps, open stopes, adits, roads and other facilities associated with the numerous small claims that have historically been worked throughout the project area. Approximately 215 acres of existing surface disturbance are located within the project area.

3.2.1.2 Direct/Indirect Impacts

For the purposes of this EIR/EIS, a significant impact would normally occur if the proposed project results in the loss of a unique geological feature of statewide or national significance.

The effect to the physiography of the site would be a change in the topography due to the creation of the open pit mine, heap leach piles and overburden material piles. Soledad Mountain is a prominent feature in the area, although it is not a unique geologic feature. The impacts of changes in site topography are potentially significant. The changes will be minimized by contouring and revegetation activities as detailed in Appendix III, Attachment D for the reclamation activities. The mine, overburden material piles and heap leach piles will constitute permanent landforms after reclamation is complete. The final slope of the open pit mine walls will range from 55 to 63 degrees as referenced in Appendix III, Attachment C. The overburden piles will have overall slopes which will not exceed 1.8:1.0 (horizontal to vertical). The heap leach piles will have downhill facing overall slopes of 2.5:1.0 (horizontal to vertical) and side slopes of 2.0:1.0 (horizontal to vertical). Topographic profiles were constructed across the site, showing the present topography and topography of the Proposed Action at maximum build out. The profile locations, the open pit, heap leach piles and overburden piles are superimposed on the existing topography as shown on Exhibit 3.2-6. The profiles are shown on Exhibits 3.2-7 through 3.2-11.

Cross Section A-A' (Exhibit 3.2-7) is a north south section from Silver Queen Road to the south side of the project area through the heap leach piles, the open pit and the overburden piles. The open pit would not be visible from this view. In order to blend with the surrounding landscape, the outer edges of the tops of the heap leach piles and overburden piles will be rounded and revegetation will be done on the heap leach piles and the horizontal surfaces of the overburden piles. Cross Section B-B' (Exhibit 3.2-8) extends from the northwest to the southeast across the project area. The view would be similar to Cross Section A-A'. Cross

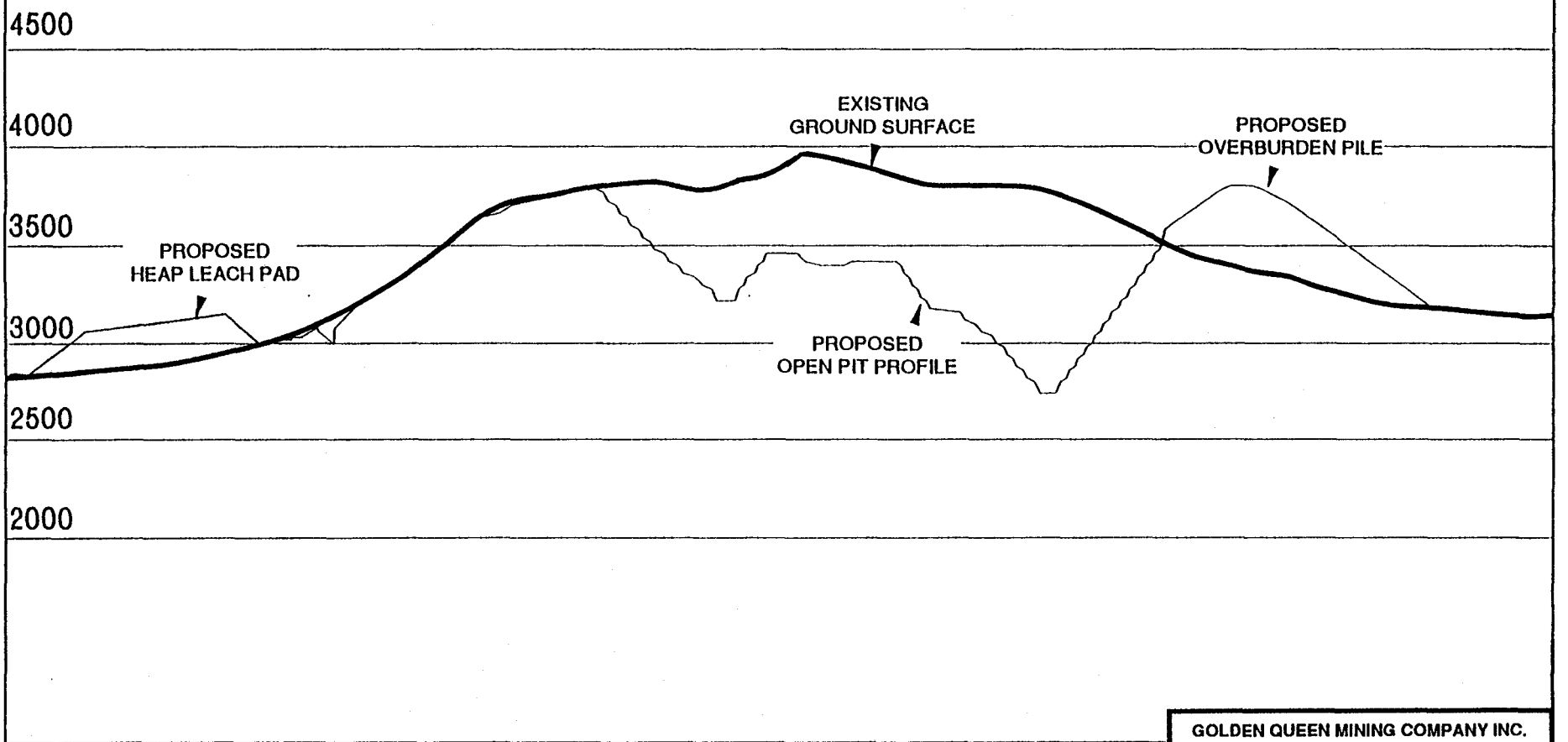


GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

PROPOSED TOPOGRAPHIC
PROFILE LOCATION MAP

DATE		EXHIBIT
11/96	0733.0010	3.2-6

CROSS SECTION
A - A'



0 800' 1600'
Scale in feet

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

CROSS SECTION A-A'

DATE		EXHIBIT
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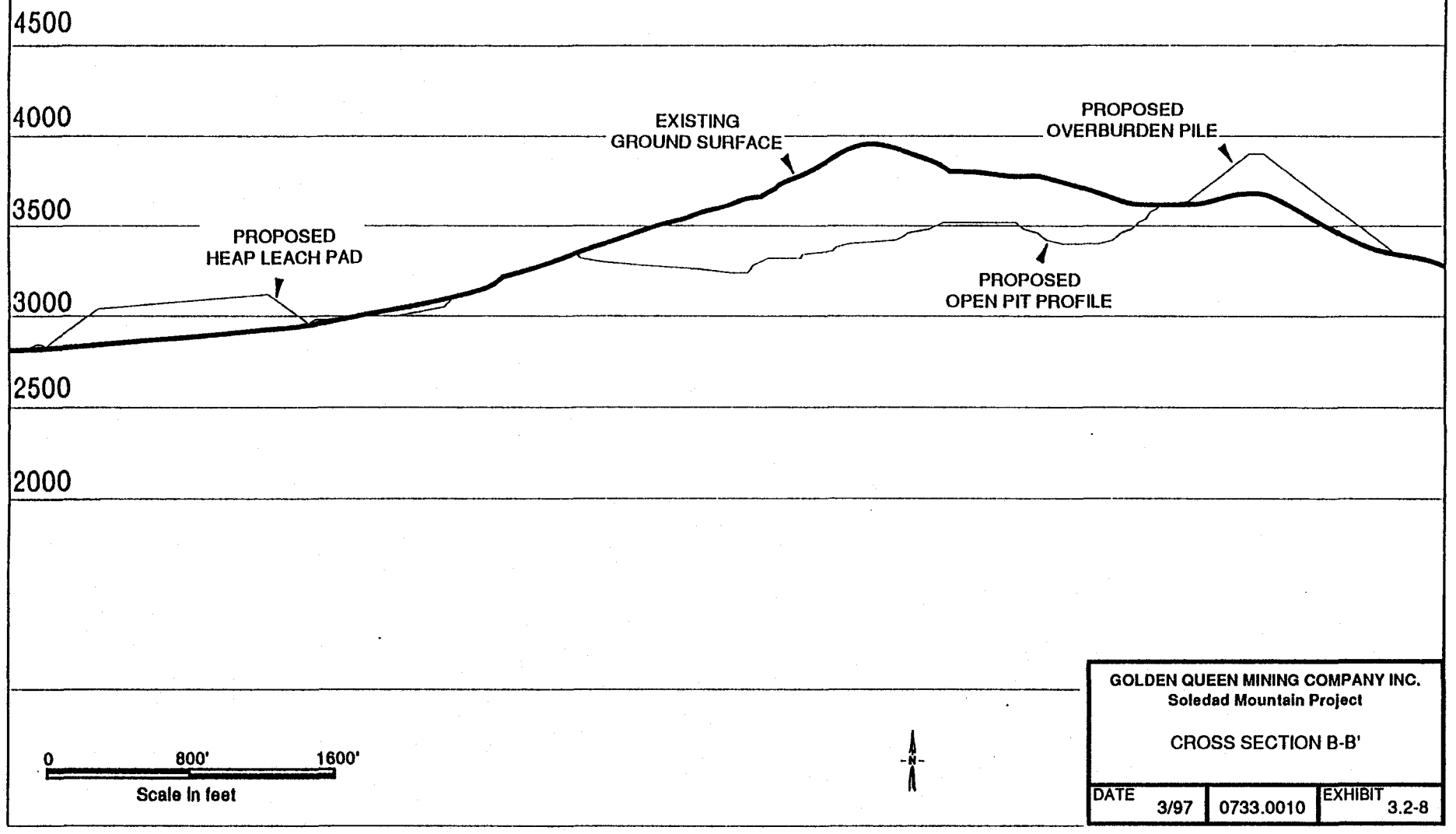
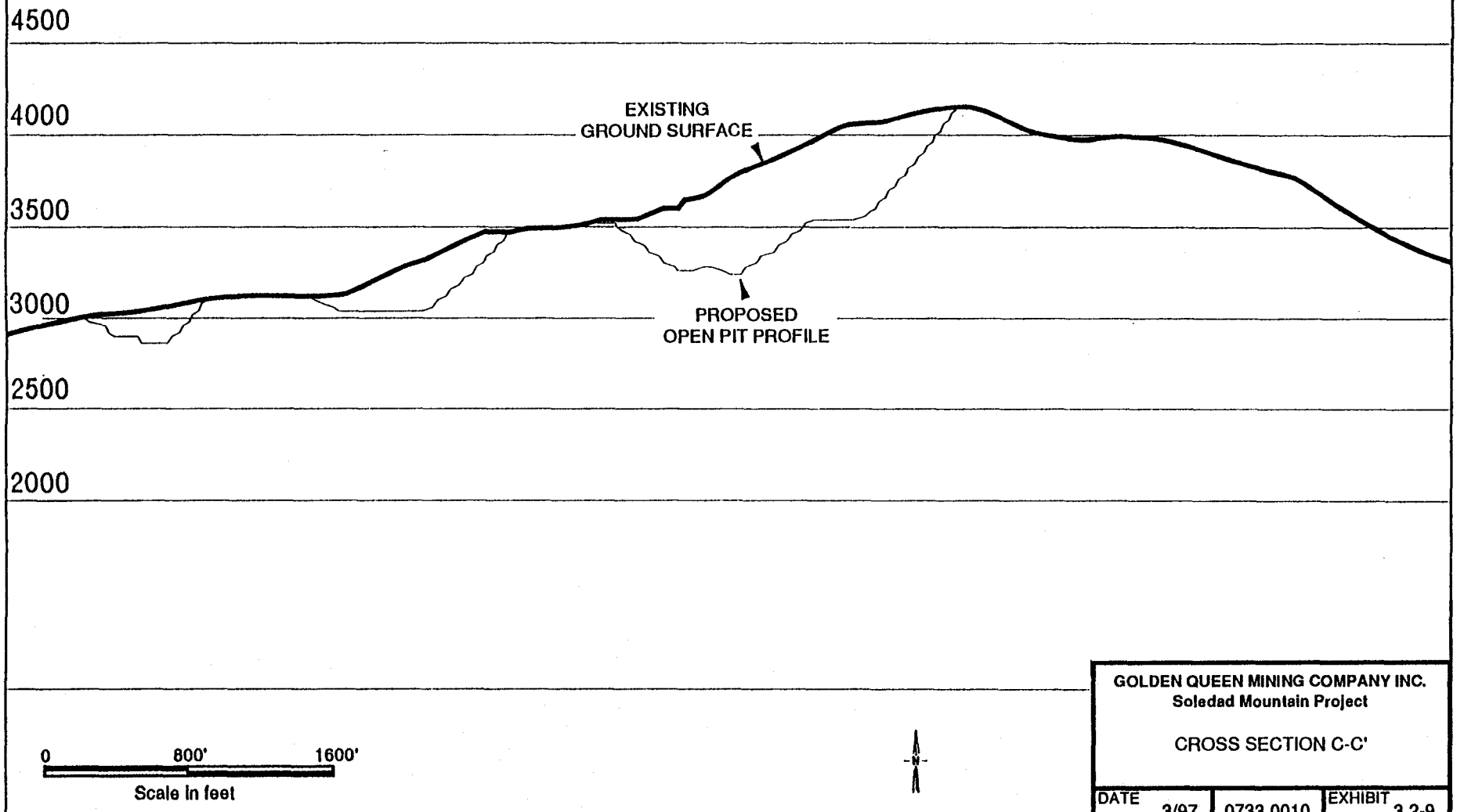
CROSS SECTION
B - B'



GOLDEN QUEEN MINING COMPANY INC. Soledad Mountain Project CROSS SECTION B-B'		
DATE 3/97	0733.0010	EXHIBIT 3.2-8

CROSS SECTION
C - C'

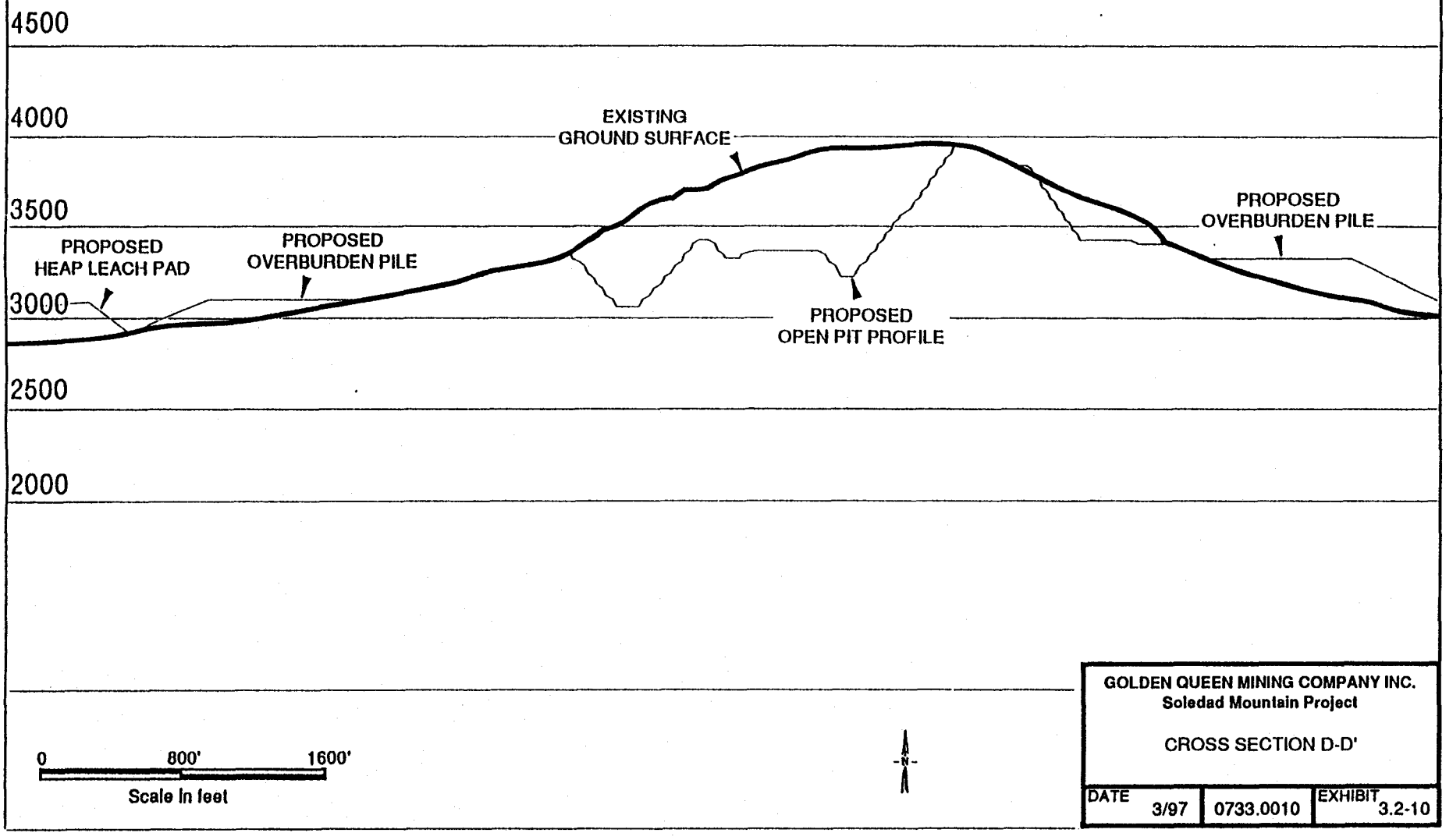


GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

CROSS SECTION C-C'

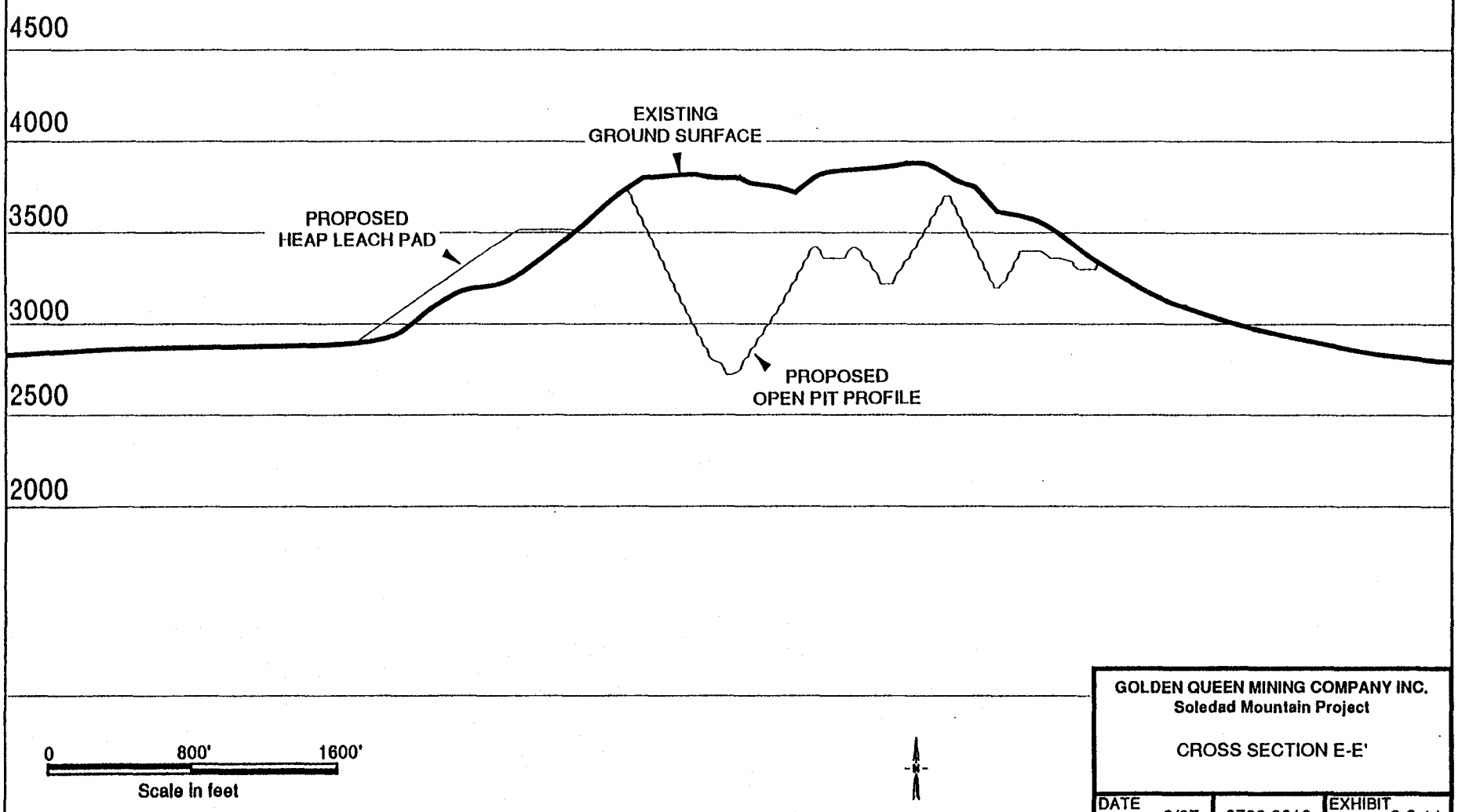
DATE		EXHIBIT
3/97	0733.0010	3.2-9

CROSS SECTION
D - D'



GOLDEN QUEEN MINING COMPANY INC. Soledad Mountain Project CROSS SECTION D-D'		
DATE 3/97	0733.0010	EXHIBIT 3.2-10

CROSS SECTION
E - E'



GOLDEN QUEEN MINING COMPANY INC. Soledad Mountain Project		
CROSS SECTION E-E'		
DATE 3/97	0733.0010	EXHIBIT 3.2-11

Section C-C' (Exhibit 3.2-9) extends from the Silver Queen and Mojave-Tropico Road intersection to the southeast corner of the project area. The open pit would be partially visible from the road. Cross Section D-D' (Exhibit 3.2-10) is an east-west section through the project area, across the western heap leach pile, the open pit and the eastern overburden pile. The steep walls of the open pit may be partially visible from both the east and the west. The views would be at least partially concealed by the heap leach and overburden piles. Cross Section E-E' (Exhibit 3.2-11) extends from the northeast at Silver Queen Road to the southwest. From this view, the profile of Soledad Mountain would be altered from the rugged mountain slopes to the visible benches of the open pit high wall.

The overall impact to the topography is Significant and Unavoidable Adverse because the final topography of the open pit would be different from the existing topography and visible. Reclaimed overburden and heap leach piles would blend in with the existing topography.

3.2.1.3 Irreversible/Irretrievable Commitment of Resources

The changes in topography would be permanent and represent an irreversible commitment of resources. The final topography of the overburden and heap leach piles would conform with the surrounding topography using final reclamation procedures as described in Section 2.2.5. The benches of the open pit would be a noticeable feature which is inconsistent with the existing topography. This view would be primarily limited to an area northeast of the site on Silver Queen Road. The view would be partially obscured beyond Silver Queen Road by the topographic feature of Standard Hill which has an elevation of approximately 3,100 feet.

3.2.1.4 Cumulative Impacts

The cumulative impacts to the topography are the same as the impacts of the Proposed Action, because there are no additional foreseeable mining projects in the area which would impact the topography.

3.2.1.5 Summary of Regulatory Requirements

The following is a summary of regulatory requirements[93] which will be in place to regulate the project in regard to topography.

- The State Mining and Geology Board Reclamation Regulations require that slopes of the pit and overburden piles be stable and conform with the surrounding topography and proposed end use.
- A Reclamation Plan is required which identifies areas to be revegetated and type of vegetation.
- Bonding for reclamation is required.

3.2.1.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The following is a summary of design features which are included by the applicant in addition to those required by regulations, and are included in the impact analysis of the project on topography.

- During final reclamation, overburden will be graded to break up the unnatural angles at the top edges.

3.2.1.7 Recommended Mitigation

Regulatory and design reclamation features as described will reduce the potential impact of the proposed project to the topography. No other mitigation measures are available to lessen the change in topography.

3.2.1.8 Level of Significance After Mitigation (Residual Impacts)

The topography would be permanently changed and the residual impact remains a Significant and Unavoidable Adverse impact.

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93 Title 14 CCR, Division 2, Chapter 8, Section 3500 et. seq.

3.2.2 Geology and Seismology

3.2.2.1 Setting

The site is located in the western Mojave Desert Geomorphic Province of Southern California. The Mojave Desert is a wedge shaped block which is separated from the Sierra Nevada Mountains to the north by the Garlock Fault Zone and from the Transverse Ranges and coastal areas to the southwest by the San Andreas Fault Zone. The rock types of the western Mojave Desert have been grouped into three main divisions[94] which include pre-Tertiary age crystalline rocks, Tertiary age sedimentary and volcanic rocks, and Quaternary age sediments and local basalt flows. Soledad Mountain is an eroded silicic volcanic center of Middle to Late Miocene age (16.9 to 21.5 million years). The volcanics consist of felsic flows, tuffs and breccias of the Gem Hill Formation with rock types ranging from quartz latite to rhyolite. The flanks of Soledad Mountain are mantled by Quaternary alluvium deposits consisting of sands and gravels.

The site is located in a geologic structurally complex area. The nearest known faults with demonstrated historic movement (during the last 200 years) are the Garlock Fault Zone, located approximately 10 miles to the north, and the San Andreas Fault Zone, located approximately 25 miles to the southwest. Other faults within 35 miles of the site with historic movement include the Sierra Nevada Fault, the Lockhart Fault and the White Wolf Fault. A regional fault map is shown in Exhibit 3.2-12.

No known faults are present within or adjacent to the project site which demonstrate evidence of Holocene movement (during the last 11,000 years). An unnamed northeast-southwest trending fault zone is located approximately four miles to the south of the site in the Rosamond Hills and the Rosamond Fault is located approximately seven miles south of the site.[95] These faults do not show evidence of Holocene movement. The western end of the Rosamond Fault,

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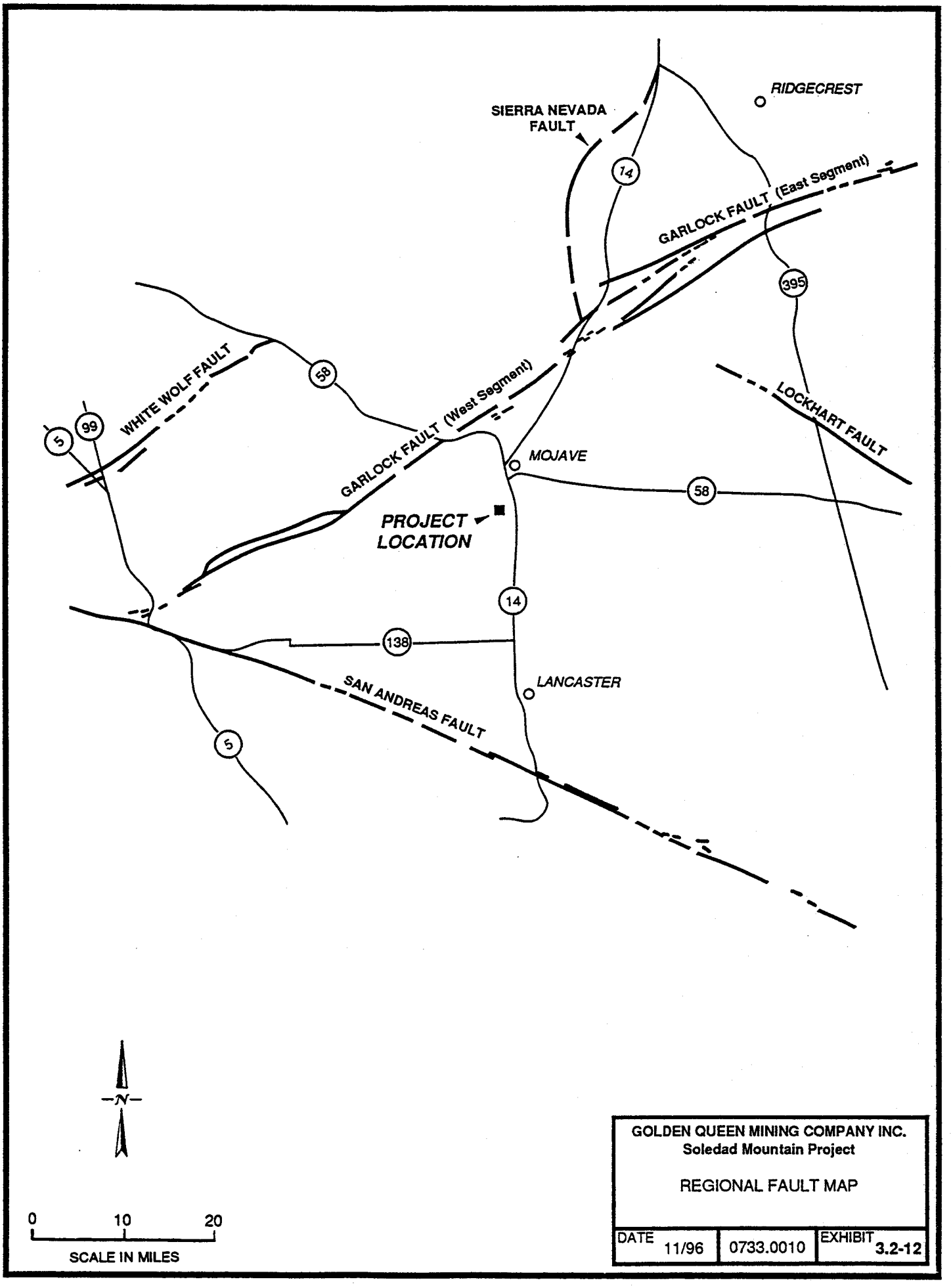
94 Dibblee, T. W., Jr., *Aerial Geology of the Western Mojave Desert, California*: U.S Geological Survey, Prof. Paper 522, 153p, 1967.

95 Jennings, Charles W., *Fault Activity Map of California and Adjacent Areas:* California Department of Conservation, Division of Mines and Geology, 1994.



GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

REGIONAL FAULT MAP

DATE		EXHIBIT
11/96	0733.0010	3.2-12

also known as the Willow Springs Fault,[96] and the Cottonwood Fault, west of the project site, show evidence of displacement some time in the last 1.6 million years.[97] The Randsburg-Mojave Fault, recognized by Duell[98] but not recognized by Jennings[99] and the Lahontan Regional Board,[100] lies northwest of the project site and the Muroc Fault lies northeast of the project site. These two faults are not exposed at the surface and show no evidence of Holocene movement. A local fault map is shown as Exhibit 3.2-13.

All of the major rock types within the project area have been disrupted by faulting with the predominant faults trending north 10 to 40 degrees west and varying in dip from 70 to 90 degrees both east and west near the surface to 45 to 50 degrees at depth. These faults are believed to be late Tertiary in age and are postulated to be the primary conduit responsible for the precious metal mineralization which occurs in a series of epithermal veins, filled faults and shear zones.

According to the Kern County Building Codes, all of Kern County is located within Uniform Building Code Seismic Zone 4, the most restrictive zone for construction. Seismicity at the site is considered to be moderate. The project is not located within an Alquist-Priolo Special Studies Zone, a known active fault zone, or an area designated as a geologic hazard.[101,102,103] Table 3.2-1 tabulates the faults nearest the site that have been identified as demonstrating

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96 Dibblee, T. W., Jr., *Geology of the Willow Springs and Rosamond Quadrangles, California*, U.S. Geological Survey, Bulletin 1089-C, 1963, 253 p.

97 Jennings, Charles W., Ibid.

98 Duell, Lowell, F. W., Jr., *Geohydrology of the Antelope Valley Area, California, and Design for a Groundwater Quality Monitoring Network*, U.S. Geological Survey, Water Resources Investigations Report 84-4081, 72 p., 1987.

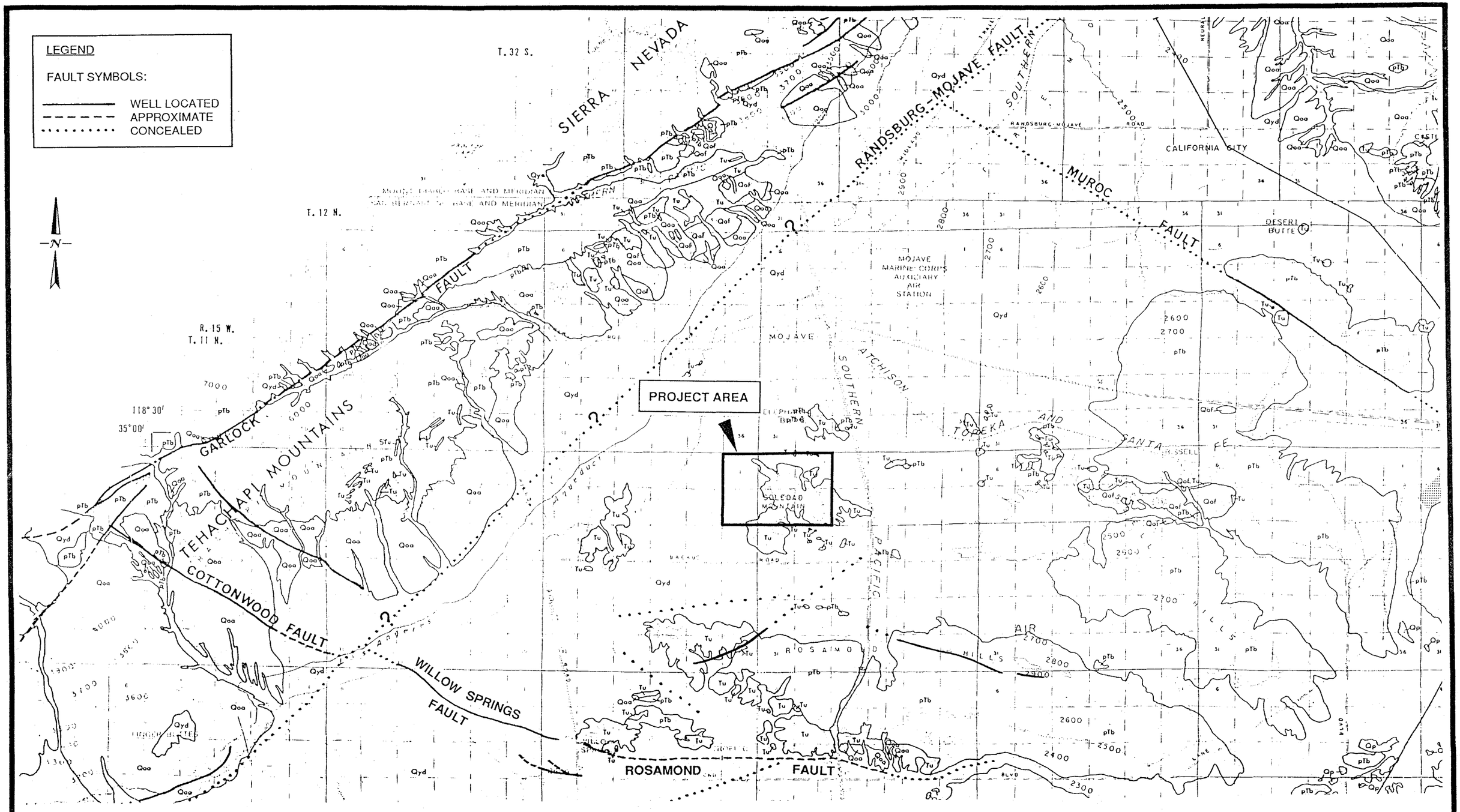
99 Jennings, Charles W., Ibid.

100 California Regional Water Quality Control Board - Lahonton Region, *Water Quality Control Plan for the Lahonton Region*, 1994.

101 Parks, William H., *Seismic Hazard Atlas, Soledad Mountain Map*, prepared for Kern County Council of Governments.

102 Jennings, Charles W., Ibid.

103 Dibblee, T. W., Jr., *Geology of the Willow Springs and Rosamond Quadrangles, California*, U.S. Geological Survey, Bulletin 1089-C, 1963, 253 p.



1 ½ 0 1 2 3 4 5 6 7 MILES

1 ½ 0 1 2 3 4 5 6 7 KILOMETERS

CONTOUR INTERVALS 100 and 1,000 FEET
National Geodetic Vertical Datum of 1929

MODIFIED FROM: DUELL, LOWELL F.W., 1987, U.S. GEOLOGICAL SURVEY, WATER RESOURCES INVESTIGATIONS REPORT 84-4081.
JENNINGS, CHARLES W., 1994, FAULT ACTIVITY MAP OF CALIFORNIA AND ADJACENT AREAS: DEPARTMENT OF CONSERVATION, DIVISION OF MINES AND GEOLOGY.

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

LOCAL FAULT MAP

DATE		EXHIBIT
11/96	0733.0010	3.2-13

TABLE 3.2-1

Ground Response for Bedrock Site Conditions

Fault	Distance from Site (miles)	Maximum Credible Earthquake[104]	Maximum Peak Credible Ground Acceleration[105]	Maximum Probable Earthquake	Maximum Peak Probable Ground Acceleration
Garlock (west segment)	10	7.8	0.297	6.50	0.144
Garlock (east segment)	21	7.8	0.132	6.25	0.046
Sierra Nevada	24	7.8	0.148	6.00	0.042
San Andreas	25	8.3	0.148	8.00	0.122
Lockhart	29	7.3	0.062	5.75	0.020
White Wolf	31	7.8	0.105	6.00	0.029

TABLE 3.2-2

Ground Response for Alluvium Site Conditions

Fault	Distance from Site (miles)	Maximum Credible Earthquake	Maximum Peak Credible Ground Acceleration	Maximum Probable Earthquake	Maximum Peak Probable Ground Acceleration
Garlock (west segment)	10	7.8	0.397	6.50	0.192
Garlock (east segment)	21	7.8	0.191	6.25	0.066
Sierra Nevada	24	7.8	0.217	6.00	0.062
San Andreas	25	8.3	0.218	8.00	0.180
Lockhart	29	7.3	0.092	5.75	0.030
White Wolf	31	7.8	0.158	6.00	0.043

surface displacement within Holocene time (past 11,000 years), their distance from the site,

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[104] Richter Scale, as measured at the epicenter.

[105] Measurements in gravity acceleration.

surface displacement within Holocene time (past 11,000 years), their distance from the site, the maximum credible earthquake magnitudes and related ground acceleration and the maximum probable earthquake magnitudes and related ground accelerations for conditions where the site is underlain by bedrock. Table 3.2-2 tabulates the data for the same faults depicted in Table 3.2-1, but for sub-surface conditions that consist of alluvium underneath the site. The maximum credible and probable earthquakes and their related ground accelerations are derived from utilization of the computer program, EQFAULT.[106]

The nearest fault that causes significant design planning for the Golden Queen Mine is the western segment of the Garlock Fault. The maximum credible earthquake along any particular fault is the largest magnitude earthquake that is possible to occur along that fault. The maximum credible earthquake along the western segment of the Garlock Fault is estimated to be magnitude 7.8. This magnitude earthquake is estimated to produce a peak horizontal ground acceleration of 0.397 gravity at areas where alluvium is present. The same magnitude earthquake would generate peak horizontal ground accelerations of 0.297 gravity at areas where bedrock is present. It is anticipated that at the Golden Queen Mine site in areas where relatively thin alluvium overlies bedrock, the peak horizontal ground acceleration would approximate the value for the bedrock.

The maximum probable earthquake along any particular fault is the largest magnitude earthquake that is likely to occur during the design life of a specific construction project that is being evaluated for seismic design. The maximum probable earthquake along the western segment of the Garlock Fault is estimated to produce a peak horizontal ground acceleration of 0.192 gravity at the Golden Queen Mine site where alluvium is present. The same magnitude earthquake would generate peak horizontal ground accelerations of 0.144 gravity at areas at the Golden Queen Mine site where bedrock is present. A computer analysis of historic earthquakes that may have subjected the site to ground shaking that occurred from 1800 to 1995 was conducted using the computer program EQSEARCH.[107] The estimated maximum horizontal peak site acceleration that affected the site during this time period for alluvial site conditions was determined to have been 0.083 gravity. Due to the nature of the mining project, most features of the project would not be impacted by the ground shaking.

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[106] Blake, Thomas, *EQFAULT, Version 2.01*, Computer Program, 1996.

[107] Blake, Thomas, *EQSEARCH, Version 2.20*, Computer Program, 1996

3.2.2.2 Direct/Indirect Impacts

According to Appendix G of the State CEQA Guidelines, a project would normally have a significant effect on the environment if it would:

(r) Expose people or structures to major geologic hazards.

For the purposes of this EIR/EIS, a significant impact would normally occur if the proposed project:

- is located within a known active fault zone, an Alquist-Priolo special Studies Zone, in an area designated as a geologic hazard area, or an area subject to geohazard safety measures in a local plan or ordinance;
- has a substrate which consists of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking;
- contains any evidence of static hazards, such as landsliding or slopes in excess of 15 percent, that could result in slope failure; or
- is located on or in the vicinity of soil that is likely to collapse or subside, as might be the case with old mining properties.

The site could be subject to ground shaking due to the earthquakes along identified potentially active faults. There are no known active faults, potentially active faults or Alquist-Priolo Special Studies Zones within the project area.[108,109,110] Regulatory requirements and project design features would reduce the impact to Less Than Significant. Project construction design, due to seismic hazards at the site, will be in accordance with Zone 4 seismic design provisions of the Uniform Building Code. Earthwork and fills will be constructed in accordance with geotechnical design specifications. Structures will not be located on unstable areas or slopes greater than allowable under the Building Code.

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108 Parks, William H., *Seismic Hazard Atlas, Soledad Mountain Map*, prepared for Kern County Council of Governments.

109 Jennings, Charles W., *Fault Activity Map of California and Adjacent Areas*: California Department of Conservation, Division of Mines and Geology, 1994.

110 Dibblee, T. W., Jr., *Geology of the Willow Springs and Rosamond Quadrangles, California*, U.S. Geological Survey, Bulletin 1089-C, 1963, 253 p.

A slope stability analysis[111] has determined the maximum allowable slope for mine walls. Analyses of maximum allowable slopes for the heap leach piles and the overburden piles have been conducted to prevent failure during a reasonably foreseeable seismic event, as well as static conditions. The impact to slope stability would be Less Than Significant.

An emergency response plan and training program will be developed which addresses seismic emergencies. Due to the seismic project design features and the nature of open pit mining, the seismic hazards would be Less Than Significant.

The substrate at the project site is volcanic and, therefore, is not subject to liquefaction.[112] There is no evidence of static hazards, such as landsliding. There is No Impact expected from static hazards.

There is the potential for significant impacts from the collapse of historical mine workings during a seismic event. Old underground mining areas will be excavated or remediated as part of the project operation. The impact would be reduced to Less Than Significant by regulatory requirements and proposed project design features.

3.2.2.3 Irreversible/Irretrievable Commitment of Resources

There is no irreversible/irretrievable commitment of geologic resources.

3.2.2.4 Cumulative Impacts

There are no cumulative seismic impacts associated with this project.

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111 Poulter, Don A., Glasgow Engineering Group, Inc., to Tony Casagranda, Golden Queen Mining Corporation, RE: Slope Stability for the Soledad Mountain Project Mine Overburden Disposal Piles, October 25, 1996, included in Appendix III, Attachment C.

112 Dibblee, T. W., Jr., *Geology of the Willow Springs and Rosamond Quadrangles, California*: U.S. Geological Survey, Bulletin 1089-C, 1963, 253 p.

3.2.2.5 Summary of Regulatory Requirements

The following is a summary of regulatory requirements which will be in place to regulate the project in regard to geology and seismology.

- Construction of buildings will be in accordance with Zone 4 seismic design provisions of the Uniform Building Code. Building plans require review and approval by Kern County.
- Earthwork and fills will be constructed in accordance with geotechnical design specifications and Kern County excavation and grading guidelines. Grading plans require review and approval by Kern County.
- The State Mining and Geology Board Reclamation Regulations[113] require that slopes of the pit and overburden piles be stable and conform with the surrounding topography and proposed end use. The slope stability analysis will be submitted to Kern County and the Office of Mine Reclamation for review and approval.
- An Emergency Response Plan to address problems related to a seismic occurrence will be developed by the applicant as part of the Hazardous Materials Business Plan filed with the Kern County Environmental Health Services Department.[114]

3.2.2.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The following is a summary of design features which are included by the applicant in addition to those required by regulations, and are included in the impact analysis of the project as related to geology and seismicity.

- Mine pit slopes will be evaluated throughout operations to assure that excavation occurs at a slope angle that is safe, considering actual rock strength and structural conditions encountered.
- Old underground mining areas will be excavated or remediated.

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[113] Title 14 CCR, Division 2, Chapter 8, Subchapter 1, Section 3704(d),(e),(f)

[114] Title 8 CCR, Section 5192

- Historical structures will be stabilized or removed by the applicant prior to site disturbance.

3.2.2.7 Recommended Mitigation

No mitigation measures are recommended.

3.2.2.8 Level of Significance After Mitigation (Residual Impacts)

The impacts due to seismic activities would be Less Than Significant as a result of regulatory and project design features.

There would be No Impacts resulting from liquefaction.

The impact from slope failure would be Less Than Significant due to regulatory and project design features.

Subsidence due to old mining properties would be Less Than Significant due to project design features.

3.3 Soils (Earth Resources)

3.3.1 Setting

A soil inventory was conducted between August 1989 and May 1990, and in May 1995.[115] The inventory identified four soil types in the area on and around Soledad Mountain, the characteristics of the soil types and the suitability of the soil and substrate material for reclamation. The four soil types are summarized as follows:

Arizo (104) - A sandy loam with 40 percent gravel and small stones grading to 50 percent stones and cobbles with depth. The soil is loose and friable with good permeability and high wind erosion potential. Soil salvage is limited by coarse fragments, texture and nutrient status. Arizo soil is generally located on alluvial toe slopes and fans around the base of Soledad Mountain.

Cajon (114, 116) - A light brown to brown, loose friable, gravelly loamy to loamy sand with fine roots containing 15 percent gravel. Gravel content decreases with depth. The soil permeability is very good, wind erosion potential is very high and salvage is limited due to coarse fragments. Cajon soils are located on alluvial fans and plains with 0 to 4 percent slopes to the west and south of the base of Soledad Mountain.

Rosamond (172) - A reddish to light brown, sandy loam to gravelly sandy loam with moderately slow permeability and high erosion potential. The soil contains 10 percent gravel and is located on the flat areas to the west of Soledad Mountain with slopes of 0 to 2 percent.

Torriorthents (185) - Weathered rock outcrops and shallow to deep residual soils from host rock on the mountain which are not of any one classification series. Soils consist of clay loam to cobbly, loamy sand with up to 60 to 70 percent rocks and cobbles, with permeabilities ranging from moderately slow to moderately rapid, and moderate erosion potential.

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[115] Bamberg Associates, *Biological and Soil Resource Evaluation for Soledad Mountain Project*, November 1995, included as Appendix III, Attachment B.

Soils on and around Soledad Mountain have been mapped by the United States Soil Conservation Service.[116] A general soil map of the site by Bamberg Associates is included as Exhibit 3.3-1. The numbers attached to the soil types above are used on the general soil map to indicate the location of each soil.

Soils contain natural biological components such as algae and fungi which contribute to plant development.

In spite of steep slopes on the mountain, there is minimal evidence of slope or soil instability in the form of slides, soil creep or solifluction lobes. None of the soils contain enough clay to be subject to shrinking or swelling.

3.3.2 Direct/Indirect Impacts

According to Appendix G of the State CEQA Guidelines, a project would normally have a significant effect on the environment if it would:

(q) Cause substantial flooding, erosion or siltation.

For the purposes of this EIR/EIS, a significant impact would occur if implementation of the proposed project would:

- result in substantial soil erosion or loss of topsoil; or
- would violate the soil conservation element of the applicable General Plan or Specific Plan.

Arizo soil is located in the area of the proposed heap leach pad and other facilities on the north side of the mountain. Construction in this area would result in the disturbance of approximately 140 acres mantled by Arizo type soils and 95 acres covered by Torriorthents.

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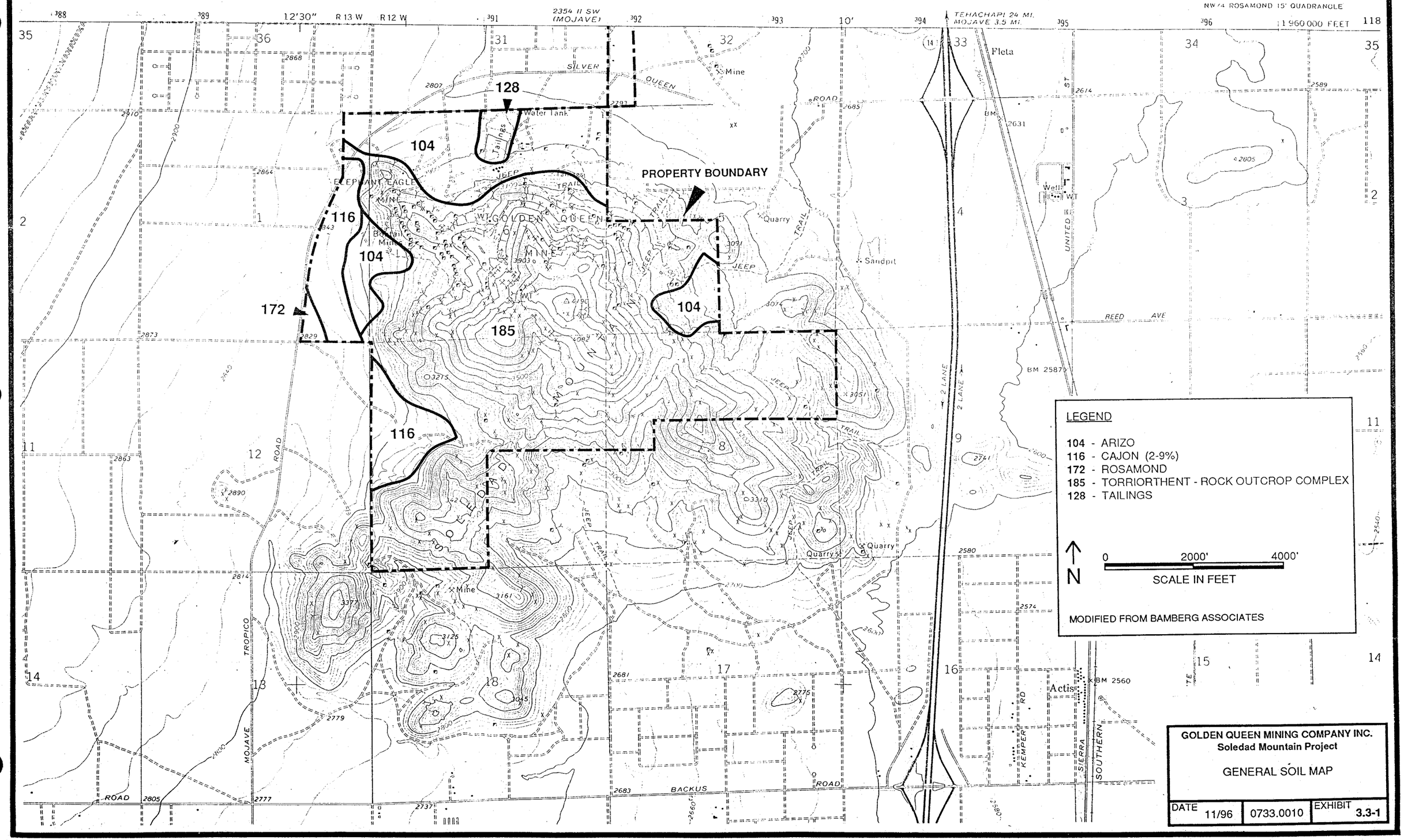
[116] U.S. Department of Agriculture, Soil Conservation Service, *Soil Survey of Kern County, California, Southeastern Part*, 1981.

SOLEDAD MTN. QUADRANGL
CALIFORNIA—KERN CO.
7.5 MINUTE SERIES (TOPOGRAPHIC
NW/4 ROSAMOND 15' QUADRANGLE



GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

GENERAL SOIL MAP

DATE		EXHIBIT
11/96	0733.0010	3.3-1

The heap leach pad proposed for the west side of the project area will lie in an area covered by Arizo, Cajon and Rosamond soils. Construction of the western heap leach pad will disturb approximately 80 acres of soil. The Arizo and Cajon soils from this area will also act as growth media and will be removed and stockpiled for use during reclamation.

The proposed open pit mine and overburden piles are to be located in areas covered by Arizo soil and Torriorthents. Approximately 555 acres of Torriorthents soil and 40 acres of Arizo soil will be disturbed.

The impact of the disturbance of approximately 260 acres of Arizo, Cajon and Rosamond soils and 650 acres of Torriorthent soils is potentially Significant. Regulatory requirements and project design features will reduce the impact to Less Than Significant.

The impact of erosion and loss of topsoil is potentially Significant. Regulatory requirements and project design features will reduce the impact to Less Than Significant.

3.3.3 Irreversible/Irretrievable Commitment of Resources

The loss of soil over approximately 910 acres, except for the estimated 200,000 cubic yards salvaged from approximately 220 acres for use as growth medium, is an irretrievable commitment of soil resources.

3.3.4 Cumulative Impacts

The proposed actions would result in loss of soil to approximately 910 acres. Approximately 419 acres will be reclaimed using salvage soil and imported growth media. The proposed Hemperly/ Warnack aggregate quarry would result in the loss of approximately 100 acres of soil for the surface mining operation. An unspecified portion of the quarry will be reclaimed using salvage soil, if available. The proposed residential development may result in disturbance of 200 acres. The cumulative long-term disturbance may be up to 791 acres. The cumulative loss of soil resources is considered Less Than Significant.

3.3.5 Summary of Regulatory Requirements

The following is a summary of regulatory requirements which will be in place to regulate the project in regard to soil disturbance. These regulatory requirements have been included for the purposes of the preceding impact analysis.

- Up to six inches of Arizo and Cajon type soils will be removed from areas to be disturbed and stockpiled as growth media for use in reclamation and revegetation.[117] The reclamation plan will be reviewed and approved by Kern County.
- A Site Drainage Plan has been prepared to control erosion and soil stabilization.[118] The Drainage Plan has been submitted to Kern County for review and approval.
- Soils in areas subject to minimal disturbance will be left in place and stabilized, as necessary, in accordance with the reclamation plan reviewed and approved by Kern County.

3.3.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The following is a summary of design features which are included by the applicant in addition to those required by regulations, and are included in the impact analysis of the project on soils.

- Surface disturbance outside the project area will be kept to a minimum by clearly delineating operating areas to limit roads and vehicle traffic outside designated areas.
- Growth media stockpiles will be stabilized by allowing germination of seeds naturally contained in the soil.
- The feasibility of inoculation of soil with biological components will be investigated in test plots.
- Site drainage will be inspected periodically to assure that excessive erosion is not occurring. In the event excessive erosion is identified, the drainage plan will be revised in consultation with Kern County.

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[117] Title 14 CCR, Section 3711

[118] Title 14 CCR, Section 3705(i)

3.3.7 Recommended Mitigation

No mitigation measures are recommended.

3.3.8 Level of Significance After Mitigation (Residual Impacts)

The permanent loss of soil would be Less Than Significant as a result of regulatory requirements and project design features.

3.4 Hydrology (Water Resources)

3.4.1 Surface Water

3.4.1.1 Setting

The site is located in the northern portion of the Antelope Valley just south of the Fremont Valley. The average annual precipitation at the site is approximately 6.14 inches. Surface drainage at the project location is greatly influenced by the site topography which varies from steep, rugged hillsides on the upper elevations of Soledad Mountain to a gently sloping desert floor on the flanks. Drainage in the project area on the north side of Soledad Mountain is through a series of deeply incised gullies and channels which are primarily fed by precipitation from winter storms and infrequent summer thunderstorms. Runoff from the project area is channeled to the north, northwest and northeast of Soledad Mountain, eventually draining north and east to the Gloster and Chaffee Hydrologic Areas of the Antelope Hydrologic Unit.[119]

The proposed project area is not located in a 100-year flood plain based on a map by the Federal Emergency Management Agency.[120] The nearest 100-year flood plain lies along Silver Queen Road one-quarter mile northeast of the proposed heap leach pad. Silver Queen Road, northeast and east of the project site, is designated zone A, defined as an area of 100-year flood where the base flood elevations and flood hazard factors have not been determined.

The project area does not contain any surface waters, including springs, seeps or intermittent streams. The nearest intermittent stream is located approximately three miles west of the project site. Oak Creek, an intermittent stream which is one of the primary sources of recharge in the area, is located approximately five miles west of the project site. All precipitation which does not evaporate will percolate into the Antelope Valley groundwater (the designated receiving water). It is estimated that approximately 5 percent of the precipitation in the groundwater basin reaches the groundwater. The majority is taken up by natural

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119 California Regional Water Quality Control Board - Lahonton Region, *Water Quality Control Plan for the Lahonton Region*, 1994.

120 Federal Emergency Management Agency, *Flood Insurance Rate Map, Kern County, California, Panel 1825 of 2075*, 1995.

processes such as evapotranspiration.[121] No site-specific information on water quality surface flow is available.

Surface water beneficial uses identified within the greater Antelope Hydrologic Unit area include municipal, agricultural, groundwater recharge, water contact recreation, non-contact recreation, warm freshwater habitat and wildlife habitat.[122] Minor wetlands have been reported well outside the project area with similar beneficial uses.

As a result of the proposed project, overburden materials will be removed from the open pit mine and deposited in piles in the project area. Studies have been conducted to determine the acid generation potential of the overburden materials in order to evaluate their potential effect on the surface water and groundwater in the area. To evaluate the acid generation potential of the overburden materials, a total of 11 samples of the rock types present at the site were collected and tested to determine the acid generation potential. The laboratory analyses of the 11 samples and calculations are presented in Table 3.4-1.

The acid generation/neutralization potential for the samples was determined by the difference between the neutralization potential and the true acid generating potential based on sulfide content ($NP\text{-}AP_{sulfide}$). The results of this method are presented in Column 7 of Table 3.4-1. According to this method, the samples have net neutralization potentials which range from 0.7 to 5.0 tons calcium carbonate equivalent per 1,000 tons of rock and an average net neutralization potential of 2.6 tons calcium carbonate per 1,000 tons of rock. The pH of the saturated paste for the samples ranges from 4.85 to 8.33 and averages 6.74 (Column 6, Table 3.4-1).

A rock material is considered potentially toxic if it has a net neutralization potential of -5.0 (5.0 less than zero) tons of calcium carbonate equivalent or less per 1,000 tons of material and

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121 Duell, Lowell, F. W., Jr., *Geohydrology of the Antelope Valley Area, California and Design for a Groundwater Quality Monitoring Network*: U.S. Geological Survey, Water Resources Investigations Report 84-4081, 72p., 1987.

122 California Regional Water Quality Control Board - Lahonton Region, *Water Quality Control Plan for the Lahonton Region*, 1994.

TABLE 3.4-1

Acid Generation/Neutralization Potential

1	2	3	4	5	6	7
Sample #	Rock Type	Date Collected	Neutralization Potential tons/1000T	Acid Generating Potential Sulfide tons/1000T	pH-Saturated Paste	Net Neutralization Potential NP-AP sulfide
GQ/AB-1	Quartz Latite	09/18/95	2.9	<0.1	7.12	2.8
GQ/AB-2	Pyroclastic	09/18/95	3.9	0.4	6.42	3.5
GQ/AB-3	Quartz Latite	09/18/95	5.1	<0.1	7.22	5.0
GQ/AB-4	Pyroclastic	09/18/95	2.2	1.2	5.37	1.0
GQ/AB-5	Rhyolite	09/18/95	3.7	<0.1	8.33	3.6
GQ/AB-6	Quartz Latite	09/18/95	2.6	0.1	7.44	2.5
GQ/AB-7	Rhyolite	09/18/95	4.7	1.2	6.48	3.5
GQ/AB-8	Pyroclastic	09/18/95	3.0	<0.1	6.73	2.9
GQ/AB-9	Pyroclastic	09/18/95	0.9	0.2	6.99	0.7
GQ/AB-10	Rhyolite Porphyry	09/18/95	<1	0.2	4.85	0.8
GQ/AB-11	Rhyolite	09/18/95	2.2	<0.1	7.20	2.1
AVERAGE			2.9	0.3	6.74	2.6

acid-toxic if the pH of the pulverized rock slurry is less than 4.0 (Column 6, Table 3.4-1).[123] All of the samples showed net positive neutralization potential and pH values greater than 4.0. Consequently, none of the samples evaluated by this method would be considered potentially toxic by acid generating potential or acid-toxic by pH level.

3.4.1.2 Direct/Indirect Impacts

According to Appendix G of the State CEQA Guidelines, a project would normally have a significant effect on the environment if it would:

(f) Substantially degrade water quality;

(g) Contaminate a public water supply.

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[123] Sobek, A. A., W. A. Schuller, J. R. Freeman and R. M. Smith, *Field and Laboratory Methods Available to Overburdens and Minesoils*: U.S. Environmental Protection Agency, EPA Document 6001 Z-78-054, 203p.

For the purposes of this EIR/EIS, a significant impact would occur if implementation of the proposed project would:

- locate project components in flood-prone areas, based on whether historical flood records or potential risks relating to existing or planned changes to flood patterns or control measures.
- alter the existing drainage pattern of the site or area in a manner which results in flooding, erosion or siltation, onsite or offsite; or
- cause direct or indirect wastewater discharges in quantities which would result in acute or eventual exposures to hazardous materials, or in quantities which would adversely affect human health, wildlife or plant species, or otherwise substantially degrade surface water quality;

The project site is not located in a flood-prone area. Therefore, No Impacts are expected from flooding as a result of the project location.

Immediately north of the project site, where the bedrock plunges below the alluvium, the groundwater table is at a depth of 180 feet below the surface. No bodies of surface water are located near the site and the site is not in a flood plain, all of which combine to minimize the potential for surface water contamination.

Based on the evaluations of the acid generation/neutralization potential and pH data for the representative overburden samples, the acid generating potential is considered to be minimal. Therefore, the overburden materials on the surface of the ground would have a Less Than Significant impact on surface water.

The Proposed Action will comply with all applicable regulations relating to hydrology and water quality. The Lahontan Regional Water Quality Control Board will regulate project systems with the potential to discharge liquids to surface or sub-surface waters. The review and permitting process will follow requirements of Title 23 CCR, Chapter 15, Article 7 (Mining Waste Management), the California Health and Safety Code, Chapter 6.67 (Above Ground Storage of Petroleum), the California Porter-Cologne Water Quality Act of 1985 and other applicable laws and regulations as described in Sections 1.6.3 of this document.

Surface drainage will be modified according to the Drainage Plan[124] which will require review and approval by Kern County prior to implementation. The plan is designed to control erosion, prevent flooding and maintain stormwater onsite. Diversion ditches will prevent stormwater run on onto the heap leach pad or solution processing areas.

Surface drainage will be altered by the proposed project and the potential impact is Significant. The impact would be reduced to a level of Less Than Significant by regulatory and design features as described in the Drainage Plan.[125]

The heap leach pads, sodium cyanide solution storage tank and conveyer system which contain sodium cyanide will have low permeability liners for solution containment. Sodium cyanide will be enclosed within tanks, piping and within the heap.

Above ground storage tanks and chemical storage will have secondary containment. Visual inspections will be conducted for detection of any leakage from the tanks or containment facility. An emergency response plan for spill response is required as part of the Hazardous Materials Business Plan.

Historical mining waste and tailings, which may degrade surface water discharge, will be tested and disposed of offsite or used onsite and removed from exposure to storm water.

There is a potential for direct or indirect wastewater discharges, in particular the cyanide solution, which would result in acute or eventual exposures to hazardous materials in quantities which would adversely affect human health, wildlife or plant species. The discharge of sodium cyanide to land would be a Significant impact. Regulatory requirements and project design features relating to hydrology and water quality are summarized above and discussed in Section 2.0. and listed in Sections 3.4.1.5 and 3.4.1.6. As a result of these regulatory requirements and design and construction considerations, the impacts to surface water resulting from the Proposed Action would be reduced to Less Than Significant.

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124 Poulter, Don A., Glasgow Engineering Group, Inc., *Soledad Mountain Project Grading Plan Layout and Design Criteria Summary*, January 13, 1997, included as Appendix III, Attachment E.

125 Ibid.

3.4.1.3 Irreversible/Irretrievable Commitment of Resources

The surface drainage pattern would be permanently altered. However, the Site Drainage Plan, which will be approved by Kern County and will fulfill the Surface Mining and Reclamation Act of 1975 (SMARA) requirements for stabilization of drainages and erosion control, would assure that the new drainage pattern will not cause flooding, would prevent undue erosion and unnatural surface runoff and would allow for percolation of storm water for normal recharge of the groundwater. Compliance with Waste Discharge Requirements would provide protection of surface water and groundwater quality.

3.4.1.4 Cumulative Impacts

There are no cumulative impacts to surface hydrology as the result of this project.

3.4.1.5 Summary of Regulatory Requirements

The following is a summary of regulatory requirements which will be in place to regulate the project in regard to surface water drainage and quality. These regulatory requirements have been included in the project for the purposes of the preceding impact analysis.

- A Report of Waste Discharge will be filed with the Lahontan Regional Water Quality Control Board in accordance with Title 23 CCR, Chapter 15, Article 7. The Lahontan Regional Board will implement the following requirements through detailed design review, issuance of waste discharge requirements and yearly inspections.
  - Soil and foundation materials under the liner will be tested.
  - Low permeability liner systems will be installed by experienced contractors with quality assurance being provided by an independent engineering firm.
  - A perimeter berm around the heap leach pads designed to contain solution from the leach pads and the 100-year, 24-hour storm event will be installed.
  - Drainage or diversion ditches outside the processing solution area will be built to preclude entry of storm runoff into the system.
  - Storm water runoff, the vadose zone (the unsaturated zone between the liner and groundwater) and groundwater will be monitored for constituents of concern using statistical analysis.

- Quarterly reports on monitoring results and the current status of operations will be submitted to the Lahontan Regional Board.

- Storage in above ground storage tanks will be regulated by the Lahontan Regional Board, in accordance with the California Health and Safety Code, Chapter 6.67 and the California Porter-Cologne Water Quality Act of 1985, with the following:
  - Development of a detailed Spill Prevention, ~~Countermeasure~~ Control and ~~Control~~ Countermeasure Plan prepared in accordance with the guidelines of 40 CFR, Part 112;
  - Frequent visual inspections for leakage or deterioration of tanks, fittings or containment facilities;
  - Secondary containment; and
  - Grading of truck-transfer areas to contain potential spills.
- Storage of hazardous chemicals will comply with the spill control and secondary containment provisions found in Section 8003.1.7 of the 1994 Uniform Fire Code.
- A General Construction Activity Storm Water Permit will be obtained from the Lahontan Regional Board to regulate storm water flows at the site during construction.
- A Site Drainage Plan for the control of surface flow during operations has been submitted to Kern County.
- The BLM will regulate the surface drainage modifications and erosion control measures through review, approval and issuance of the Plan of Operations. Annual inspections will assure compliance.
- Kern County will regulate surface mining and reclamation activities related to stabilization of drainage and erosion control to assure consistency with SMARA requirements. Kern County will conduct inspections annually to assure compliance.

3.4.1.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The following is a summary of design features which are included by the applicant in addition to those required by regulations, and are included in the impact analysis of the project on surface water drainage and quality.

- The evaporation of water and, therefore, the need for makeup water will be minimized by the use of enclosed solution storage.

- The overliner protective material placed in direct contact with the HDPE liner will not exceed one and one-half inches in diameter, and will not contain hard, sharp, angular pieces.
- Additional erosion prevention techniques include:
  - Site drainage will be retained onsite.
  - Site roads and drainages will be inspected by Golden Queen personnel after rainfall events which result in surface flow to ensure erosion prevention is maintained and upgraded as needed.
  - Drainage from the tops of overburden piles will be directed away from the slopes toward the pit.
  - Salvaged growth media will be stockpiled away from areas of concentrated drainage.
  - Reclamation of disturbed areas will occur as soon as possible.
- A cyanide destructing compound (e.g., hydrogen peroxide or calcium hypochlorite) will be maintained onsite for use in the event that a spill occurs.
- Historical mining wastes and tailings will be tested and used onsite or, if indicated, disposed of at an offsite permitted disposal facility, removing any future threat of surface water contamination.
- The Lahontan Regional Board will be consulted prior to the use of dust suppression or soil stabilization chemicals.

3.4.1.7 Recommended Mitigation

No mitigation measures are recommended.

3.4.1.8 Level of Significance After Mitigation (Residual Impacts)

There would be No Impact related to flooding from the proposed project.

The impact to surface water quality as a result of the placement of overburden directly on the ground surface would be Less Than Significant.

Impacts to surface drainage would be Less Than Significant as a result of regulatory requirements and design features.

The potential for discharge of hazardous materials to land would be Less Than Significant as a result of regulatory requirements and design features.

3.4.2 Groundwater/Water Supply

3.4.2.1 Setting

According to recent published reports, the project site is located in the northern area of the greater Antelope Valley Groundwater Basin in the Chaffee subunit[126] or in the Gloster subunit[127] as shown in Exhibit 3.4-1. Earlier work by Bloyd places the project site in the Gloster and Chaffee subunits in the Fremont Valley Groundwater Basin which is located immediately north of the Antelope Valley.[128] The Gloster subunit is separated from the remainder of the Antelope Valley Groundwater Basin by the Rosamond Hills except in an area west of Willow Springs.[129]

Groundwater recharge is primarily from the Tehachapi Mountains via intermittent streams, such as Cache Creek and Oak Creek. Bloyd calculated the recharge to the Fremont Valley, including the Gloster and Chaffee subunits, as approximately 18,000 acre feet per year. Hydrographs of water wells located in the vicinity of Soledad Mountain indicate that the groundwater table has been relatively stable over the last 16 years, lowering at the rate of approximately one-quarter to one-half foot per year. Some of this change can be related to wet vs. dry periods of rainfall with a flattening or slight recovery during wet periods and a steeper drop during drought conditions. Exhibit 3.4-2 shows rainfall totals in the vicinity of Mojave and Exhibit 3.4-3 shows a hydrograph for a well located five miles east-southeast of the project area in the same groundwater subunit.

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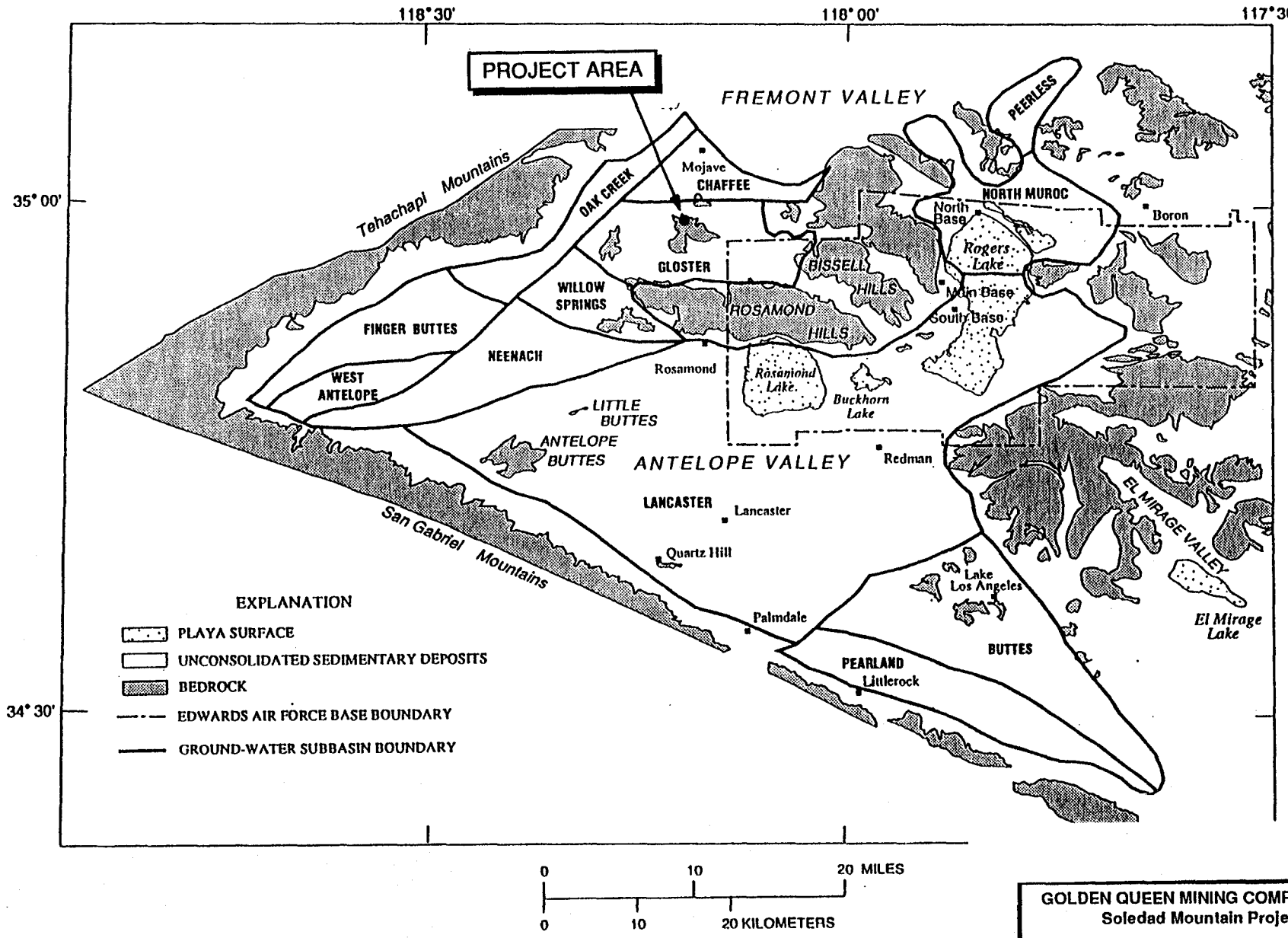
[126] California Regional Water Quality Control Board - Lahonton Region, *Water Quality Control Plan for the Lahonton Region*, 1994.

[127] Duell, Lowell, F. W., Jr., *Geohydrology of the Antelope Valley Area, California, and Design for a Groundwater Quality Monitoring Network*: U.S. Geological Survey, Water Resources Investigations Report 84-4081, 72p., 1987.

[128] Bloyd, R. M., Jr., *Water Resources of the Antelope Valley - East Kern Water Agency Area, California*: U.S. Geological Survey, Water Resources Division, Open File Report 67-21, 69p., 1967.

[129] Ibid.



Ground-water subbasins in Antelope Valley (from Bloyd, 1967).

GOLDEN QUEEN MINING COMPANY INC. Soledad Mountain Project		
REGIONAL GROUNDWATER BASINS		
DATE 11/96	0733.0010	EXHIBIT 3.4-1

RAINFALL DATA, MOJAVE STATION NO. 45756

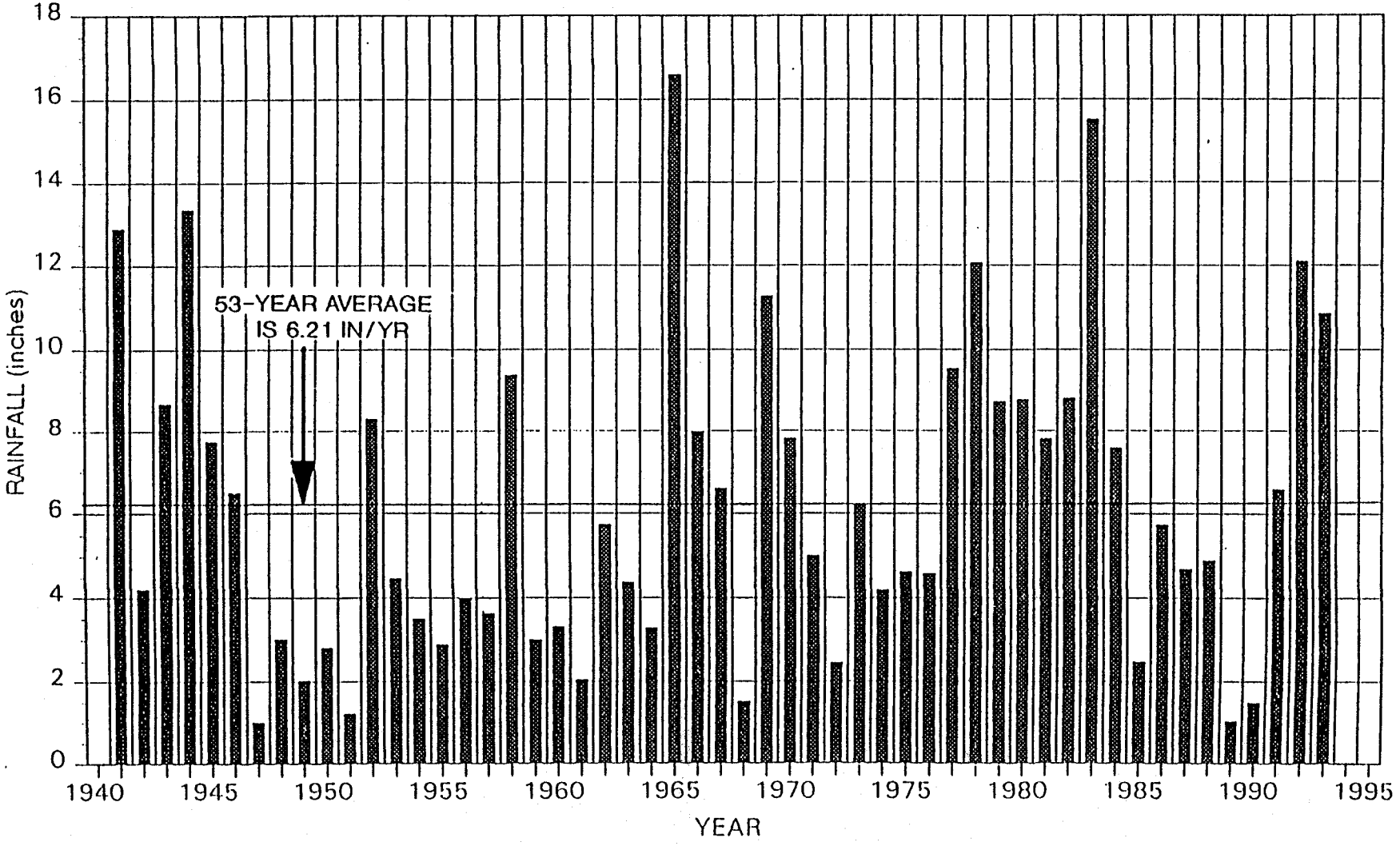


EXHIBIT 3.4-2
0733.0010

HYDROGRAPH

Well No. T10N/R 12W-13H1

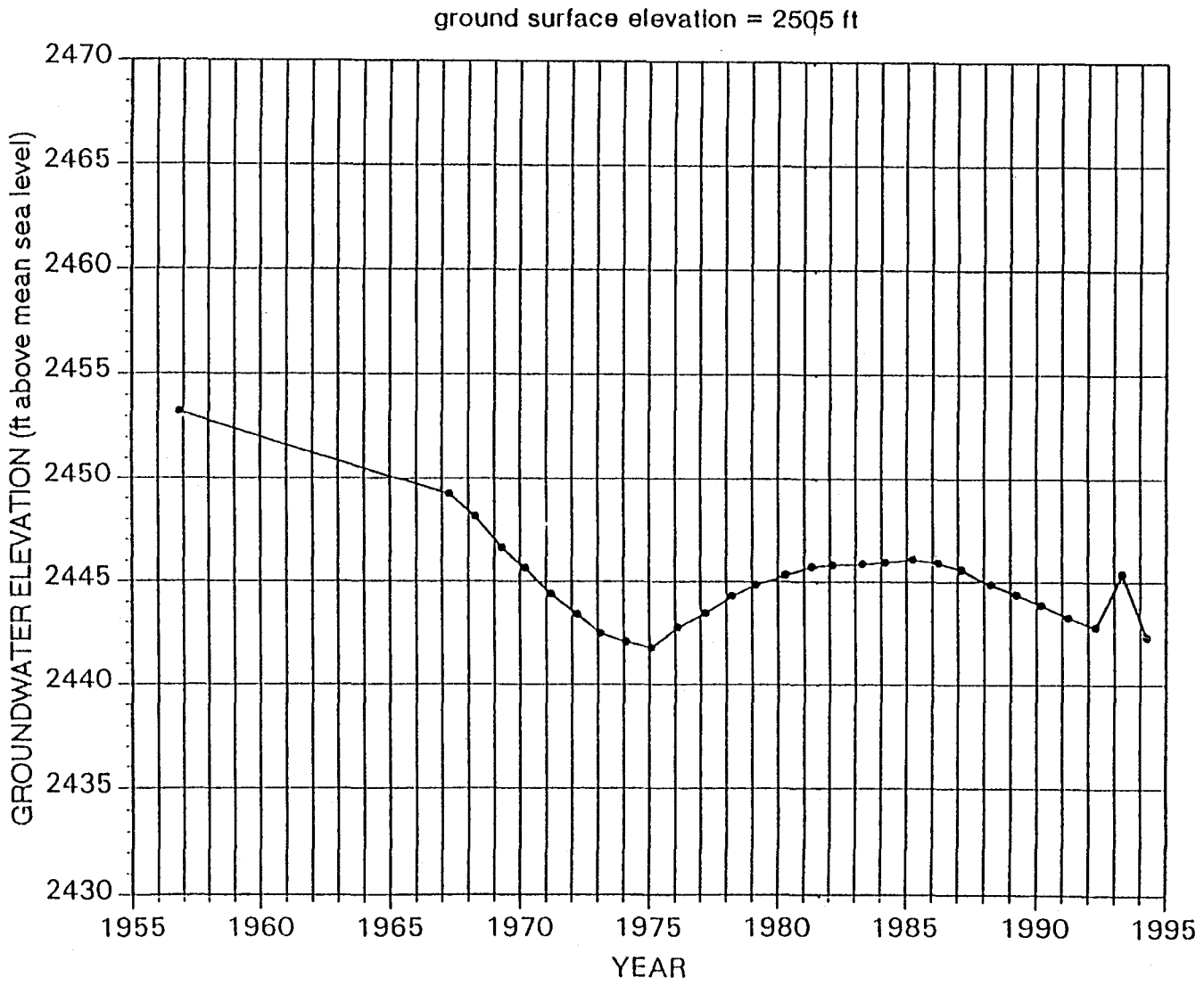


EXHIBIT 3.4-3
0733.0010

Slade calculated a perennial yield for the Chaffee subunit of approximately 300 acre feet/year over the period from 1970 through 1990.[130] Perennial yield is the quantity of groundwater that can be pumped annually without any change in groundwater levels or net change in groundwater storage during the base period. This calculation considers existing groundwater withdrawal. There have been no significant changes in the groundwater basin since 1990.

The primary aquifer in the area is the alluvium which fills the areas between bedrock outcrops. The alluvial aquifer is generally poorly consolidated to unconsolidated and composed of silt, sand, gravel and boulders, as described in the Hydrology Study Summary for the Soledad Mountain Project.[131] Limited amounts of groundwater may occur in the fractured crystalline and volcanic bedrock that forms Soledad Mountain although groundwater has not been noted in the exploration boreholes or the mine shafts. Known water wells in the vicinity of the project are shown in Exhibit 3.4-4. The groundwater gradient is generally from west to east, with local southwest components in the vicinity of the project site as shown on the groundwater elevation map constructed from 1990 groundwater data (Exhibit 3.4-5).

Groundwater users in the Gloster and Chaffee subunits include California Portland Cement Company, Cactus Gold Mines Company, Mojave Public Utility District and individual residences. The Cactus Gold Mines facility is scheduled to close in the near future and will discontinue use of groundwater from the area basin. Very little water is used in the area for crop irrigation. The main independent use of water is domestic. Mojave Public Utility District maintains two wells approximately four miles northeast of the project area, in Section 22, Township 11 North, Range 12 West, SBBM, although these are not the primary wells for the Utility District. One well is used when needed and the other well is idle. Most of the Mojave municipal water is currently obtained from other wells north of Mojave and from the Antelope Valley East Kern Water District (AVEK) which provides imported surface water from areas outside the local groundwater basin recharge area via pipeline. Total groundwater use in the area west, north and east of the project site is estimated to be less than 1,000 acre feet per year.

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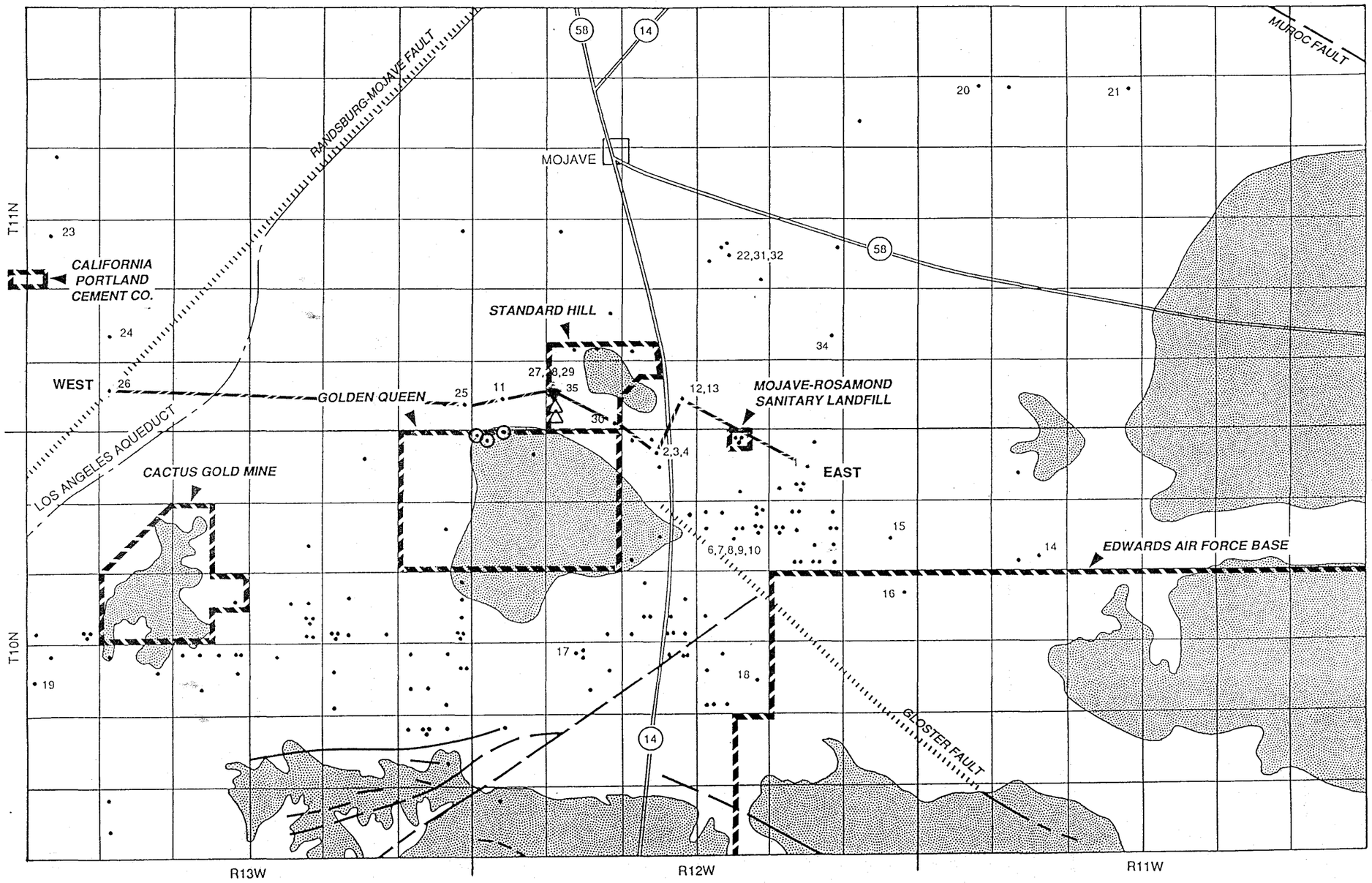
[130] Slade, Richard C. and Associates, *Perennial Yield Assessment of Chaffee Subunit in the Fremont Valley Groundwater Basin*, unpublished draft report prepared for Mojave Public Utilities District and California City, 1994.

[131] Water, Waste & Land, Inc., *Hydrology Study Summary for the Soledad Mountain Project*, July 1990, included in Appendix V.



LEGEND

- GOLDEN QUEEN WATER WELL
- PROPOSED WATER WELL LOCATION
- WELL LOCATION
- CONSOLIDATED / BASEMENT ROCK
- FAULT - Dashed where approximate; dotted where concealed
- FACILITY BOUNDARY
- LINE OF CROSS-SECTION
- MONITOR WELL

N

0 1 2
Scale In Miles

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

WELL LOCATION MAP

DATE		EXHIBIT
11/96	0733.0010	3.4-4

Historically, water supply wells have been used to supply irrigation water for alfalfa farms. From approximately 1959 through 1970, the Jameson Ranch, located in Sections 22, 26, 27 and 31, Township 11 North, Range 12 West, SBBM, used approximately 2,500 gallons of water per minute. The drawdown was 40 to 50 feet at the center of the depression.[132] A radius of approximately two and one-half miles showed a drawdown of approximately 10 feet. After pumping ceased in the early 1970's, the water table rose approximately 35 feet around the water well within five years, then continued to rise more slowly after that.

Available data indicates that total dissolved solids in the groundwater of the area ranges from approximately 200 to 500 mg/l.[133] The dominant anions appear to be sulfate and bicarbonate with concentrations on the order of 100 to 200 mg/l. Chloride concentrations are in the range of 10 to 40 mg/l. Calcium is the predominant cation with concentrations generally ranging from 50 to 100 mg/l followed by sodium with concentrations on the order of 40 to 50 mg/l. Arsenic concentrations in groundwater in the vicinity of Soledad Mountain generally exceed the maximum contaminant level of 0.05 mg/l arsenic in drinking water. Beneficial uses of the groundwater basin include municipal, agricultural, industrial and freshwater replenishment.[134]

Golden Queen drilled a monitoring well near the site of the proposed heap leach pad which encountered groundwater at approximately 220 feet and reached bedrock at a depth of approximately 250 feet.

In October 1996, Golden Queen drilled a water supply well located north of the project site in Section 32, Township 11 North, Range 12 West, SBBM, as shown on Exhibit 3.4-4. The well was drilled to a depth of 300 feet below ground surface and the static water level was measured at 177 feet below ground surface. A depth to groundwater map is shown as Exhibit 3.4-6.

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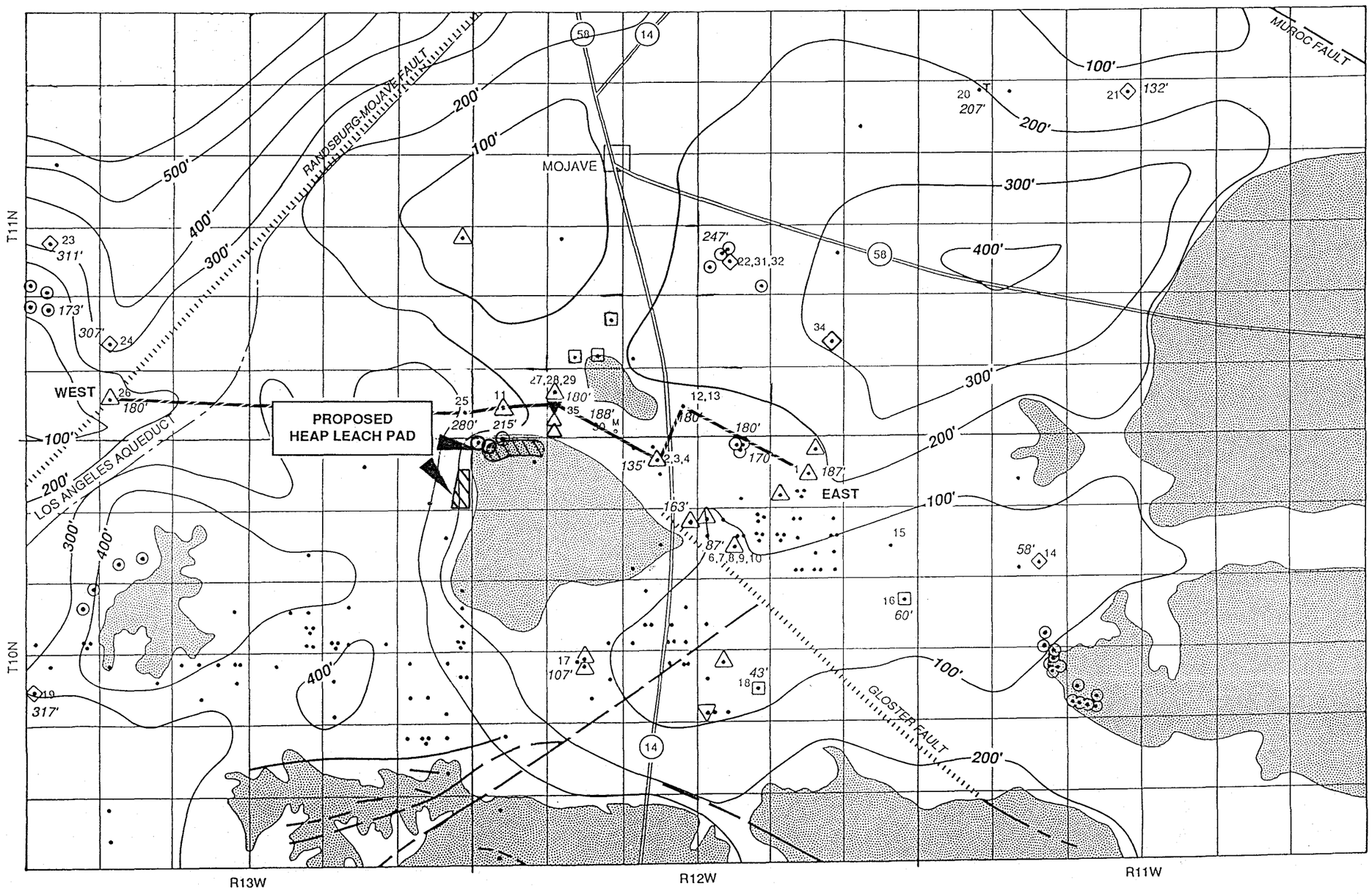
132 Yelverton, Charles, *Groundwater Resources Investigation, Tract 3554, Kern County, California*, unpublished.

133 Water, Waste & Land, Inc., *Hydrology Study Summary for the Soledad Mountain Project*, July 1990, included in Appendix V.

134 California Regional Water Quality Control Board - Lahonton Region, *Water Quality Control Plan for the Lahonton Region*, 1994.



LEGEND

- GOLDEN QUEEN WATER WELL
- PROPOSED WATER WELL LOCATION
- WATER WELL
- MONITOR WELL
- DOMESTIC WELL
- DRILLED OBSERVATION WELL
- DRILLED UNUSED WATER TABLE WELL
- INDUSTRIAL WELL
- T TEST WELL
- M MUNICIPAL WELL
- 100' CONTOUR LINE
- CONSOLIDATED / BASEMENT ROCK
- FAULT - Dashed where approximate; dotted where concealed
- LINE OF CROSS-SECTION

N

0 1 2
Scale In Miles

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

DEPTH TO GROUNDWATER - 1990

DATE		EXHIBIT
11/96	0733.0010	3.4-6

The water supply test well was pump tested at multiple rates from 500 to 750 gpm and was analyzed for determination of aquifer parameters as well as long-term reliability as a water supply source. The aquifer appears capable of supplying the required amount of water from this well.[135] However, a total of up to three water supply wells, located in Section 32, Township 11 North, Range 12 West, SBBM, will be used.

One well located one to one and one-half miles northwest of the project site in Section 36, Township 11 North, Range 13 West, SBBM, known as one of the Gillis wells, reportedly tested at rates of 750 gpm and 900 gpm. This well is located in a much thicker part of the alluvium with greater than 630 feet penetrated and 250 to 350 feet of thickness below the water table. Other wells in the immediate vicinity are primarily used for residential benefit, are mostly very low yield wells, and were drilled and completed to a depth of less than 300 feet. Other industrial wells are located east, north and west of Soledad Mountain and have yields ranging from 250 to 1,000 gpm. A summary of existing water well data is included as Exhibit 3.4-7. The relationship of groundwater elevation and known bedrock is shown in cross section on Exhibit 3.4-8.

3.4.2.2 Direct/Indirect Impacts

According to Appendix G of the State CEQA Guidelines, a project would normally have a significant effect on the environment if it would:

(h) Substantially degrade or deplete groundwater resources;
(i) Interfere substantially with groundwater recharge.

For the purposes of this EIR/EIS, a significant impact would normally occur if implementation of the proposed project would:

- substantially degrade groundwater quality interfere substantially with groundwater recharge or deplete groundwater resources in a manner that would cause water-related hazards, such as subsidence.

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[135] WZI Inc., *Groundwater Supply Evaluation, Soledad Mountain Project*, December 1996, included in Appendix V.

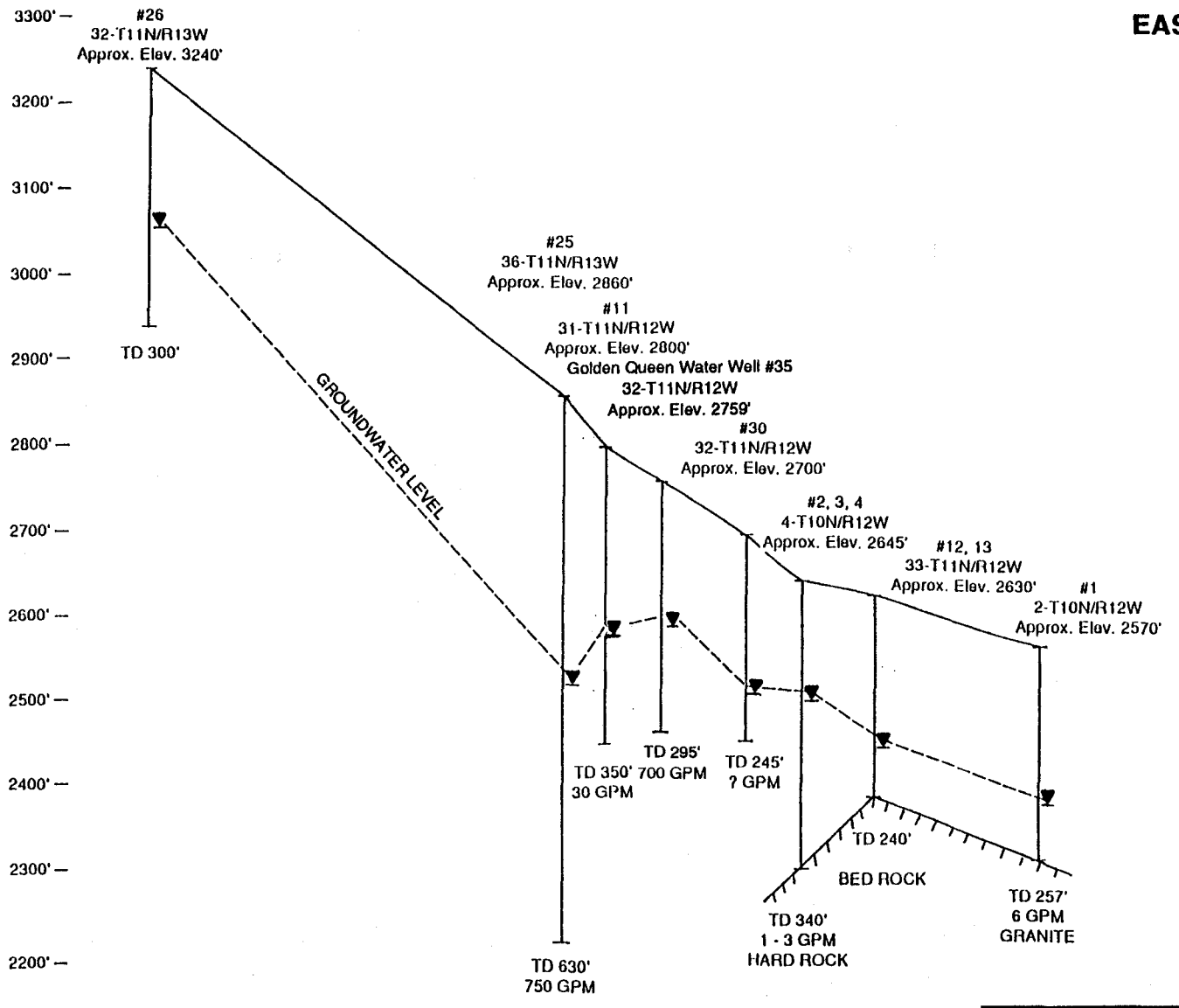
SUMMARY OF EXISTING WATER WELL DATA

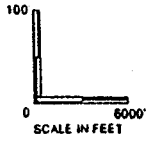
REF NO.	LOCATION	TOTAL DEPTH (FT)	DEPTH TO WATER (FT)	REPORTED YIELD (GPM)	COMMENTS
1	T10N, R12W, SEC 2	257	187		TERMINATED ON "GRANITE"
2	T10N, R12W, SEC 4	340	135		TERMINATED ON "HARD ROCK"
3	T10N, R12W, SEC 4	275	175	3	
4	T10N, R12W, SEC 4	222	186	1	TERMINATED ON "HARD ROCK"
5	T10N, R12W, SEC 9	238	163	6	ALLUVIUM TOTAL DEPTH
6	T10N, R12W, SEC 10	200	87	30	ALLUVIUM TOTAL DEPTH
7	T10N, R12W, SEC 10	204	93	35	ALLUVIUM TOTAL DEPTH
8	T10N, R12W, SEC 10	202	93	35	
9	T10N, R12W, SEC 10	200	92	30	
10	T10N, R12W, SEC 10	200	85	25	
11	T11N, R12W, SEC 31	350	215	40	PUMP LIMITATION
12	T11N, R12W, SEC 33	240	175	FAIR	YIELD REPORTED AS "FAIR"
13	T11N, R12W, SEC 33	252	190		TERMINATED IN "BEDROCK"
14	T10N, R11W, SEC 8	280	58		
15	T10N, R12W, SEC 12	224	84		
16	T10N, R12W, SEC 13	185	60		
17	T10N, R12W, SEC 20		107		
18	T10N, R12W, SEC 22	242	43		
19	T10N, R13W, SEC 19	770	317		
20	T11N, R11W, SEC 7	414	209		
21	T11N, R11W, SEC 9	422	131		IN ALLUVIUM
22	T11N, R12W, SEC 22	350	247		
23	T11N, R13W, SEC 19	430	311		
24	T11N, R13W, SEC 29	749	307		IN ALLUVIUM
25	T11N, R13W, SEC 36	630	280 - 380	750	ALLUVIUM TOTAL DEPTH
26	T11N, R13W, SEC 32	300	180		TOP 50 FEET ALLUVIUM
27	T11N, R12W, SEC 32	300		40	
28	T11N, R12W, SEC 32	265	180	40	
29	T11N, R12W, SEC 32		176		
30	T11N, R12W, SEC 32	245	188		
31	T11N, R12W, SEC 22	350	260	250	MOJAVE P.U.D. WELL
32	T11N, R12W, SEC 22	348	270		"ROCK" AT TOTAL DEPTH
33	T11N, R12W, SEC 22	395	223	1000	MOJAVE P.U.D. WELL
34	T11N, R12W, SEC 26	230		200	FORMER JAMESON RANCH IRRIGATION WELL
35	T11N, R12W, SEC 32	300	177	700	NEW GOLDEN QUEEN WATER WELL

REVISED FROM WATER WASTE AND LAND, INC., 1990, HYDROLOGY STUDY SUMMARY FOR THE SOLEDAD MOUNTAIN PROJECT.

F:\CLIENTS\GOLDQUEN\WELLINFO.WQ2

BCJ 11/20/96





H 1" = 6000'
V 1" = 100'

NOTE: CROSS SECTION LOCATION SHOWN ON EXHIBITS 3.4-4, 3.4-5, 3.4-6

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

CROSS-SECTION THROUGH WATER WELLS

DATE 11/96	0733.0010	EXHIBIT 3.4-8

The proposed project will have an average consumption of 1,200 acre-feet of water per year. Up to three water supply wells will be in use. Pumping of groundwater would lower the groundwater table in the proximity of the installed well(s). The groundwater is approximately 177 feet below ground surface in the vicinity of the water wells. Over the 10 to 15 year project life, based upon a withdrawal rate of approximately 750 gpm, drawdown is expected to be 39 to 41 feet at the nearest currently operating well located approximately 3,700 feet west of the water wells. The nearest well has a total depth of 350 feet. The depth to groundwater is approximately 215 feet, and a drawdown of 41 feet would not affect the water supply. The increased pumping costs would be approximately $0.025 per 1,000 gallons.

Based on calculations included in Groundwater Supply Evaluation,[136] groundwater drawdown should not exceed 30 feet at a distance of two miles from the water supply wells during the life of the project. Using the Jameson Ranch wells as an analog, the actual drawdown could be approximately 10 feet or less. The groundwater level would recover to within 80 percent of the pre-project level within five years after use of the wells is discontinued. This is a conservative estimate, assuming no recharge and a perennial yield of zero. Golden Queen will monitor drawdown in the water supply wells to check that drawdown does not occur beyond the predicted amount. The impact to the groundwater quantity is considered Less Than Significant.

A Report of Waste Discharge will be prepared and submitted to the Lahontan Regional Board as discussed in Section 2.2.4.1. Waste Discharge Requirements adopted by the Lahontan Regional Board will incorporate a monitoring program to ensure compliance. A double liner system and a leachate collection and removal system will be provided at each heap leach pad, along with vadose zone and groundwater monitoring systems as described in Section 2.2.4.1 to protect the soil and groundwater from contamination.

The structure housing the processing equipment will have a zero liquid discharge design with specially lined collection basins. Above ground fuel storage tank areas will be bermed and specially lined to prevent soil contamination. Fueling areas, maintenance areas and used oil

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136 WZI Inc., *Groundwater Supply Evaluation, Soledad Mountain Project*, December 1996, included in Appendix V.

storage areas will be built on concrete pads and specially lined to prevent soil contamination as described in Section 2.2.3.3 and 2.2.3.7.

The proposed project has the potential to discharge hazardous waste to the groundwater through the use of a sodium cyanide solution at the surface causing a Significant impact. Regulatory requirements and project design features, as described in Sections 2.2.4.1, 3.4.2.5 and 3.4.2.6, will reduce the impacts to Less Than Significant.

3.4.2.3 Irreversible/Irretrievable Commitment of Resources

Golden Queen plans to use 750 gallons of water per minute during the main phase of the project. The use of this water, approximately 18,000 acre-feet over the life of the project, represents an irretrievable use of resources. However, the groundwater would be replaced in the basin by future recharge and the groundwater levels are projected to return to within 80 percent of normal in approximately five years. In addition, the projected annual water use is less than 7 percent of the estimated annual recharge to the basin.

3.4.2.4 Cumulative Impacts

The proposed project would have an average water consumption of 1,200 acre-feet per year supplied by up to three production groundwater wells. The proposed Hemberly/Warnack Aggregate Quarry would use 1.1 acre-feet per year supplied by an offsite water well.[137] Residential water use for the projected 776 new residential units is estimated to be approximately 350 acre-feet per year assuming consumption of 400 gallons per day per dwelling unit.[138] The residential water would be supplied by Mojave Public Utility District. The water would be supplied by a combination of AVEK (surface water via pipeline) and well water. Currently, MPUD has rights to 450 acre-feet from AVEK and uses up to 250 acre-feet.[139] MPUD water supply wells are located outside the groundwater basin in Sand Canyon, and in

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[137] *Kern County Planning Staff Report for CUP Case No. 20, Map 214*, 1994.

[138] EIP Associates, *Draft Tier 1 Environmental Impact Report, West Mojave Project*, April 1991.

[139] Personal communication with Bruce Gaines, MPUD.

the northern portion of the Chaffee subunit. Cumulative impacts to the groundwater quantity would be Less Than Significant.

3.4.2.5 Summary of Regulatory Requirements

The following is a summary of regulatory requirements which will be in place to regulate the project in regard to groundwater supply and quality. These regulatory requirements were considered for the purposes of the preceding impact analysis.

- A Report of Waste Discharge will be filed with the Lahontan Regional Board in accordance with Title 23 CCR, Chapter 15, Article 7. The Lahontan Regional Board will implement the following requirements through detailed design review, issuance of waste discharge requirements and yearly inspections.
  - Approval of heap leach pad design and construction.
  - A leachate collection and recovery system (LCRS) will monitor and collect any solution which may pass through the upper liner.
  - Water quality will be monitored in groundwater monitoring wells for one year prior to the use of sodium cyanide as background information.
  - Storm water runoff, the vadose zone (the unsaturated zone between the liner and groundwater) and groundwater will be monitored for constituents of concern using statistical analysis.
  - Quarterly reports on monitoring results and the current status of operations will be submitted to the Lahontan Regional Board.
  - The heap leach pile will be neutralized at the time of closure.
  - A Final Closure and Post-Closure Maintenance Plan will be approved 180 days before the start of closure.
  - Financial assurance for neutralization and closure of the heap leach pile will be posted in accordance with Title 23 CCR, Section 2580(f).
  - Financial assurance sufficient to initiate and complete corrective actions for any reasonably foreseeable potential release to the environment will be posted in accordance with Title 23 CCR, Section 2550.0(b).
- An approval for the septic system design will be obtained from Kern County Environmental Health Services Department.

- New water supply wells will be drilled under a permit from Kern County Environmental Health Services Department in accordance with approved methods. A surface seal will be witnessed by a representative from the county.

3.4.2.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The following is a summary of design features which are included by the applicant in addition to those required by regulations, and were considered in the impact analysis of the project on the groundwater supply and quality.

- ~~Water withdrawal from the aquifer will be monitored on a quarterly basis by Golden Queen and submitted annually to Kern County Planning Department for review. Golden Queen will annually compare the water level data collected by the monitoring program to the water levels predicted by the modeling. In the event the monitoring program shows a 200 percent difference between the actual data and the model results, Golden Queen will supplement the water supply with up to 300 gpm from Antelope Valley - East Kern Water Agency to maintain the drawdown at or less than 200 percent of the predicted amount.~~
- Golden Queen will monitor the groundwater level on a monthly basis and compare the water level data collected by the monitoring program to water levels predicted by the groundwater drawdown model. In the event that the monitoring program shows that the actual water drawdown in the well, when corrected for well conditions, exceeds the predicted model for six consecutive months, Golden Queen will supplement the water supplied by the production wells with up to 300 gpm of water from Antelope Valley - East Kern Water Agency.

3.4.2.7 Recommended Mitigation

No mitigation measures are recommended.

3.4.2.8 Level of Significance After Mitigation (Residual Impacts)

Impacts to the groundwater supply would be Less Than Significant, as demonstrated by hydrology studies.

Impacts to the quality of groundwater would be Less Than Significant as a result of regulatory requirements and design features.

3.5 Air Quality

The air quality section discusses the background meteorological conditions and background concentrations of certain pollutants around the proposed site, as well as the impacts of the proposed project on background conditions. Section 1.2.4.1 contains a general discussion of air quality regulations and ambient air quality standards.

3.5.1 Setting

The proposed project is located in Kern County in the Mojave Desert Air Basin. The air basin is separated from the coastal regions by two mountain ranges which provide a climatological boundary. Weather consists of hot dry summers and cool winters, with a majority of the precipitation coming from Pacific frontal storms. Convectional summer storms may occur on the site, dropping a large amount of rain in a short period. Some winter precipitation falls in the form of snow.

Relative humidity in the desert during summer is very low with humidities below 10 percent common in the hottest part of the day.

Temperatures can exceed 100° Fahrenheit for 60 to 70 days per year between May and September with almost no rainfall. Seasonal differences are noted principally by differences in temperature with hot, dry summers and mild, dry winters. Diurnal variations of approximately 30° F can occur throughout the year. Wintertime temperatures are cool with highs in the 50's during the day and lows dropping into the 30's or less at night.

Annual average precipitation in Mojave, located approximately five miles northeast of the project site, is 6.14 inches per year and in Palmdale, located approximately 25 miles south, is 6.92 inches per year.[140] Table 3.5-1 shows monthly precipitation and temperature information from nearby locations. Weather information from Edwards Air Force Base, approximately 25 miles east of the project location was used to describe wind speed in the

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[140] Owenby, James R. and D. S. Ezell, *Monthly Station Normals of Temperature, Precipitation and Heating and Cooling Days 1961-1990, California*: U.S. Department of Commerce National Climatic Data Center, January 1992.

general vicinity of the project. Published data for 13 years, from 1958 through 1970, shows a mean wind speed of 8.05 miles per hour. The strongest winds at Edwards occur in the spring and summer during the late afternoon period.[141]

TABLE 3.5-1

Available Weather Data

Month	Average Temperature (°F)[142]			Precipitation (inches)[143]	
	Minimum	Mean	Maximum	Mojave	Palmdale
January	30.6	43.6	57.1	1.10	1.23
February	34.4	47.8	61.2	1.11	1.29
March	39.0	51.9	64.7	0.91	1.13
April	44.0	57.9	71.7	0.32	0.41
May	52.1	65.9	79.7	0.11	0.13
June	59.9	74.6	89.2	0.05	0.06
July	65.7	80.8	95.7	0.16	0.05
August	63.7	79.3	94.8	0.20	0.18
September	56.7	82.7	88.7	0.30	0.25
October	46.1	62.1	78.0	0.25	0.23
November	35.2	50.4	65.6	0.83	0.95
December	28.7	42.9	57.0	0.80	1.01
Mean Annual	46.3	60.8	75.3	6.14	6.92

141 California Air Resources Board, Aerometric Data Division, *California Surface Wind Climatology,* 1992.

142 From Lancaster for the period January 1969 to December 1993.

143 Owenby, James R. and D. S. Ezell, *Monthly Station Normals of Temperature, Precipitation and Heating and Cooling Days 1961-1990, California*: U.S. Department of Commerce National Climatic Data Center, January 1992.

A meteorological station was established on the project site from October 1989 through August 1991. This meteorological station conformed to the United States Environmental Protection Agency guidelines. Appendix VI contains the meteorological data from October 1989 through June 1990, along with the sampling protocol for the meteorological monitoring program. Exhibits 3.5-1 and 3.5-2 show wind rose information for the periods October 1989 to September 1990 and September 1990 to August 1991. Typical winds at the proposed project site are out of the northwest representing flow from the San Joaquin Valley.

Monitoring stations located at Mojave, Lancaster, China Lake and Trona monitor concentrations of certain criteria pollutants in the air. The criteria pollutants are defined and discussed in Section 1.7.1.1. Table 3.5-2 shows the background concentrations from 1994 at these monitoring stations which are considered representative of the concentrations at the project site. PM_{10} levels in the region vary greatly. High winds and the arid climate may account in part for the high PM_{10} levels experienced at the monitoring stations. Each monitoring station setup is different and not all pollutants are sampled at each monitoring station.

TABLE 3.5-2

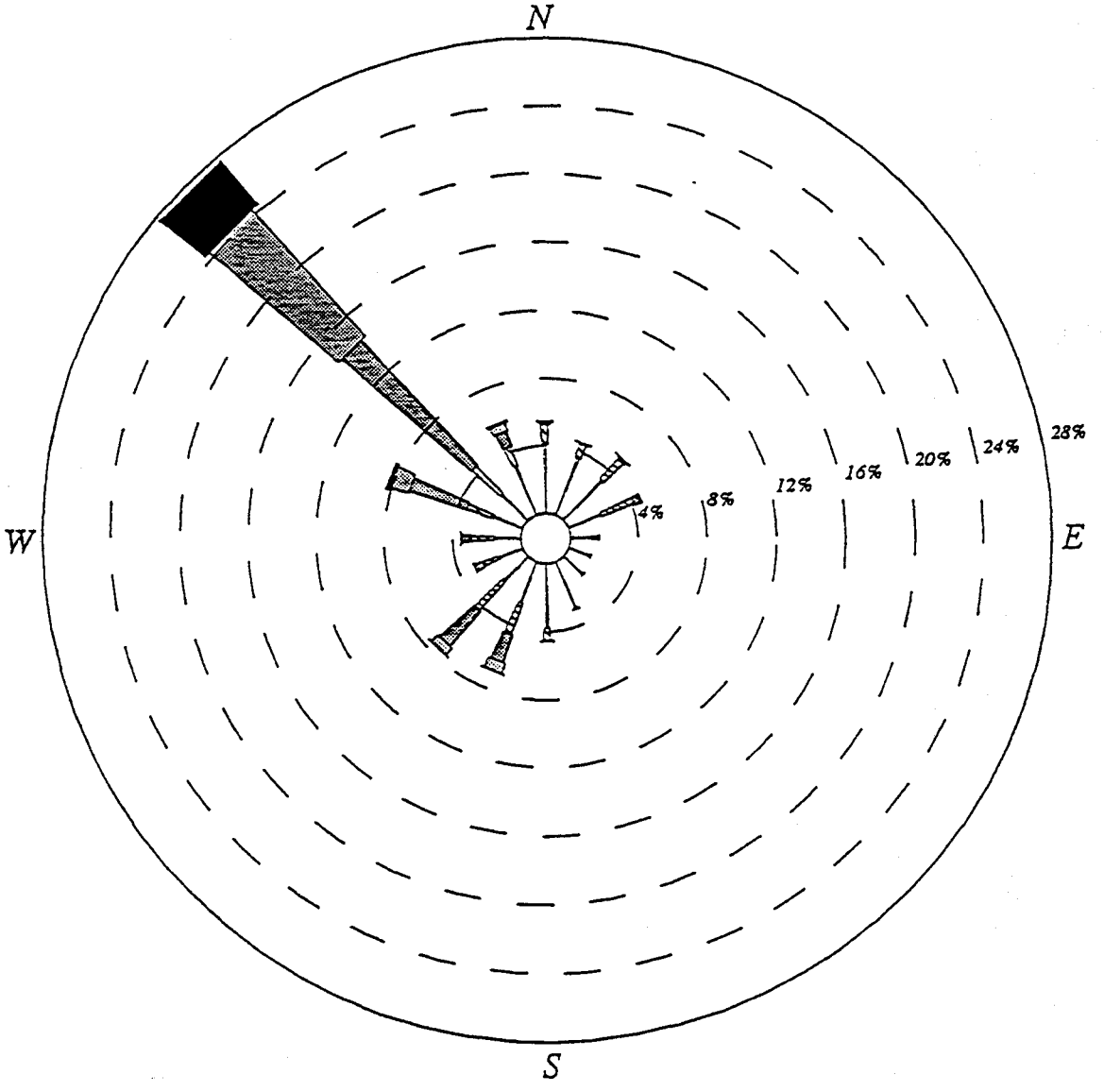
Background Concentrations[144]

Pollutant		Monitoring Station			
		Mojave	Lancaster	China Lake	Trona
Ozone (ppm)	1-hour	0.12	0.14		0.10
NO_2 (ppm)	1-hour	0.06	0.10		0.06
	Annual Average	0.008	0.018		0.10
SO_2 (ppm)	1-hour				0.01
	24-hour				0.01
	Annual Average				0.001
PM_{10} ($\mu g/m^3$)	24-hour	33	97	26	107
	Annual Geometric Mean	16.1	27.7	13.7	24.2

144 Concentrations from CARB, *California Air Quality Data: Summary of 1993 Air Quality Data; Gaseous and Particulate Pollutants*, Technical Services Division, 1994.

Soledad

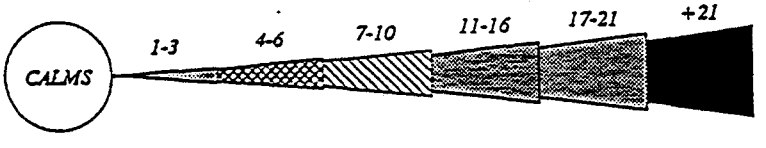
October 1989 to September 1990; Midnight - 11 PM



CALM WINDS 4.66%

NOTE: Frequencies indicate direction from which the wind is blowing.

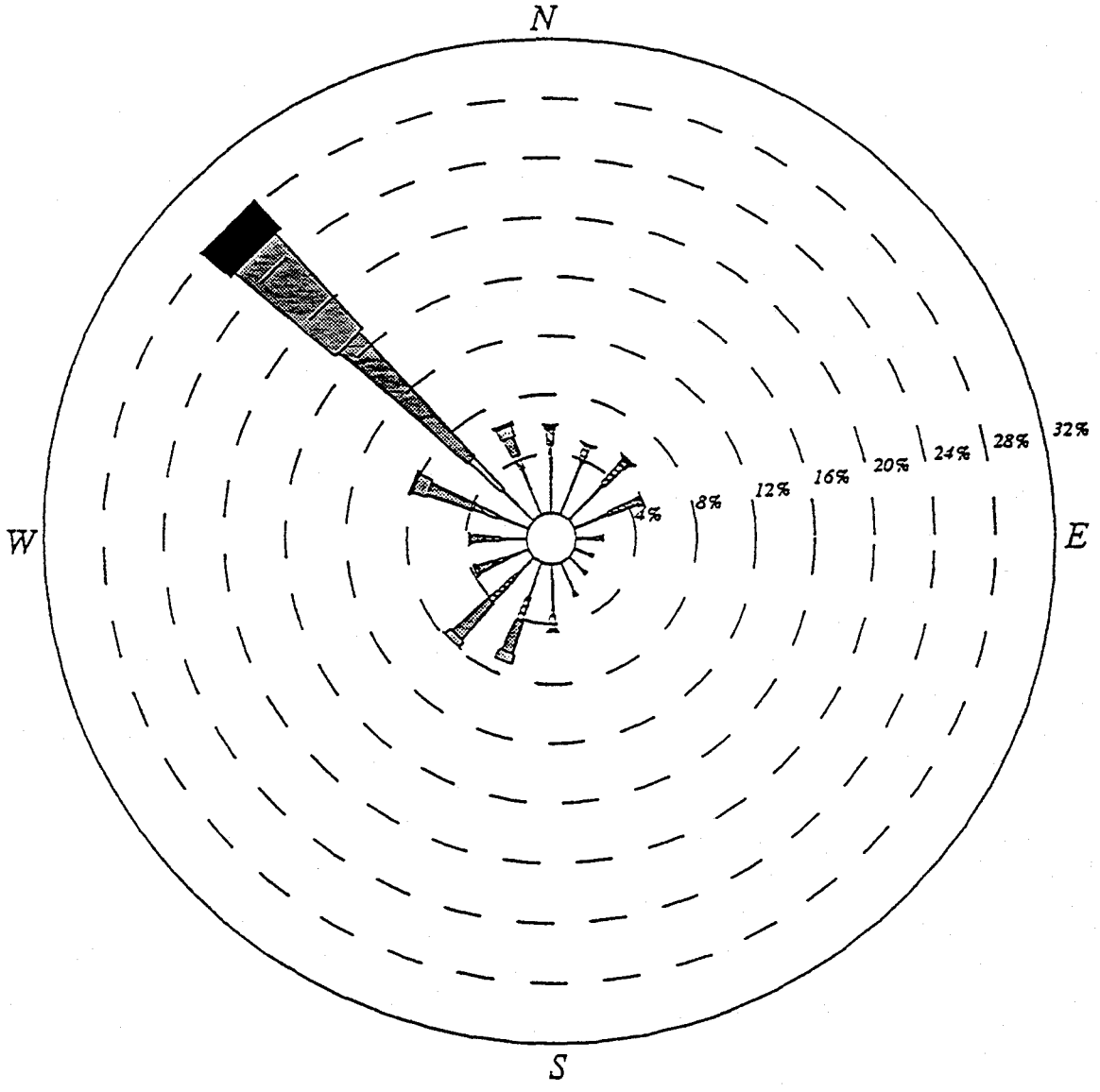
WIND SPEED (KNOTS)



GOLDEN QUEEN MINING COMPANY INC. Soledad Mountain Project WIND ROSE DIAGRAM ONSITE DATA 1989-1990		
DATE 11/96	0733.0010	EXHIBIT 3.5-1

Soledad

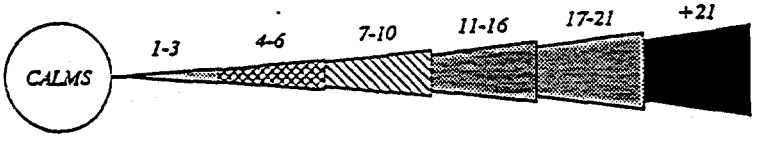
September 1990 to August 1991; Midnight - 11 PM



CALM WINDS 0.17%

WIND SPEED (KNOTS)

NOTE: Frequencies indicate direction from which the wind is blowing.

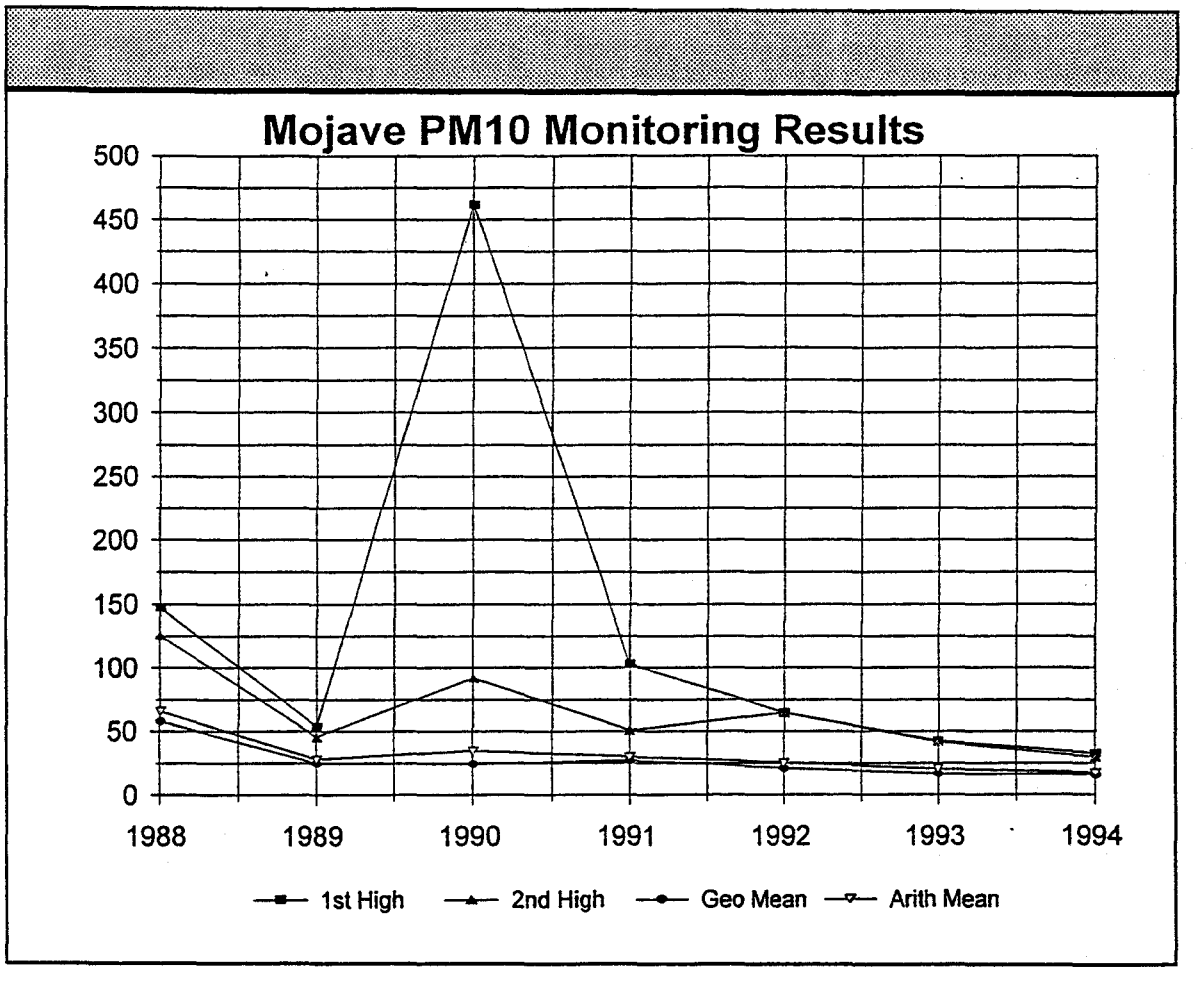


GOLDEN QUEEN MINING COMPANY INC. **Soledad Mountain Project** WIND ROSE DIAGRAM ONSITE DATA 1990-1991		
DATE 11/96	0733.0010	EXHIBIT **3.5-2**

PM_{10} is the primary pollutant of concern since high winds or increased surface disturbance can elevate PM_{10} concentrations. Principal existing sources of PM_{10} in and around the project area are vehicle traffic on unpaved roads and naturally occurring windblown dust. Other significant existing sources of PM_{10} near the project area include facilities owned by California Portland Cement Company, Calaveras Cement Company and U.S. Borax & Chemical Company. Exhibit 3.5-3 shows the PM_{10} concentrations from 1988 through 1994 from Mojave. The average 24-hour concentration at Mojave decreased approximately one-third between 1989 and 1994 from 28.6 $\mu g/m^3$ to 17.9 $\mu g/m^3$.

EXHIBIT 3.5-3

Monitored PM_{10} Concentrations at Mojave[145]



[145] California Air Resources Board, *California Air Quality Data, Summary of (Year) Air Quality Data, Gaseous and Particulate Pollutants*, Annual Summaries 1988 through 1994.

For a period of approximately one year during 1990 and 1991, Golden Queen authorized the collection of PM_{10} concentration data to determine existing ambient PM_{10} levels in the project area. This data has been evaluated by Air Sciences, Inc. of Denver, Colorado.[146]

Continuous 24-hour samples were collected every three days at two adjacent sampling stations. Out of 238 attempts, 233 samples were valid and were analyzed. A total of 116 24-hour periods have two readings. Two stations were used in order to cross check data for accuracy. The data is fairly consistent with a low of 4.6 $\mu g/m^3$, a high of 50.9 $\mu g/m^3$, an arithmetic mean of 21.7 $\mu g/m^3$ and a geometric mean of 18.8 $\mu g/m^3$. These results are similar to, though approximately one-third less than, the results from the Mojave station, located approximately five miles north, for the same time period.

Two Class I wilderness areas[147] are located within 100 kilometers of the proposed project area. These include the Dome Land Wilderness, approximately 80 kilometers north of the project area, and the San Gabriel Wilderness Area, located 75 kilometers south-southeast of the project area. Exhibit 3.5-4 shows the relative location of the project site compared to the Class I wilderness areas.

3.5.2 Direct/Indirect Impacts

A project would normally have a significant effect on the air quality if it would:

Violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations.[148]

For the purposes of this EIR/EIS, a significant impact would normally occur if implementation of the proposed project would:

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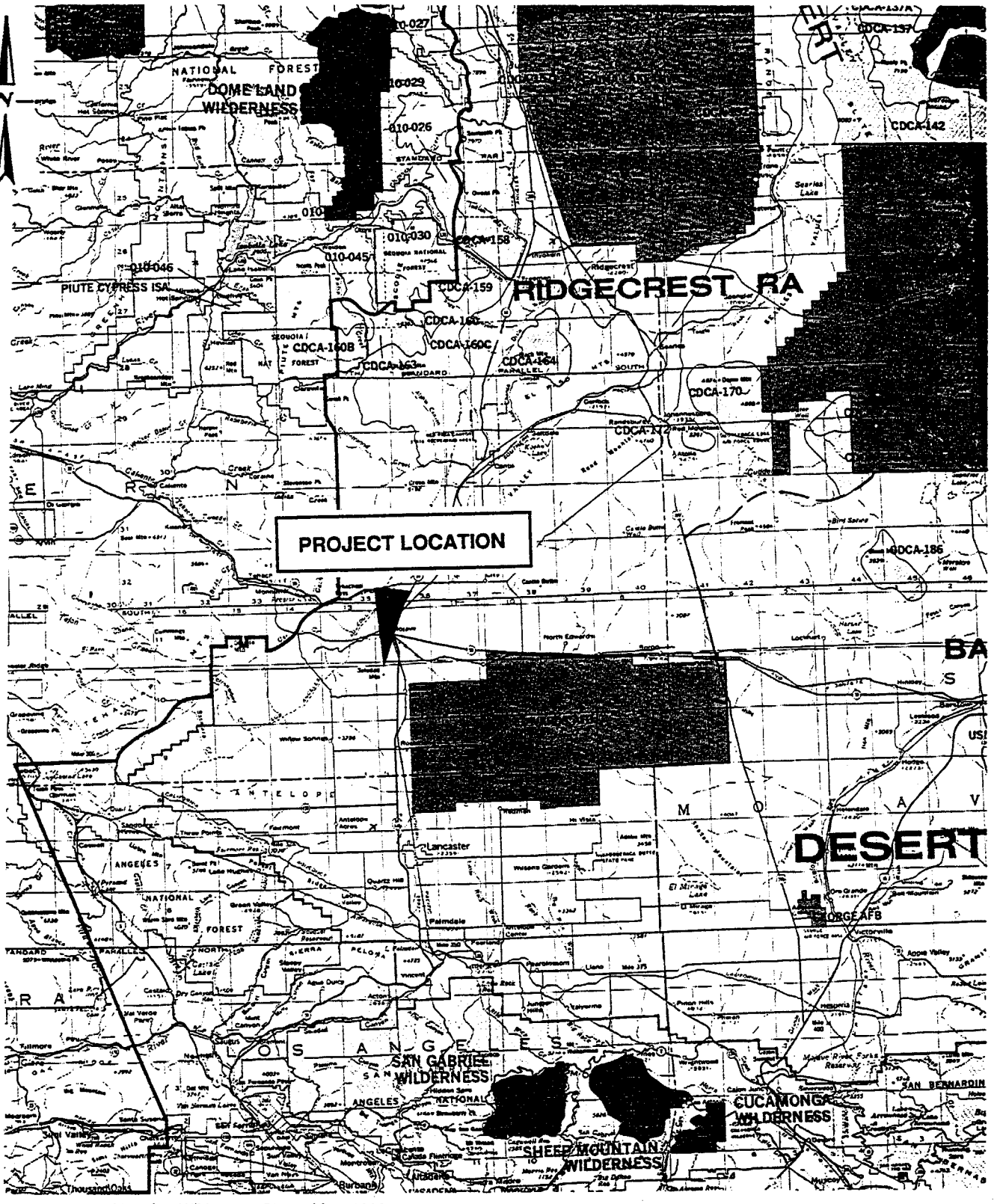
146 Air Sciences, Inc., *Meteorological Data Summary... , Soledad Mountain Project*, October 1989 to August 1990, included as Appendix VI.

147 The Clean Air Act provides special protections to national parks and wilderness areas. Such areas are mandatorily considered "Class I" (see 40 CFR §52.21).

148 CEQA Guidelines, Appendix G, (x)



Ref: US Dept. of Interior, Wilderness Status Map, 1986

Scale 1:1,000,000
1 inch equals Approximately 16 miles

- Distance to Dome Wilderness is approx. 80 kilometers
- Distance to San Gabriel Wilderness is approx. 75 kilometers
- Distance to Sheep Mountain Wilderness is approx. 80 kilometers

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

CLASS I WILDERNESS AREAS WITHIN 100 KILOMETERS

DATE		EXHIBIT
11/96	0733.0010	3.5-4

- violate any environmental law, regulation, statute or rule designed to achieve or maintain compliance with ambient air quality standards or protect against adverse health effects caused by air pollution;
- violate any approved implementation plan or policy regarding air pollution, including federal or state air quality management plans for achieving or maintaining compliance with applicable ambient air quality standards, local or regional growth or congestion management plans and local or regional CEQA significance standards for air quality (e.g., General Conformity);
- result in a net increase of any criteria pollutant for which the project area has not attained applicable federal or state ambient air quality standards;
- result in toxic air contaminant emissions which would cause a significant short- or long-term health risk or cause an increased cancer risk of greater than ten per million;
- concentrate vehicle trips or vehicle-related emissions in a localized area which would cause a violation of any CO ambient air quality standard; or
- cause an odor, visibility or other problem which would create a public nuisance condition.

The desert portion of Kern County is currently designated as non-attainment for both the National and California Ambient Air Quality Standards (NAAQS and CAAQS) for ozone. Ozone precursors (NO_x and VOC) would be emitted from the mobile equipment located at the facility. This type of mining project was anticipated by the Kern County Air Pollution Control District and is in conformity with the air district's plans for attainment of the ozone NAAQS and CAAQS. The primary air pollutant which would be emitted during operation of this facility is PM_{10}. PM_{10} emissions result from both fugitive and controlled sources. There are three primary phases of operations for this project: construction activities, normal operations and reclamation activities. Each phase has separate and distinct emissions.

Construction Activities - Although temporary in nature, fugitive dust emissions are generated from surface disturbance during construction activities and travel on unpaved roads by vehicles and construction equipment. Increased surface disturbance during construction would increase fugitive dust emissions which would, in turn, cause an increase in total suspended particulates (TSP) and PM_{10} emissions.[149]

[149] PM_{10} is that portion of TSP which has an aerodynamic diameter less than 10 microns.

Using the U.S. Environmental Protection Agency (EPA) emission factor for fugitive dust for newly disturbed surfaces associated with construction, an estimate of the amount of fugitive dust generated by the new construction and associated surface disturbance under the Proposed Action can be calculated.[150] The uncontrolled emission factor for an active construction site is 1.2 tons of TSP per acre per month. Golden Queen will utilize water spray and/or chemical treatment as necessary to control fugitive dust emissions during construction, which will reduce the emission rate by a minimum of 50 percent.[151] Assuming that a total of 95 acres of the project area would be disturbed for construction activities, the total fugitive dust emissions would be 114 tons of TSP per month and, after applying dust control methods, would be reduced to 57 tons of TSP per month. These emissions would only occur during the construction phase of the project which is expected to last eight to 12 months.

In addition to anthropogenic sources, fugitive dust emissions would result from wind erosion during the construction phase of the Proposed Action. Assuming 95 acres are disturbed for construction activities, it is estimated the wind erosion would cause 0.4 tons of TSP per month.[152]

Normal Operations - Federal and state ambient air quality standards are shown in Section 1.7.1.1. Fugitive and controlled emissions are generated from the proposed mining and processing operations. Estimated emissions of PM_{10} from the project are detailed in Appendix VII. Table 3.5-3 is a summary of the calculated maximum hourly and annual PM_{10} emissions from the proposed project at the projected annual processing rate of six million tons per year of ore. Section 2.2.4.2 presents project design features included to minimize the air quality impact of this project.

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150 EPA, *Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources*, EPA Publication No. AP-42, Fifth Edition, GPO Stock No. 055-000-00251-7, January 1995; Section 13.2.3, Heavy Construction Operations.

151 According to EPA AP-42, Section 13.2.4.4, application of water and chemical treatment can control fugitive emissions of PM_{10} up to 90 percent. KCAPCD recommends use of a control efficiency equal to 50 percent.

152 Based on EPA AP-42, Section 13.2.5, Industrial Wind Erosion. For calculation method, see Appendix VII.

Reclamation Activities - The primary sources of PM_{10} fugitive emissions during reclamation activities include the loading and unloading of growth media (the original topsoil salvaged and stored for later use), bulldozing, road emissions and erosion from disturbed surfaces before vegetation is established.

Dispersion modeling was performed to determine whether PM_{10} emissions from the proposed project would cause or contribute to a violation of the national or California ambient air quality standards (NAAQS or CAAQS) for PM_{10}. When added to the average background concentration of PM_{10} at the project site of 18.8 $\mu g/m^3$, the maximum estimated 24-hour average PM_{10} concentration during normal operations is 45.62 $\mu g/m^3$.[153]

TABLE 3.5-3[154]

Estimated PM_{10} Emissions

Emission Source	Uncontrolled Emissions		Controlled Emissions		Proposed Project Emissions	
	max. lb/hr	ton/year	max. lb/hr	ton/year	max. lb/hr	ton/year
Fugitive Sources						
Drilling	0.33	1.20	N/A	N/A	0.33	1.20
Blasting	157.00	20.61	N/A	N/A	157.00	20.61
Truck loading	5.31	17.69	N/A	N/A	5.31	17.69
Truck unloading	2.95	14.15	N/A	N/A	2.95	14.15
Hauling	246.10	624.20	3.15	7.99	3.15	7.99
Dozing	1.89	0.94	N/A	N/A	1.89	0.94
Wind erosion	0.94	0.33	N/A	N/A	0.94	4.25
Permitted Sources						
Crushing	70.40	234.60	1.43	4.78	1.43	4.78
Totals	**484.90**	**913.80**	-	-	**173.00**	**71.61**

153 Appendix VII contains the results of the ambient air dispersion modeling prepared for this analysis, including emissions calculations.

154 Calculation of emissions is shown in Attachment F of Appendix VII.

The Federal 24-hour standard for PM_{10} is 150 $\mu g/m^3$ and the California 24-hour standard for PM_{10} is 50 $\mu g/m^3$. Neither the NAAQS or the CAAQS for PM_{10} would be exceeded by the project. Therefore, implementation of the Proposed Action would have a Less Than Significant impact on the attainment or maintenance of ambient air quality standards.

For purposes of evaluating Potential for Significant Deterioration (PSD) applicability, it is necessary to determine the total amount of emissions, not including fugitive emissions for mining operations. The proposed project would emit less than the PSD threshold of 250 tons per year of controlled PM_{10} emissions (Table 3.5-3), therefore, the project is not subject to PSD regulation.

A visibility analysis was evaluated for the two Class I wilderness areas using the approved EPA Level 1 Screening analysis in VISCREEN.[155] For a conservative basis, all emissions were assumed to be from the same point. Screening criteria are not exceeded based on the results of the modeling.[156] Exhibit 3.5-5 shows the results of the analysis for the closest of the two Class I areas.

An analysis of the impact on nearby Class I Wilderness areas show that the incremental increase in 24-hour PM_{10} concentration at either the Dome Land or the San Gabriel Wilderness areas is approximately 0.21 $\mu g/m^3$ which is less than the significance level of 10 $\mu g/m^3$. A visibility screening analysis using the program VISCREEN also shows that the screening criteria are not exceeded. Thus, the impact on the visibility and ambient air quality in either Wilderness area is Less Than Significant.

Previously disturbed areas located within the project area will be removed as potential sources of air pollution either through reclamation or elimination by mining activity. A tailings pile from historical mining activity is located where heap leach pad number 1 will be built and is proposed as base material for the heap. This tailings pile is a large emissions generator when the wind speed exceeds the threshold velocity. On the same basis used to calculate emissions from the proposed project, it is estimated that the disturbed acreage has annual

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155 EPA, *Workbook for Plume Visual Impact Screening and Analysis*, EPA document 450/4-88-015, September 1988.

156 WZI Inc., *Golden Queen Mining Company Soledad Mountain Project Estimated PM_{10} and Air Toxics Emissions and Impacts Assessment*, December 1996, included as Appendix VII.

Visual Effects Screening Analysis for
Source: Golden Queen Mining
Class I Area: San Gabriel Mountains

*** Level-1 Screening ***

Input Emissions for

Particulates	21.80	G	/S
NOx (as NO2)	.00	G	/S
Primary NO2	.00	G	/S
Soot	.00	G	/S
Primary SO4	.00	G	/S

**** Default Particle Characteristics Assumed

Transport Scenario Specifications:

Background Ozone:	.04 ppm
Background Visual Range:	50.00 km
Source-Observer Distance:	76.00 km
Min. Source-Class I Distance:	76.00 km
Max. Source-Class I Distance:	100.00 km
Plume-Source-Observer Angle:	11.25 degrees
Stability: 6	
Wind Speed: 1.00 m/s	

R E S U L T S

Asterisks (*) indicate plume impacts that exceed screening criteria

Maximum Visual Impacts INSIDE Class I Area
Screening Criteria ARE NOT Exceeded

					Delta E		Contrast	
Backgrnd	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume
SKY	10.	84.	76.0	84.	2.00	1.155	.05	.017
SKY	140.	84.	76.0	84.	2.00	.185	.05	-.009
TERRAIN	10.	84.	76.0	84.	2.00	.668	.05	.007
TERRAIN	140.	84.	76.0	84.	2.00	.136	.05	.005

Maximum Visual Impacts OUTSIDE Class I Area
Screening Criteria ARE NOT Exceeded

					Delta E		Contrast	
Backgrnd	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume
SKY	10.	25.	54.3	144.	2.00	1.459	.05	.019
SKY	140.	25.	54.3	144.	2.00	.227	.05	-.010
TERRAIN	10.	50.	66.4	119.	2.00	.847	.05	.009
TERRAIN	140.	50.	66.4	119.	2.00	.183	.05	.006

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

VISUAL EFFECTS
SCREENING ANALYSIS

DATE		EXHIBIT
11/96	0733.0010	3.5-5

emissions of 136,000 pounds of PM_{10} per year.[157] Development of the project would eliminate the emissions from the tailings piles. Fugitive dust emissions resulting from the removal of these piles will be controlled using water spray and/or chemical suppressant. The net long-term effect (after reclamation) is that annual emissions from the project area will be decreased by 126,100 pounds of PM_{10} per year. The long- term impact to air quality would be beneficial.

In addition to analyzing the impacts of criteria pollutants on ambient air quality, a health impact assessment has been conducted for toxic air contaminants which would be emitted from the project. This analysis, included as Appendix VII, considered carcinogenic, acute and chronic health risks which may be posed by the project. Golden Queen plans to perform some crushing and screening operations in order to properly size the ore going to the heap leach pad, however, the majority of the particulate emissions are fugitive emissions from sources, including: drilling, blasting, loading, hauling, unloading, dozing and wind erosion of native materials. The quantification of particulate emissions discussed above is used as a basis for determining the amount of air toxic emissions from each source. Concentrations were calculated at 20 specific receptors (identified as existing residences or groups of residences), at 70 locations along the property line and at 367 gridded locations (arbitrary locations picked to help determine a maximum estimated impact).

The concentrations of each toxic compound were used to determine the maximum expected cancer risk for each location. The modeled output includes the concentration of each toxic compound in $\mu g/m^3$, receptor estimated total excess cancer risk, maximum acute exposure and maximum chronic exposure. In addition, source and pollutant contributions to total excess cancer risk, maximum acute exposure and maximum chronic exposure are estimated for specified locations.

The health impact assessment includes a multi pathway analysis based on assumptions listed in the California Air Pollution Control Officers Association (CAPCOA) Guidelines revised October 1993. The determination of maximum offsite cancer risk, maximum individual offsite cancer risk at an existing specific receptor and the combined inhalation and non-inhalation risk are calculated for each gridded location. The inhalation risk is calculated by multiplying

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[157] Calculations are included in Appendix E, Emissions Estimates, of Appendix VII, *Golden Queen Mining Company Soledad Mountain Project Estimated PM_{10} and Air Toxics Emissions and Impacts Assessment.*

"ground level" concentrations of an air toxic by the air toxic-specific unit risk factor. The non-inhalation risk for each air toxic at a location is calculated by multiplying the average daily dose by the potency slope. The average daily dose of each substance was calculated using the results of the dispersion model (ISC3) and the multi pathway exposure algorithms found in the CAPCOA Guidelines. The estimated risks for individual substances are then summed to provide the total excess cancer risk for the receptor locations.

The estimated risk values calculated herein are based on the ground level concentration of emissions at the specific locations. Due largely to the conservativeness of the assumptions inherent in the risk assessment procedures, the risk to actual residents living near the proposed facility may be less than the values indicated. The methods of calculating carcinogenic risk, hazard indices and cancer burden used here are based on a "worst-plausible" situation and are health-conservative in nature. They predict the upper limits of risk based upon the given emission rates. This health-conservative approach to assessing risk is the one chosen by EPA, the California Office of Environmental Health Hazards Assessment (OEHHA) and the California Air Resources Board (CARB). This comparison of estimated toxic emissions assumes continuous exposure to the maximum concentration of emissions for the entire life of the project. This method ignores the reduction in exposure realized by periods of time spent away from the residence on vacation, at work or indoors.

Implementation of the Proposed Action would result in the emission of various air toxics, including naturally occurring metals from handling of the ore and overburden materials, hydrogen cyanide from the leaching solution and organic gases and some metals from the gas-fired furnace and the mercury retort. The estimated excess cancer risk from the Proposed Action at any of the 20 specified receptors is 1.15×10^{-6}, or an additional cancer risk of 1.15 per one million population. This is a level which the Kern County Air Pollution Control District (KCAPCD) defines as Less Than Significant because it is less than 10 in one million. The cancer risk is driven primarily by arsenic and beryllium, which are naturally occurring components of the soil in the desert, particularly in areas where precious metals are found.

The maximum expected excess cancer risk within the grid location from toxic air contaminants emitted from the project is 4.989×10^{-6} (five in one million). This is less than the significance level of 10 per one million. The maximum estimated short-term (acute) hazard index from exposure to toxic air contaminants from project emissions is 0.014. This is less than the

significance level of 1.0. The maximum estimated long-term (chronic) hazard index from exposure to toxic air contaminants from project emissions is 0.052. This is less than the significance level of 1.0.

Sodium cyanide reactions in the heap leach pad will release a certain amount of hydrocyanic acid (hydrogen cyanide gas) into the atmosphere. Hydrogen cyanide gas is a byproduct which results from the natural degradation of sodium cyanide. As shown in the assessment results, the projected maximum one-hour concentration of hydrogen cyanide is 45.3 $\mu g/m^3$ (0.04 ppm), which is significantly less than the 10 ppm threshold limit/ time-weighted average for a normal eight-hour work day established by the United States Occupation Safety and Health Administration for sustained breathing of gaseous hydrogen cyanide, and significantly less than the State of California 11 ppm threshold.

Therefore, the proposed project is Less Than Significant with respect to short- or long-term health risks or cancer risk which may result from project emissions.

Based on the findings of Section 3.13, Traffic and Transportation, there will not be any concentration of vehicle trips or vehicle-related emissions in a localized area which would be expected to cause a violation of any CO ambient air quality standards. No conditions are anticipated which would create a public nuisance condition, therefore, the impact of the Proposed Action is Less Than Significant.

3.5.3 Irreversible/Irretrievable Commitment of Resources

There are no irreversible or irretrievable commitments of air quality resources. When the project is complete in approximately 15 years, there would be no further related emissions of air contaminants.

3.5.4 Cumulative Impacts

Several residential and industrial projects, besides the proposed project, have been proposed for this area. The potential impacts of these proposed projects, listed below, must be considered in combination with the proposed project to assess the potential cumulative impact on air quality in the project area.

- Increased housing units previously authorized by Specific Plan Amendments
- California Portland Cement Company's supplemental fuels project
- Hemperly/Warnack Quarry

In addition to these proposed projects, Granite Construction previously received approval under Conditional Use Permit 21, Map 196, to install a temporary asphalt batch plant in Section 29, Township 11 North, Range 12 West. The Conditional Use Permit only provides approval to operate the asphalt batch plant until November 25, 1998, unless extended. The project is located on land zoned A-1 (limited agriculture), and the Kern County Zoning Ordinance does not provide for a permanent asphalt batch plant in this zoning district. Prior to construction of the plant, Granite would be required to obtain an Authority to Construct from the Kern County Air Pollution Control District. To date, no application has been submitted to the air district for this project. Because Granite has not obtained needed approvals from the air district and the Conditional Use Permit is set to expire prior to the operational phase of the proposed project, the previously proposed temporary asphalt batch plant is not considered in this cumulative impact analysis.

Residential development generally causes significant dust emissions during the construction phase. After construction, emissions continue from resident's motor vehicles. Several General and Specific Plan amendments have been identified in the Mojave area that could potentially result in the construction of 15,000 new housing units. Based on the historical growth rate for this area, it is projected that only 780 new housing units will be necessitated by population growth during the life of the proposed project. It is unknown at this time which of the approved residential projects will ultimately be developed. The environmental impact reports prepared for the various residential projects contain measures intended to mitigate fugitive dust emissions, including:

- Use of water or dust suppressants to control fugitive dust
- Required covers for trucks hauling excavated material
- Construction wind barriers
- Cleaning dirt and mud from truck tires prior entrance onto paved roads

After applying these measures, construction impacts from the residential projects was considered less than significant or significant but unavoidable.

Based on information submitted to the Kern County Air Pollution Control District, the proposed supplemental fuels project at California Portland Cement Company would not result in changes to the existing criteria pollutant emissions levels.

As approved under Conditional Use Permit 20, Map 214, the proposed Hemperly/Warnack quarry project would mine rock, sand and gravel, and operate a concrete batch plant in Section 10, Township 10 North, Range 13 West. The permit contains a mitigation measure that states, "Prior to commencement of mining operations, the applicant shall consult with the Kern County Air Pollution Control District and comply with any requirements deemed necessary to minimize air pollutant emissions associated with development of the project." Potential emissions from this project have not been quantified.

All of these projects will result in an increase in motor vehicle traffic in the Mojave area. Population growth and the accompanying vehicular emissions have been considered in the Air Quality Attainment Plan for that portion of Kern County in the Mojave Desert Air Basin.[158] In that document, the air district projected that the population in this area would increase at an annual growth rate of 2.1 percent between 1990 and 2010.[159] Similarly, motor vehicle registration for the area was expected to increase by 14,251 vehicles and to increase total vehicle miles traveled by 691,000 miles during the same period. Although the air district has no jurisdiction over mobile sources of air pollutants, the district has planned for these emissions and projects that attainment of the NAAQS for ozone will be achieved by 1999, as required by the Federal Clean Air Act. The air district has demonstrated that air quality in the Mojave area is substantially impacted by transport from the South Coast and San Joaquin Valley air basins. The air district's prediction of ozone attainment is based on attainment being achieved in those areas, and does not consider the significant emission reductions resultant from the air district's control strategy.[160]

The impact to air quality from the cumulative projects is considered Less Than Significant.

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158 Kern County Air Pollution Control District, *1991 Air Quality Attainment Plan: Southeast Desert Kern County*, July 1991, amended June 1992.

159 Ibid., p. 3-20

160 Kern County Air Pollution Control District, *1994 Attainment Demonstration*, October 31, 1994.

3.5.5 Summary of Regulatory Requirements

The following is a summary of the regulatory requirements which will be in place to regulate the proposed project in regard to air quality. These regulatory requirements have been included in the project for the purposes of the preceding impact analyses.

- The Kern County Air Pollution Control District will review facility designs and operations for compliance with Federal and California regulations for the protection of air quality. An application for Authority to Construct has been submitted to the Kern County Air Pollution Control District.
- As required by the Kern County Air Pollution Control District, permitted sources of emissions will be equipped with Best Available Control Technology (BACT).
- Roads will be maintained on a routine basis. Appropriate dust suppression techniques will be used on roads and disturbed surfaces to minimize fugitive emissions.
- As required by the Kern County Air Pollution Control District, sources of emissions will be controlled to ensure compliance with California Health & Safety Code §41700 (i.e., nuisance) and §41701 (i.e., visible emissions).
- Cyanide concentrations at leach pad and processes will be monitored.
- Kern County Air Pollution Control District will be notified prior to demolition of any existing structures, as required under National Emission Standards for Hazardous Air Pollutants (NESHAPS) Subpart M - National Emission Standard for Asbestos.

3.5.6 Summary of Project Design Features Proposed By Applicant (Applicant-Proposed Mitigation)

The following is a summary of design features, in addition to those required by regulations, which are included by the applicant. These design features have been considered in the preceding in the impact analyses on air quality.

- Onsite equipment and vehicles and equipment will be maintained on a routine basis, as recommended by manufacturer manuals, to reduce exhaust emissions.
- Monitoring stations for PM_{10} will be established upwind and downwind from the processing facilities.
- A mercury retort will be installed to control mercury emissions.

- The size and number of blasts in the mine will be limited by good engineering design.
- The existing tailings piles will be removed, thereby reducing the long-term fugitive emissions from the site.
- The adopted reclamation plan shall include rReclamation of previously disturbed areas.

3.5.7 Recommended Mitigation

There are no recommended mitigation measures.

3.5.8 Level of Significance After Mitigation (Residual Impacts)

The proposed project will obtain permits, as applicable, from the Kern County Air Pollution Control District and comply with all applicable rules and regulations designed to achieve or maintain compliance with NAAQS or CAAQS. As shown by dispersion modeling, PM_{10} emissions from the proposed project would not cause or contribute to a violation of the NAAQS or CAAQS for PM_{10} in the project area.

The proposed project would not violate any approved plan for achieving or maintaining compliance with NAAQS or CAAQS, local or regional growth or congestion plans or local CEQA significance standards for air quality. The 1991 air quality attainment plan for ozone stated that mining employment would increase 5.2 percent annually between 1990 and 2010.[161]

The proposed project would not result in toxic air contaminant emissions which would cause a significant short- or long-term health risk or cause an increase cancer risk of greater than 10 per million. As demonstrated by the health impact assessment, the estimated short- and long-term health risks are 0.014 and 0.052, respectively, both of which are less than the significance level of 10 and 1.0, respectively. The estimated excess cancer risk is 4.989×10^{-6} (5 per million), which is less than the significance threshold of 10 per million.

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[161] Kern County Air Pollution Control District, *1991 Air Quality Attainment Plan: Southeast Desert Kern County*, amended 1992, Page 3-18, Table 3-3.

The proposed project would not concentrate vehicle trips or motor vehicle-related emissions in a localized area which would cause a violation of any CO ambient air quality standard.

The proposed project would not cause an odor, visibility, or other problem which would create a public nuisance condition. This was demonstrated by the visibility analysis.

Therefore, the proposed project would have a Less Than Significant impact on air quality in the project area.

3.6 Biology

3.6.1 Vegetative Resources

3.6.1.1 Setting

Plant species found at the project site on Soledad Mountain are typical for the western Mojave Desert area. The plant species are hardy desert shrubs and sub-shrubs which generally grow year-round when moisture is available. Annual species which are fall germinating and grow throughout the winter and spring seasons are also present. The major vegetative species at the site have been summarized in the Biological and Soil Resource Evaluation for the Soledad Mountain Project.[162] The dominant vegetation type on the lower alluvial fans and flats is a creosote bush shrub/scrub with widely scattered Joshua trees. The vegetation on the mountain slopes is a mixed shrub/grass type dominated by species adapted to rocky substrates and cooler conditions. These species are common in desert mountain ranges and have affinities to the Great Basin deserts to the north. Plant communities on portions of Soledad Mountain are extensively disturbed by previous mining activities and mineral exploration. In addition, nearly all the lower slopes, sides and top of the mountain have been altered by frequent burns which change and reduce the shrub cover and increase annual grasses and weeds.

The lower slopes on alluvial fans and flats are desert shrub/scrub dominated by creosote bush (*Larrea tridentata*) and a secondary cover of burrowbush (*Ambrosia dumosa*), Mojave-aster (*Xylorhiza tortifolia*), goldenhead *(Acamptopappus sphaerocephalus*) and joint fir (*Ephedra nevadensis*). Plant zonation at the base of the mountain is dominated by burrowbush and taller growths of creosote bush. There is less plant variety at the base of the mountain, most likely due to a less diverse topography and the greater disturbance.

In 1990, the total canopy cover of the shrub/scrub on the alluvial fans and flats ranged from 20 to 26 percent and averaged 23 percent for the four linear transects. Individual plots within the surveyed plots varied from 9 to 35 percent. Cover in 1995 was greater due to increased

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[162] Bamberg Associates, *Biological and Soil Resource Evaluation for Soledad Mountain Project*, November 1995, Revised, included as Attachment B in Appendix III.

moisture and improved growing conditions The primary difference was the large increase in plant cover averaging from 23 percent in 1990 to approximately 80 percent in 1995. The annual grasses and forbs had the greatest increase in percent ground cover and the shrubs were also larger due to the recent rains.

The mid-slope and upper-slope areas of the site are sparsely vegetated by a mixed shrub/grass community with plant species, including spiny hopsage (*Grayia spinosa*), winterfat (*Krascheninnikovia lanata*), buckwheat (*Eriogonum* sp.) and cattle spinach (*Atriplex polycarpa*), common in the Great Basin. Much of the land surface is covered by rock outcrops and rock slides. The scant vegetation on the upper slopes is fairly diverse and varies widely depending on the exposure and soil moisture conditions, as well as previous disturbances. Cover in the mixed shrub community of the mid- and upper-slope ranges from 10 percent in burned areas to 49 percent in other protected areas in 1990, and increased to approximately 80 percent in 1995 in comparable areas.

Based on biological surveys, there were no threatened, endangered or rare species of plants identified on the project site. No wetlands, marshes or other environmentally-sensitive habitat areas have been identified on the project site. There are no well-defined drainage channels or waters of the United States. There is no "specimen tree" or other tree with historic value located on the project site.

3.6.1.2 Direct/Indirect Impacts

According to Appendix G of the State CEQA Guidelines, a project would normally have a significant effect on the environment if it would:

(c) Substantially affect a rare or endangered species of animal or plant or the habitat of the species; or

(t) Substantially diminish habitat for fish, wildlife or plants.

(v) Create a potential public health hazard or involve the use, production or disposal of materials which pose a hazard to people or animal or plant populations in the area affected.

For the purposes of this EIR/EIS, a significant impact would normally occur if implementation of the proposed project would:

- violate any environmental law or regulation designed to protect wildlife, fisheries, plant species or habitat areas;
- directly harm a sensitive species or cause a net loss to the habitat of the species;
- cause a net loss of any riparian lands, wetlands, marshes or other environmentally- sensitive habitat areas; or
- result in the loss of any "specimen tree" or tree with historic value.

The Proposed Action would disturb approximately 560 acres of the upper slope area of Soledad Mountain by the excavation of the mine and creation of overburden piles. Approximately 370 acres of the lower slope and alluvial fan areas would also be disturbed by the construction of the heap leach pads, overburden piles, process facility, offices and ancillary activities. The upper-slope and lower-slope areas are not environmentally-sensitive habitat areas. There would be no loss of riparian, wetlands or waters as a result of the proposed project.

There are no endangered, threatened, rare or sensitive plant species observed or present, therefore, No Impacts are anticipated.

Except for the approximately 221 acres of disturbed area which would be created by the open pit mine (Table 2.2-5), site reclamation activities as described in Section 2.2.5 and wildlife protection and monitoring as described in Section 2.2.4.3 would minimize to Less Than Significant the overall impacts to vegetation.

Reclamation activities and monitoring include a revegetation plan, onsite seed collection and test plots to evaluate reclamation methods. Previously disturbed areas inside the project area and outside the proposed disturbance area would be reclaimed as part of the project's ecosystem management program.

3.6.1.3 Irreversible/Irretrievable Commitment of Resources

Approximately 221 acres of open pit, 267 acres of overburden pile side slopes and 20 acres of steep slopes in the facilities area would not be reseeded due to the steepness of the pit walls and side slopes. Natural revegetation processes would eventually establish vegetation on portions of these areas and provide habitat for wildlife, however, the vegetation may differ in species composition due to changes in steepness of slope, exposure, substrate and moisture conditions.

3.6.1.4 Cumulative Impacts

The land disturbance from this project (930 acres new disturbance), projected residential build out (approximately 200 acres) and the proposed aggregate (100 acres) quarry operated by Hemperly/ Warnack represent a cumulative disturbance of 1,230 acres during the life of the project. Required reclamation will mitigate land disturbance on the proposed project and the aggregate quarry. The cumulative impact on vegetation is considered Less Than Significant.

3.6.1.5 Summary of Regulatory Requirements

The following is a summary of regulatory requirements which will be in place to regulate the project with regard to vegetative resources.

- The filing of a Reclamation Plan with Kern County in accordance with the requirements of the Surface Mining and Reclamation Act of 1975, which defines revegetation of disturbed areas which will include the heap leach pads, facilities area, unnecessary roads, the tops of the overburden piles and the bottom areas of the pit.[163]
- Development of a seed mix which utilizes only plant species native to the site area.[164]

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[163] Title 14 CCR, Section 3705(a)

[164] Title 14 CCR, Section 3705(g)

- Posting of financial assurance to assure appropriate revegetation efforts are completed.[165,166]

3.6.1.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The following is a summary of design features which are included by the applicant in addition to those required by regulations, and are included in the impact analysis of the project on vegetative resources.

- Project disturbance will be minimized to that necessary for safe and efficient operation. The limits of the construction areas will be clearly marked and vehicles and equipment will be confined to these areas.
- Mature Joshua trees which may be disturbed will be salvaged and replanted in undisturbed areas within the property boundary.
- The use of seedlings for revegetation will be investigated in test plots.
- Fencing around the heap leach pile will remain in place until vegetation is established or as otherwise specified in the Reclamation Plan.

3.6.1.7 Recommended Mitigation

No mitigation measures are recommended.

3.6.1.8 Level of Significance After Mitigation (Residual Impacts)

Permanent or temporary loss of approximately 555 acres of natural vegetation is a residual impact. Revegetation during reclamation will offset the loss of natural vegetation types. The loss would be Less Than Significant because no rare or unique habitats are affected and there are large amounts of similar undisturbed habitats in the regional area. Reclamation activities and monitoring include a revegetation plan, onsite seed collection and test plots to evaluate

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165 43 CFR, Section 3809

166 Title 14 CCR, Section 3702

reclamation methods. Previously disturbed areas inside the project area and outside the proposed disturbance area will be reclaimed as part of the project's ecosystem management program producing a beneficial effect.

There would be No Impact to environmentally-sensitive habitat areas or "specimen trees" because there are none present on the project site.

3.6.2 Wildlife Resources

3.6.2.1 Setting

Wildlife species which are typical inhabitants of desert scrub habitats occur within the project site. The desert scrub habitat is composed of widely spaced low shrubs and abundant annuals in season. The habitat is characterized in the western Mojave Desert at moderate altitudes by sandy/rocky soils, seasonal temperature extremes and desiccation by high winds and sun.

Surveys of the wildlife species present or expected in the project study area were conducted and are summarized in the Biological and Soil Resource Evaluation for the Soledad Mountain Project.[167] The presence of wildlife was confirmed during surveys by observation or other signs such as burrows, scat, tracks or skeletal remains. Surveys for specific species of bats and small mammals involved specialized techniques of trapping or tracking. Densities of wildlife populations appeared to be low, possibly due to alteration of habitats by historical mining, urbanization, recreation and fires.

No threatened or endangered animal species have been identified or observed on the project site.

Common animal species that inhabit the site include predators such as the coyote (*Canis latrans*), bobcat (*Lynx rufus*), ring-tailed cat (*Bassariscus astutus*), gray fox (*Urocyon*

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[167] Bamberg Associates, *Biological and Soil Resource Evaluation for Soledad Mountain Project*, November 1995, Revised, included as Attachment B in Appendix III.

cinereoargenteus) and possibly badger (*Taxidea taxus*). Predators use the site as part of their hunting territory, and some may den on the mountain during breeding season.

Small animals on the site which are typical of the desert scrub habitat include antelope ground squirrel (*Spermophilus leucurus*), jackrabbit (*Lepus californicus*), cottontail rabbit (*Sylvilagus auduboni*), kangaroo rat (*Dipodomys merriami*), woodrat (*Neotoma lepida*) and several species of small rodents. Bird species common to the site include the raven (*Corvus corax*), rock dove (*Columba livia*), violet green swallow (*Tachycineta thalassina*) and sparrows. Large birds include the golden eagle (*Aquila chrysaetos*), turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*) and peregrine falcon (*Falco peregrinus*). Reptile species common in the study area include the side-blotched lizard (*Uta stansburiana*), desert iguana (*Dipsosaurus dorsalis*), gopher snake (*Pituophis melanoleucus*) and Mojave rattlesnake (*Crotalus scutulatus*).

Bats

Bats were specifically surveyed during ~~two separate periods from Spring~~ 1990, 1996 and ~~to January~~ 1997. Surveys~~ were conducted for each species and~~ results are included in the Biological and Soil Resource Evaluation.[168]

The first two surveys for bats, especially Townsend's big-eared bat, ~~was~~ were conducted in mine openings, including stopes and glory holes, on Soledad Mountain during late March and June 1990.[169] During ~~the~~ these surveys, 55 openings were entered and visually inspected for bats~~,~~ and guano ~~or other animal signs~~. No evidence of bats was found in the openings or mine workings. One western pipistrelle bat was trapped in a mist net ~~and other~~ on April 2. Many other pipistrelles and two pallid bats were observed~~ flying in~~ the same evening. High winds and low counts of flying insects may have accounted for the low numbers of bats~~, and possible low populations~~ detected or observed during the surveys.

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168 Ibid.

169 Brown, Patricia, Ph.D., A Survey *for Bat of the Soledad Mountain Project, Mojave, Kern County, California*, July 2, 1990, included in Attachment B in Appendix III.

A second series of surveys for bats was conducted in August and October 1996;[170] ~~, and a~~ A ~~winter~~ cold season survey for bats was conducted in January 1997.[171] ~~The recent surveys for bats were conducted i~~ In August and October 1996, ~~when~~ over 70 workings were entered to search for bats or guano. No bats were observed in the mines during diurnal surveys, and only small amounts of guano (myotis sp.) were observed in two prospect holes and a stoped adit. Bats were observed entering or leaving mine workings at dusk. ~~Based on these surveys, at least two unidentified species of bats were observed in the project area. The small bats flying around and exiting the mines were probably California myotis (*Myotis californicus*) and/or western pipistrelle (*Pipistrellus hesperus*). Two species of bats were observed entering or leaving a large open cut. One was a light-colored, broad-winged bat, and the others were 14 large, light-colored bats. The sight and lack of echolocation evidence is consistent with the identification of either Townsend's big-eared bat (*Corynorhinus townsendii*) or pallid bat (*Antrozous pallidus*).~~ As a result of these surveys, it was determined that at least two species of bats roost in the mines at Soledad. Small bats observed in the evenings are probably California myotis (*Myotis californicus*) and/or western pipistrelle (*Pipistrellus hesperus*). Larger bats observed and detected were either Townsend's big-eared bat (*Corynorhinus townsendii*) or pallid bats (*Antrozous pallidus*). Mexican free-tailed (*Tadarida brasiliensis*) bats were detected flying over the area, but it is unlikely that they would roost within the mines, although they may roost within crevices in large boulders on Soledad Mountain.

A ~~winter~~ cold season bat survey was conducted January 4-6, 1997;[171] ~~in which o~~Over 30 mine workings were entered on foot and by hoist by (Dr. Scott Altenbach).[171a] No bats were observed hibernating in the mine workings, and only a few pieces of fresh guano were detected in one mine adit. Dr. Brown observed that the large number of interconnected, inaccessible workings could not be surveyed, and, therefore, more bats may be resident than were observed. Ideally, bats present would voluntarily abandon the mines when mining commences.

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170 Brown, Patricia, Ph.D., Brown-Berry Biological Consulting, *Warm Season Bat Surveys at Soledad Mountain, Kern County, California*, October 28, 1996, included in Attachment B in Appendix III.

171 Brown, Patricia, Ph.D., *Winter Bat Survey at Soledad Mountain, Kern County, California*, February 3, 1997, included in Attachment B in Appendix III.

171a Altenbach, Scott, Ph.D, *A Summary Report on Internal Bat Surveys of Abandoned Mine Features at Soledad Mountain, Mojave, California*. Exploration 4-6, January 1997, included in Attachment B in Appendix III.

Dr. Altenbach saw no sign of bats or guano in the extensive drifts, stopes or shafts he entered. He concluded that, although there was an absence of evidence, this does not preclude the presence of bats. He does state, however, that if there were significant numbers of bats, he would have observed signs, and that the absence of bats was unprecedented in such large underground workings. However, the few bats present would present a difficult or impossible task to exclude. The number of bats possibly killed by mining activities would be low based on the indications of the surveys. If bats were present, Dr. Altenbach believes that due to the high proportion of interconnected working and multiple openings, the bats could escape the advance of open pit mining.

Species of Management Concern

Four animals known to inhabit the types of habitats in the project site on Soledad Mountain are of possible concern from the threatened, endangered or special concern species lists for the Federal and California agencies. These species of concern are the desert tortoise (*Gopherus agassizii*); ~~and the~~ Mohave ground squirrel (*Spermophilus mohavensis*); ~~and the bats,~~ Townsend's big-eared bat (*Corynorhinus townsendii*) and pallid bat (*Antrozous pallidus*).

Desert tortoise:

The Desert tortoise is a federally-listed endangered species. Desert tortoise surveys were conducted in specific areas of potentially suitable habitat, although the project area is not designated as critical habitat by the United States Fish and Wildlife Service. No recent active sign or live tortoises were observed on the project site. Tortoises were not found to occur on the project site during surveys in 1995. According to the United States Fish and Wildlife Service, recent tortoise surveys have not detected any tortoises west of State Route 14 in Antelope Valley.[172] A detailed survey was conducted in April 1997 to confirm previous results.

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[172] Bamberg Associates, *Biological and Soil Resource Evaluation for Soledad Mountain Project*, November 1995, Revised, Section 5.4, included as Attachment B in Appendix III.

Mohave ground squirrel:

The Mohave ground squirrel is a state-listed threatened species. Surveys for the Mohave ground squirrel[173] were carried out in late March and May 1990. Two trapping grids did not result in the capture of any Mohave ground squirrel. The project area is on the edge of the known Mohave ground squirrel range. There are two habitat types in the lower shrub/ grass and shrub/scrub vegetation on the west flank of the mountain which could support Mohave ground squirrels. The proposed western heap leach pad and overburden pile are in part of the habitat area.

Bats:

Townsend's big-eared bat and the pallid bat are California Department of Fish and Game Species of Special Concern. Townsend's big-eared bat was formerly a U.S. Fish and Wildlife Service Category 2 (C2) Candidate for listing as threatened or endangered. The USFWS recently abolished the C2 category, but the status of Townsend's big-eared bat is still being monitored.

Surveys for the two bat species of concern, Townsend's big-eared and pallid bats, were conducted ~~in two separate occasions during Summer, Fall, Winter 1996-97, and Spring 1990.~~ during January 1997, August and October 1996 and March, April and June 1990. Only a small number of bats were ~~discovered or~~ observed or detected in the surveyed mine workings. ~~At least two species of bats were observed in the historic mine workings at Soledad, but absolute identification was not possible. Bats~~ Two of the bat species observed were either Townsend's big-eared bat and/or pallid bat~~s, both of which are listed by California Department of Fish and Game as Species of Special Concern. Dr. Brown suggests that the few bats present will voluntarily vacate the mines when mining activity begins, and the number of bats possibly killed should be low, based on the results of the surveys.~~ Ideally, any bats present would voluntarily vacate the mine when mining activity begins, as it would be extremely difficult to exclude bats from interconnected mine workings. Flightless juvenile bats (May through June) and hibernating bats could be killed during mining activities. The number of bats which could potentially be killed due to mining activities would be low.

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173 Brown, Patricia, Ph.D., *A Survey for Mojave Ground Squirrels, Soledad Mountain Project, Mojave, Kern County, California*, August 2, 1990, included in Attachment B in Appendix III.

3.6.2.2 Direct/Indirect Impacts

According to Appendix G of the State CEQA Guidelines, a project would normally have a significant effect on the environment if it would:

(c) Substantially affect a rare or endangered species of animal or plant or the habitat of the species;

(d) Interfere substantially with the movement of any resident or migratory fish or wildlife species;

(t) Substantially diminish habitat for fish, wildlife or plants.

(v) Create a potential public health hazard or involve the use, production or disposal of materials which pose a hazard to people or animal or plant populations in the area affected.

For the purposes of this EIR/EIS, a significant impact would normally occur if implementation of the proposed project would:

- violate any environmental law or regulation designed to protect wildlife, fisheries, plant species or habitat areas;
- directly harm a sensitive species or cause a net loss to the habitat of the species;
- interfere substantially with the movement of any resident or migratory fish or wildlife species, or with established resident or migratory corridors;
- cause any fish or wildlife population to drop below self-sustaining levels; or
- cause a net loss of any riparian lands, wetlands, marshes or other environmentally-sensitive habitat areas.

~~The project site does not include environmentally-sensitive habitat areas or species.~~ No threatened or endangered species have been identified on the project site. Neither desert tortoises or Mohave ground squirrels were observed on the project site. There were ~~possible~~ sightings of either the Townsend's big-eared bat or pallid bat which are California species of special concern. There will be no interference with fish, migratory species or wildlife species, or with established migratory corridors. During the life of the mine, no open water will exist to attract waterfowl or other migrants.

The populations of wildlife are not anticipated to drop below self sustaining levels as a result of the proposed project. No significant impacts to sensitive species are anticipated as a result of the proposed project.

Impacts to wildlife and wildlife habitat during construction and operation of the project will be minimized by containing disturbance within necessary areas only, maintaining a 25 mph speed limit, limiting exposure of wildlife to the cyanide solutions by using a closed system, and preventing ponding of the cyanide on the surface of the heap as described in Section 2.2.2.2 and Section 2.2.4.3. Any loss of wildlife on the project site will be reported and measures taken to prevent a reoccurrence. Potential impacts to wildlife are considered to be Less Than Significant.

3.6.2.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible/irretrievable commitment of wildlife resources related to the proposed project. Some wildlife habitat would be altered for species composition and use by specific species. Revegetation of disturbed areas with native plants would restore the disturbed wildlife habitat. In addition, as part of the Proposed Action, some areas disturbed by historical mining activity would be reclaimed.

3.6.2.4 Cumulative Impacts

The land disturbance associated with this project (930 acres), projected residential build out (approximately 200 acres) and the proposed aggregate quarry operated by Hemperly/Warnack (approximately 100 acres) represents a cumulative disturbance of 1,230 acres during the life of the project. Required reclamation of the mining projects would return the sites to the preexisting land use. The reclamation requirements and large surrounding area of undisturbed habitat make the cumulative impact to wildlife Less Than Significant.

3.6.2.5 Summary of Regulatory Requirements

The following is a summary of regulatory requirements which will be in place to regulate the project in regard to wildlife resources.

- An informal consultation with the California Department of Fish and Game will take place before construction begins.
- An informal consultation with the United States Fish and Wildlife Service will take place before construction begins.
- A preconstruction survey for desert tortoise was conducted in April 1997.
- A desert tortoise survey will be conducted by a qualified biologist before construction of each portion of the heap leach pads and the surveyed area will be fenced with appropriate material for exclusion of desert tortoises.
- **In the event that a desert tortoise is found within the project site, mining activities must cease in the vicinity of the sighting and the BLM shall be contacted immediately. At this time BLM is responsible for initiating formal section 7 consultation with the U.S. Fish and Wildlife Service (the Service). The Golden Queen Mining Company is not authorized for any form of "take" of desert tortoise. Taking is defined as harassing, harming, pursuing, hunting, shooting, wounding, trapping, capturing, collecting or attempting to engage in any such conduct. Authorization for take of desert tortoise by Golden Queen Mining can only be obtained after a biological opinion has been issued to the BLM by the Service.**
- Reclamation according to SMARA will return the project site to open habitat including native vegetation after mining is completed.

3.6.2.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The following is a summary of design features which are included by the applicant in addition to those required by regulations, and are included in the impact analysis of the project as related to wildlife resources.

- Grading for the project will be minimized to the extent consistent with safe and efficient operations to limit the total area of surface disturbance.
- Routine distribution of cyanide solution on the top of the heap leach pad will occur via a drip irrigation system and the heap leach pads will be contoured to prevent surface ponding which could attract birds and small animals.
- Containers of reagents will be stored within controlled reagent storage areas and kept closed, stored in enclosed areas, or otherwise managed to prevent access by wildlife.

- Project waste will be properly managed at the site to control garbage that could attract wildlife.
- The maximum vehicle speed will be 25 mph.
- Wildlife habitat awareness will be included in the worker education program.
- Some of the mine adits will be retained and ~~fenced~~ gated, and some of the mine shafts will be covered by grates to allow access by bats while excluding people.

3.6.2.7 Recommended Mitigation

As a result of regulatory requirements and project design features, impacts to wildlife would be Less Than Significant. No mitigation measures are recommended.

3.6.2.8 Level of Significance After Mitigation (Residual Impacts)

Impacts to the small numbers of bats would be reduced by placing gates or grates at the entrance to some existing shafts and adits to allow bat access for roosting. Other impacts to wildlife will be reduced by reclamation of disturbed surfaces to restore habitats.

The proposed project would not violate any environmental law or regulation designed to protect wildlife.

The proposed project would not directly harm a sensitive species or cause a net loss of habitat to the species.

The proposed project would not interfere substantially with the movement of any resident or migratory fish or wildlife species.

The proposed project would not cause any wildlife population to drop below self-sustaining levels.

The proposed project would not cause a net loss of an riparian lands, wetlands, marshes or other environmentally-sensitive habitat areas.

Impacts to wildlife resources would be Less Than Significant after regulatory and proposed project design features are in place.

3.7 Cultural and Historical Resources (Cultural Resources)

3.7.1 Setting

The Mojave Desert and surrounding area have been occupied by various groups of people from possibly as long ago as 30,000 years before the present.[174] There is little information available about the early groups because few archaeological sites have been found. More substantial inhabitation occurred from 6,000 to 4,000 years before the present, as demonstrated by sites found along prehistoric shorelines, including the prehistoric shoreline of Rosamond Lake. From 4,000 years to 800 years before the present, population groups continued to inhabit the desert and foothills. Evidence suggests that these groups attained a food supply by both foraging and hunting. There are few sites representing the last portion of this period, when missions pulled many of the region's inhabitants away.

Before the 1860's, the Antelope Valley was traversed by various Euro-American explorers. The first settlers arrived in the 1860's and were involved in ranching in the foothills of the Tehachapi Mountains. The completion of the Southern Pacific railway through the valley in 1876 was a major impetus to settlement.

The first recorded mining activity in the area occurred in 1894 at what is now Standard Hill. There have been three main periods of development at Soledad Mountain. During the first period from approximately 1894 to 1910, there was major prospecting and development. The Karma, Queen Esther and Echo mines were in operation with mills onsite. The Eagle Group and Bobtail Claims were operating, but the ore was taken to offsite mills. During the second period, from the Depression years until 1942, there were numerous small scale mining efforts and all ore was hauled to Tropico for milling. During the third period, from 1942 to the present, there has been a limited amount of mining and exploration. These mining operations involved the establishment of small living groups on Soledad Mountain.

The remains of buildings, mining equipment and residences are evident throughout the project area. These cultural and historical resources are subject to evaluation in accordance with the guidelines set forth in the California Environmental Quality Act (CEQA) and the National

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174 W & S Consultants, *Phase I Archaeological Survey of the Golden Queen Mine Project Area*, 1995, included as Appendix VIII.

Historic Preservation Act (NHPA). Only those resources found to be "important" under CEQA or "significant" under NHPA are considered in the assessment of the potential of a Proposed Action to adversely affect the cultural environment.

3.7.1.1 Cultural Resources on Private Lands

In accordance with state requirements under CEQA for private lands, a phase I archaeological survey and phase II test excavations and determinations of significance were prepared by W & S Consultants on the Soledad Mountain Project area. The reports documenting this work are included in Appendix VIII. The reports are considered confidential information and will be distributed accordingly.

According to Appendix K of CEQA, if the project may cause damage to an important archaeological resource, the project may have a significant effect on the environment. Damaging effects on an archaeological resource should be avoided whenever feasible. If avoidance is not feasible, the following criteria shall be used to evaluate the importance of the site:

- The archaeological resource is associated with an event or person of (1) recognized significance in California or American history or (2) recognized scientific importance in prehistory.
- The resource can provide information which is of both demonstrable public interest and useful in addressing scientifically consequential and reasonable or archaeological research questions.
- The resource has a special or particular quality, such as oldest, best example, largest or last surviving example of its kind.
- The resource is at least 100 years old and possesses substantial stratigraphic integrity.
- The resource involves important research questions that historical research has shown can be answered only with archaeological methods.

Cultural resources on private land were evaluated based on the preceding criteria. The following four sites on private land have been identified as "important" according to CEQA.

CA-KER-4446H is referred to as Cobble City or "Little Italy." It is a complex of building remains, located on private land, which are in a good state of preservation and which have a potential to contribute to the understanding of a period of Kern County history. The site is endangered by downslope movement of tailings from the Queen Esther Mine.

CA-KER-4447H is the Wegmen residential complex located on private land. The complex includes turn of the century, Depression era and recent remains. The site contains information which would contribute to the understanding of early mining patterns in Kern County.

CA-KER-4448H is the Karma Mill complex, including a head frame, vertical shaft and hoist and shop in conditions varying from good to poor. The site, located on private land, contains information which would contribute to the understanding of early mining practices and patterns.

CA-KER-4449H is the Queen Esther Mill which was built in 1903 and operated until 1910 on private land. The mill structure and buildings lack integrity, but the site contains information useful for the understanding of early mining history in Kern County.

The following sites were identified on private land, but were not considered "important."

CA-KER-4450H is the Echo Mill constructed on private land in 1903 and dismantled in 1906. The building remains have been mapped and no more information is expected from this site. However, it might yield information under the surface if uncovered.

CA-KER-4451H is the large Golden Queen Mill site constructed on private and federal land in 1935. The site remains do not contain information of archaeological or historical interest.

CA-KER-4452H is the post-World War II Silver Queen Mine complex. The structures, located on private land, are lacking in integrity and scientific interest.

CA-KER-4453H is the Gypsy Starlight area which consists of a cluster of wooden ore chutes and related mine features located on private land. The site is lacking in integrity and does not contain historically important information.

CA-KER-4454H, referred to as the Bobtail site and located on both private and federal land, consists of unrelated mining features of various ages. The site is not considered to contain information of scientific or historical interest.

CA-KER-4693H consists of the remains of at least six structures on private land which represent a small mining camp occupied for a short period of time. There is no evidence of sub-surface deposits and the architectural remains are in various stages of collapse.

CA-KER-4694 consists of a low-density, prehistoric, Late Archaic or later, plant processing station located on private land along the northern margin of a dry mud playa. The site contains surficial artifacts commonly associated with plant grinding.

CA-KER-4695H is a small turn-of-the-century mining camp consisting of a single tent pad adjacent to a historical road or trail on private land. A privy pit has been excavated and the site is not expected to contain any more scientific information.

3.7.1.2 Cultural Resources on Public Lands

In accordance with federal requirements, class III inventories were prepared for all federal lands within the project area by W & S Consultants. All archaeological documents are included as Appendix VIII and are summarized in this section. The archaeological studies are treated as confidential information and will be distributed accordingly.

The evaluation of cultural significance as required by federal law is made with reference to the ability of a site or related group of sites to meet the criteria for eligibility to the National Register of Historic Places (NRHP). As stated in 36 CFR, Part 60.4, these criteria are as follows:

1. is at least 50 years in age;
2. retains integrity of location, design, setting, materials, feeling and association; and
3. has one or all of the following characteristics (significance criteria):
    a. association with events that have made a significant contribution to the broad patterns of our history; or
    b. association with the lives of persons significant in our past; or

c. embodies the distinctive characteristics of a type, period, method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack distinction; or
d. has yielded, or may be likely to yield, information important to pre-history or history.

No sites located on federal property were determined to be eligible for the National Register of Historic Places (NRHP). The following sites were identified on federal property, but were not considered eligible for the NRHP:

CA-KER-764H, a group of cobble structures on federal land, was discovered in 1977. The structures appear to be water-retention structures, but their function is unknown. They do not contribute to the understanding of the history of the area. It is not a significant site and, therefore, is not eligible for inclusion in the NRHP.

CA-KER-765 was discovered in 1977 on federal land and was interpreted to be a bedrock grinding slick. It is now interpreted to be a natural rock feature and does not constitute an archaeological site.[175]

CA-KER-4451H is the large Golden Queen Mill site constructed on private and federal land in 1935. The site lacks integrity and research potential and is not eligible for inclusion in the NRHP.

CA-KER-4454H, referred to as the Bobtail site and located on both private and federal land, consists of unrelated mining features of various ages. The site is not considered to contain information of scientific or historical interest. Therefore, it is not significant and is not eligible for inclusion in the NRHP.

CA-KER-4455H is the Elephant-Eagle Mill and Mine located on federal land and built during the Depression era. It lacks integrity and has no scientific value. It is not significant and is, therefore, not eligible for inclusion in the NRHP. However, the site includes a gyratory crusher which is in good condition.

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[175] W & S Consultants, *Class III Inventory of the Golden Queen Mine Project Area, Mojave, Kern County, California*, October 1996, included in Appendix VIII.

CA-KER-4841H represents a small mining activity area consisting of a small vertical shaft and associated trash scatter. The integrity of the site has not been maintained. It is a small outlying feature of the Wegman complex, CA-KER-4447H, which has been salvaged. The site is not significant and, therefore, is ineligible for inclusion in the NRHP.

3.7.2 Direct/Indirect Impacts

3.7.2.1 Cultural Resources on Private Lands

According to Appendix G of the State CEQA Guidelines, a project would normally have a significant effect on the environment if it would:

(j) Disrupt or adversely affect a prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group.

For the purposes of this EIR/EIS, a significant impact would normally occur if implementation of the proposed project would:

- cause the physical disturbance of, or prevent the future access to, a prehistoric, historic or cultural site which is listed or eligible for listing on the National Register of Historic Places, the California Register of Historic Resources, or a Register of Historic Resources which has been adopted by the resolution or ordinance of a local government;
- cause the physical disturbance of, or prevent future access to, a structure, parcel or other feature of historic or cultural significance to a community, ethnic or social group; or
- cause the disturbance of any human remains.

The archaeological sites lie in areas which will be disturbed by the excavation of open pits and creation of overburden piles and the heap leach pads. The existing structural remains, surficial and sub-surface deposits and shafts and adits will be affected. Four sites on private land, CA-KER-4446H, CA-KER-4447H, CA-KER-4448H and CA-KER-4449H, which are considered important under CEQA criteria, will be disturbed. Four sites of minor interest, CA-KER-4450H, CA-KER-4695H, CA-KER-4693H and CA-KER-4694, will also be disturbed.

The impact to the cultural resources is Significant because four historical sites on private land, considered important, would be disturbed.

3.7.2.2 Cultural Resources on Public Lands

The proposed project would be considered to have a significant effect on cultural resources on federal lands if it would:

- disturb cultural resources that are listed or eligible to be listed in the National Register of Historic Places.

Of the historical sites which lie in areas of federal land which would be disturbed by the proposed project, none were eligible for inclusion in the NRHP. In consultation with the BLM, it has been determined that there are no significant sites on federal lands. The impact to cultural resources on federal lands is considered Less Than Significant.

3.7.3 Irreversible/Irretrievable Commitment of Resources

The historical sites found in the project area would be disturbed by the excavation of open pits and creation of overburden piles and the heap leach pads. However, the sites on private land with scientific and historical value will have been subject to a Phase III Data Recovery (salvage excavation and architectural recording) prior to site disturbance. There were no sites on federal land eligible for the NRHP.

3.7.4 Cumulative Impacts

The proposed project, in conjunction with other past, present and recently foreseeable future projects, will result in Less Than Significant impacts to cultural resources with the implementation of regulatory requirements according to CEQA Guidelines Appendix K, including mitigation measures, such as data recovery for important sites, as defined under CEQA and according to federal requirements.

3.7.5 Summary of Regulatory Requirements

The following is a summary of regulatory requirements which will be in place to regulate the project in regard to cultural resources.

- If any unknown cultural resources (i.e., archaeological artifacts, human remains, paleontological resources) are discovered in the course of operations on federal land, the operator shall bring this to the attention of the authorized officer and shall leave such discovery intact until told to proceed by the authorized officer.[176]
- In the event of discovery of human remains, work in the area will halt until the coroner has determined that no investigation of the cause of death is required; or, if the remains are of Native American origin, descendants have made a recommendation to the owner regarding proper disposal of remains, or no descendants have been identified or descendants failed to make a recommendation with 24 hours of notification. If no recommendation is received, remains are to be reinterred with appropriate dignity on the property in a location not subject to future development.

3.7.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The following is a summary of design features which are included by the applicant in addition to those required by regulations, and are included in the impact analysis of the project on cultural resources.

- Should any previously unknown archaeological/cultural resources be discovered on private land during the course of mining or reclamation, work in the area of discovery shall be stopped and a qualified archaeologist contacted to evaluate the find and, if necessary, mitigate~~d~~ impacts prior to resumption of work.
- Artifacts from the historical sites will be used to establish a small display of historical mining activities onsite. After conclusion of the project, the items on display will be donated to a museum located in Kern County.

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[176] 43 CFR, Section 3809.2-2(e)(2)

- As part of the worker education program, construction contractors and operations personnel will be instructed regarding the sensitivity of cultural resources and the presence of laws against unauthorized collection and disturbance.

3.7.7 Recommended Mitigation

Phase III Data Recovery shall be conducted prior to site disturbance on four historically important sites: CA-KER-4446H, 4447H, 4448H and 4449H, and the results reported to Kern County prior to site disturbance. Following the Phase III Data Recovery, the four sites shall have an archaeological monitor review the area during grading activity to record and collect any additional archeological information that may be uncovered during such activity.

The three historic sites on private land, CA-KER-4450H, CA-KER-4695H and CA-KER-4693H, and one prehistoric site on private land, CA-KER-4694, shall have an archaeological monitor review the areas during grading activity to record and collect any additional archeological information that may be uncovered during such activity. Any information uncovered shall be reported to Kern County.

No mitigation measures are recommended for sites on federal properties because the impacts to those sites are Less Than Significant.

3.7.8 Level of Significance After Mitigation (Residual Impacts)

As a result of the proposed mitigation measures, the impact to the cultural resources on both private and federal lands would be Less Than Significant. The Phase III Data Recovery will actually preserve artifacts and information which would otherwise be lost to continued decay.

3.8 Visual Resources (Light and Glare/Aesthetics)

3.8.1 Setting

The visual resources comprise the visual quality and character of the project site and the surrounding region. Land surface, water, vegetation and other natural or man-made features make up the scenic quality of the landscape. These properties can be described in terms of the visual elements of form, line, color and texture.

The landscape characteristics, or form, of the project area consist of broad, relatively flat, alluvial areas with steep hills/mountains rising above the desert floor at various locations. Soledad Mountain, the project site, is a volcanic peak approximately three miles in diameter rising more than 1,000 feet above the surrounding desert. The visual line, the path the eye follows, is predominately horizontal. The flat, broad valleys allow long distance views and the horizontal line results from the contact of the ground and vegetation with the sky. The line is broken by vertical changes, such as Soledad Mountain. The landscape color consists of browns, tans and grays. Vegetation colors are generally browns, greens, yellows and tans. Because of the limited vegetation cover, landscape colors meld with vegetation colors from distant view points. Texture, the visual manifestation of the interplay of light and shadows, is subtle because of the uniformity of the broad valleys, sparse vegetation and colors.

Several open pit mines are located in the area. All the mines have visual contrasts created by roads, open pits, overburden piles and, in the case of gold mines, heap leach pads. Several industries along State Route 14 and the windfarms in the Tehachapi Mountains contribute to existing visual contrasts.

The project area is visible from major travel routes along State Route 14 and State Route 58 passing through the Mojave area to the north and east of the project site. The project area is also visible from Silver Queen Road, a county road which provides access to the project site and borders the north and west sides of the project site. The project area is in the foreground from the local road and in the background from the state highways. Approximate traffic on Silver Queen Road is 410 average daily trips, while approximate traffic on State Route 14 as reported in 1995 is 15,000 ADT.[177]

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[177] Personal communication, CalTrans.

Residents along Backus Road view Soledad Mountain from the south and will be able to see portions of the overburden piles. Residents along Silver Queen Road will have a direct view of the heap leach pad and the mine. Most residents of Camelot Park do not have an uninterrupted view of Soledad Mountain from the north because of the proximity of the houses to each other and the distance to Soledad Mountain.

The significant majority of the visitors to the project site would be mine employees, contractors and other mine-related personnel. Access to the actual mining operations will be limited by the company for safety and security reasons.

The visual resources of the project area were investigated using methods outlined in Section 8400 of the BLM Manual. Using these methods, the resources are analyzed by considering the scenic quality, viewer sensitivity and the distance between the viewer and the proposed modification of the landscape. The BLM visual resource management (VRM) system, which was developed by the BLM for identifying, evaluating and classifying visual resources of public lands, assigns a management class rating from I through IV by inventorying and evaluating both scenic quality and the sensitivity of a landscape (Table 3.8-1). Discussions with Mr. Dave Wash at the BLM Office in Ridgecrest indicate that the BLM has not assigned a VRM rating to lands in the project area.

The Master Environmental Assessment/Master Environmental Impact Report for the Kern County General Plan, based upon the BLM VRM classes presented in Table 3.8-1, assigns a management class rating of II to the area around Soledad Mountain. The area along State Route 14 north to and including Mojave is assigned a management class rating of III.

Contrast ratings were conducted from four selected viewing locations, using methods outlined in Section 8400 of the BLM Manual. These Key Observation Points (KOPs), shown in Exhibit 3.8-1, were selected to represent the view from the intersections of major highways and local roads which carry the majority of traffic flow in the Mojave area and represent locations where the general public will view the project site. Visual contrast rating sheets and photographs are included in the Visual Resource Impact Analysis.[178] All photographs represent the view from the passenger seat of an automobile located at the KOP.

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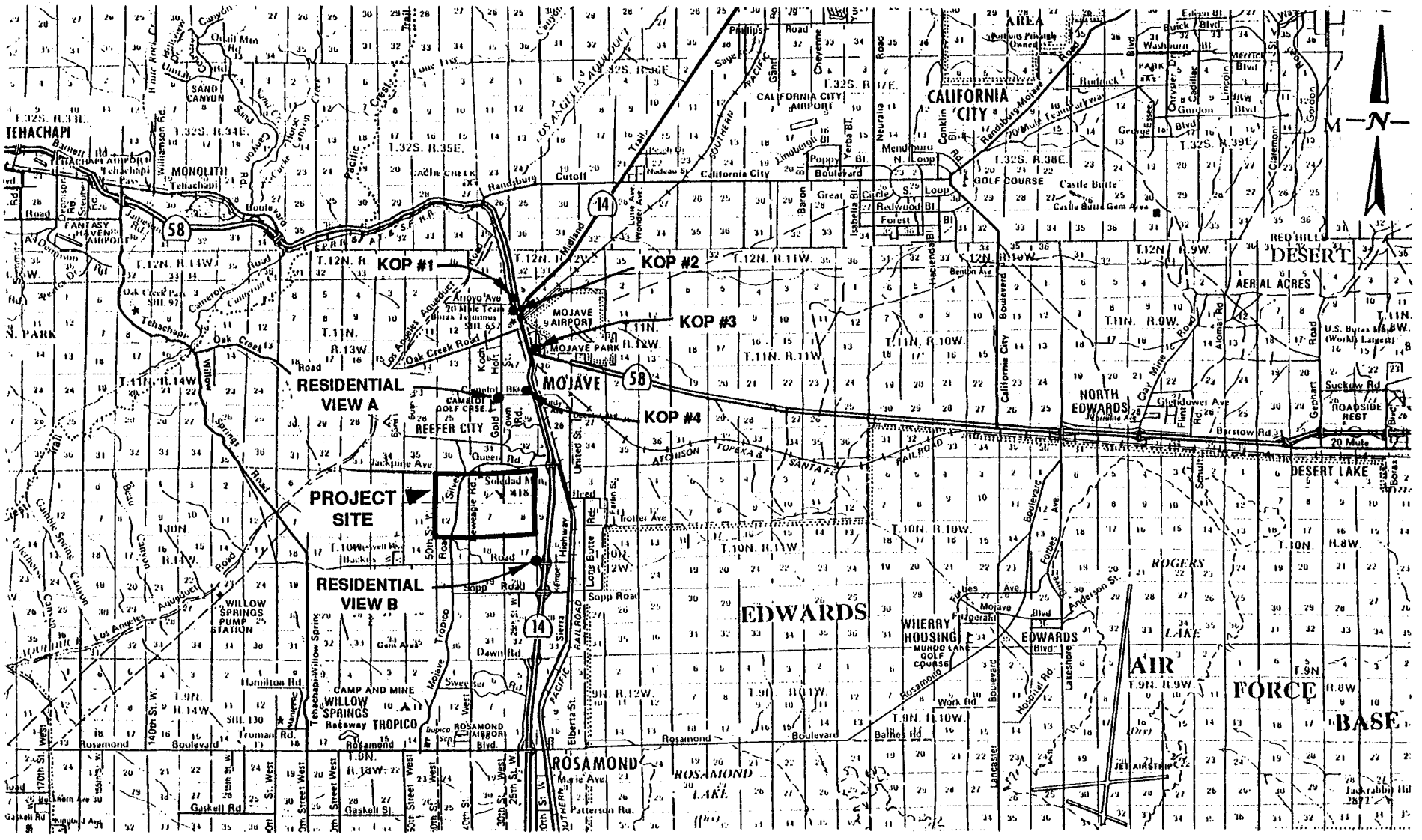
[178] WZI Inc., *Visual Impact Analysis*, included as Appendix IX.



FOR PHOTOGRAPHS, SEE VISUAL IMPACT ANALYSIS, APPENDIX IX

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

VISUAL IMPACT ANALYSIS
KEY OBSERVATION POINTS (KOP)
AND RESIDENTIAL VIEWS

DATE		EXHIBIT
11/96	0733.0010	3.8-1

TABLE 3.8-1

BLM Visual Resource Management Classes

Class	Description
I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color and texture found in the predominant natural features of the characteristic landscape.
III	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
IV	The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. Management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic element.

KOP #1 represents a view of the project area from State Route 58 and Arroyo Avenue north of Mojave. This intersection provides access to residential housing and is inside the 30 mile per hour speed zone approaching Mojave from the north. The foreground view is composed of power poles, highway signs, billboards and railroad tracks. The middleground is composed of power poles, residential housing and open space. The background is composed of Soledad Mountain and other distant mountains.

KOP #2 represents a view of the project area from State Route 58 and State Route 14 north of Mojave. This intersection is controlled by a traffic signal. The foreground view is composed of power poles, highway signs, billboards and railroad tracks. The middle ground is composed of power poles, residential housing and open space. The background is composed of Soledad Mountain and other distant mountains.

KOP #3 represents a view of the project area from State Route 58 and State Route 14 in downtown Mojave. This intersection is controlled by a traffic signal. The foreground view is composed of power poles, highway signs, billboards and railroad tracks. The background is composed of Soledad Mountain.

KOP #4 represents a view of the project area from State Route 14 and Camelot Boulevard south of Mojave. This intersection provides access to residential housing at the Camelot housing tract. The foreground view is composed of pavement, highway signs and markers for various buried utilities. The middle ground is composed of open space and the existing Granite Construction Company aggregate operations at Standard Hill. The background is composed of Soledad Mountain.

In addition to KOP's for major travel routes, the Visual Resource Evaluation included two residential views. Appendix IX contains a view (A) looking south from the south edge of the Camelot housing development and a view (B) looking northwest from the corner of State Route 14 and Backus Road. Locations are shown on Exhibit 3.8-1.

The view from the Camelot housing development is obscured for many residents by other houses. Those residents with a view of Soledad Mountain see only the upper slopes of the mountain in the background of the view. The foreground is composed of chain link fencing, grasses and shrubs.

The view from State Route 14 and Backus Road represents the view for residents along Backus Road. The foreground and middle ground consist of open space with vegetation. The background is dominated by Soledad Mountain.

A third residential view, as shown in Section 3.2.1, Exhibit 3.2-3 of this document, is from four residences located just north of the project area off Silver Queen Road. The foreground is composed of vegetation. The middle ground is composed of tailings from previous mining activity. The background is composed of Soledad Mountain where historical mining activity, including roads and tailings, is visible. The tailings from previous mining create a strong color contrast in the landscape.

3.8.2 Direct/Indirect Impacts

According to Appendix G of the State CEQA Guidelines, a project would have a significant effect on the environment if it would:

(b) Have a substantial, demonstrable negative esthetic effect.

For the purposes of this EIR/EIS, a significant impact would occur if implementation of the proposed project would:

- conflict with the applicable vista protection standards, scenic resource protection requirements or design criteria, of federal, state and local agencies;
- change the existing visual quality and character at the project site in a manner that is inconsistent with other uses which currently exist or have been approved for the area;
- increase light and glare in the project vicinity so as to cause a hazard or nuisance condition;
- alter or obstruct existing public viewsheds from or across the project site, including scenic features associated with designated scenic highways; or
- significantly reduce sunlight or introduce shadows in public areas.

Impacts to visual resources from the activity during the operating life of the project would result from the visibility of surface disturbance associated with construction and operation of project facilities, the creation of overburden piles, the creation of the heap leach facilities, the creation of the open pit mine and the occasional dust plumes resulting from blasting in the open pit mines. These impacts would occur over a period of up to 15 years. Impacts to visual resources on completion of the project after closure, reclamation and revegetation would be reduced. Additionally, impacts to visual resources vary depending on the viewpoint, whether from a distant viewpoint or from a nearby residence.

Photographs of current conditions, taken from each KOP, and photographic simulations of the Proposed Action are presented in Appendix IX. Standard four inch by six inch prints illustrate the current conditions and the Proposed Action as viewed by the naked eye from each KOP. Enlargements to eight inch by 10 inch are used to outline and discuss the Proposed Action. Standard four inch by six inch prints of the current views and eight inch by 10 inch simulations of the Proposed Action as viewed from the two residential areas are also presented in Appendix IX.

The heap leach pads, open pit mine, overburden piles and access road constructed as part of the Proposed Action would represent a noticeable visual contrast for nearby residential viewers north of the project. A noticeable visual contrast for nearby residential viewers south of the project site would be the result of overburden piles only.

The visual contrasts would be less noticeable from a distance for casual viewers, those traveling along State Routes 14 and 58. The Proposed Action, as viewed in relationship to other current and historical activities in the area would only be a weak contrast to the existing regional landscape. There is a potential significant impact to visual resources as a result of the proposed project.

Existing roads and exploration drilling sites which are not necessary to provide operating and exploration access to the proposed project site will be recontoured and reclaimed to minimize visual impacts at the proposed project. Some existing overburden piles from previous mining activity within the proposed disturbance will be reclaimed and/or revegetated as described in the Reclamation and Revegetation Procedures (Appendix III, Attachment D). The heap leach pads and overburden piles resulting from open pit mining as part of the proposed project will also be recontoured as part of the reclamation and closure activities at the site.

The form of the reclaimed project would approach the form of the surrounding landscape, however, some areas would remain discontinuous and there would be some areas of angular line. The color of the reclaimed project would approach that of the surrounding landscape.

The open pit mine would remain as a permanent change to the line and form of the area. Due to the steepness of the pit walls, the pit walls would be in shadow during certain times of the day and year. The shadows would cause the pit walls to blend with other features on the mountain.

Views from residences located immediately north of Soledad Mountain and to a lesser extent along Backus Road south of Soledad Mountain would have less contrast after reclamation. As a result of final reclamation, the heap leach pads and overburden piles, which repeat the basic elements of form, line, color and texture of the rest of Soledad Mountain, would no longer attract attention. The visual impact would be reduced.

Operations under the Proposed Action would cause some visual contrast with the surrounding land from more distant viewpoints, even after reclamation. However, when the Proposed Action is viewed in relationship to other current and historical activities there is only a weak contrast. The project area, with the implementation of the Proposed Action, would contrast

slightly with the existing environment. Due to the viewing distance from the major travel routes, viewer sensitivity to the visual resources is considered to be low to moderate.

All the mining projects in the area are subject to reclamation procedures which would reduce the impact to the visual resources. The proposed project would not alter the existing appearance to the casual viewer because the type of activities outlined in the Proposed Action are consistent with past activities in the area.

The visual impacts from the Proposed Action would be Less Than Significant when compared to the currently existing conditions and surrounding views.

The operations plan calls for portable lighting units which will be used in the active working areas in the mine and on the overburden piles. The facilities will be lighted for safety 24-hours per day. The lights would be visible from the KOP's, however, all lighting will be directed toward the working areas and shielded. Project design features will reduce the level of impact to Less Than Significant.

3.8.3 Irreversible/Irretrievable Commitment of Resources

The landscape would have a permanent change, however, the basic elements of form, line, color and texture of Soledad Mountain would be similar to the existing features.

3.8.4 Cumulative Impacts

The change in the landscape associated with the proposed project, the potential residential development and the Hemperly/Warnack aggregate quarry would alter the landscape, but the cumulative visual impact to the overall regional landscape would be Less Than Significant.

3.8.5 Summary of Regulatory Requirements

The following is a summary of regulatory requirements which will be in place to regulate the project in regard to visual quality. These regulatory requirements have been included in the project for the purposes of the preceding impact analysis.

- The Reclamation Plan approved by Kern County will include:
  - The removal of all buildings and foundations at the end of the project;
  - Grading of overburden piles and heap leach piles to fit in with the surrounding topography; and
  - Revegetation of the disturbed areas with native species of plants.
- Dust control measures required in the air permit to control particulate emissions will minimize the potential visual impact of fugitive dust.

3.8.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The following is a summary of design features which are included by the applicant in addition to those required by regulations, and are included in the impact analysis of the project on visual resources.

- Surface disturbance will be minimized to that required for safe and efficient operation.
- Historical mining disturbance will be reclaimed.
- Buildings and structures will be painted with nonreflective earthtone colors to blend with the predominant background.
- Outdoor lighting for the mine pit and other areas of nighttime activities will be shielded and directed downward to reduce fugitive light. Light poles will be no higher than necessary for safe and efficient lighting Low-pressure sodium bulbs or other appropriate technology will be used for outdoor lighting.

3.8.7 Recommended Mitigation

No mitigation measures are recommended.

3.8.8 Level of Significance After Mitigation (Residual Impacts)

The change in topography and landscape of Soledad Mountain represent residual impacts. After reclamation the change in the visual resources of the project area would not be unlike surrounding areas, repeating the basic visual elements, and may not be noticeable to the casual observer from major traveled routes. The long-term impact would be Less Than Significant.

3.9 Noise

3.9.1 Setting

Noise is generally defined as unwanted or objectionable sound. Sound is technically described in terms of the loudness (amplitude) of the sound and the frequency (pitch) of the sound. Sound levels are usually measured and expressed in decibels (dB). The decibel measurement is logarithmic, meaning each increase of one decibel is a tenfold increase in noise. Because the human ear is not equally sensitive to sound at all frequencies (human hearing is less sensitive to low and extremely high frequencies than mid-range frequencies), the A-weighted decibel scale has been devised to relate noise to human sensitivity and rank the intensity of sound. In the following discussion, the term dB will indicate A-weighted sound level in decibels.

In Kern County, the standards for noise levels are established in the Noise Element of the Kern County General Plan.[179] The goals of the Noise Element and General Plan are to (1) ensure that residents of Kern County are protected from excessive noise and moderate levels of noise are maintained and (2) protect the economic base of Kern County by preventing the encroachment of incompatible land uses near known noise producing roadways, industries, railroads, airports and other sources. The plan states that industrial uses or operations should "be designed or arranged so that they will not subject residential or other noise sensitive land uses to exterior noise levels in excess of 65 dB L_{dn}." The L_{dn} scale, the Day Night Noise Level, represents a time weighted 24-hour average noise level based on the A-weighted decibel with time of day penalties applied to sounds occurring outside of "daytime" hours (7:00 a.m. to 10:00 p.m.).

The project area is located in a sparsely populated rural area, with the nearest occupied residences located approximately 2,900 feet northwest and 4,250 feet southwest of proposed blasting, loading and crushing areas and 1,100 feet north and 2,500 feet southwest of the heap leach pads and overburden piles. An unoccupied residence in the Goldtown subdivision is located approximately 1,000 feet east of the eastern overburden pile.

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[179] *Kern County General Plan, Noise Element*, December 1989

The principal existing sources of noise in the area are sonic booms from military aircraft, vehicle traffic on nearby roads, including State Route 14 and Silver Queen Road, and diesel locomotives on the railroad tracks east of the site. The local terrain is complex, which produces areas where noise from the mining and processing operations may be sheltered.

Ambient noise level data collection was conducted[180] at a location in the northwest corner of the project site across Silver Queen Road during the following periods when no mining activity was conducted:

May 31, 1990 - Jul 5, 1990
Aug 31, 1990 - Oct 3, 1990
Nov 30, 1990 - Jan 5, 1991
Feb 28, 1991 - Apr 5, 1991

Appendix X contains a summary of the Noise Level Data Collection and Processing Methods, and a tabulation of the data showing the Leq (total sound energy of a time-varying sound level over a given period of time, in this case, one hour), the Lmax (the maximum level in a given period, in this case, one hour), and the L90 (the level exceeded 90 percent of the time over one hour, which excludes noise levels of short duration). This information was summarized in a noise impact analysis report,[181] adjusted to compute the Day Night Noise Level (L_{dn}) shown in Table 3.9-1.

TABLE 3.9-1

Day Night Noise Level (L_{dn}) - dB (A-weighted)

	June 1990	September 1990	December 1990	March 1991
Month Average	61.9	55.4	54.9	59.7
Highest Day	71	63	63	69
Lowest Day	50	47	48	52

180 Air Sciences, Inc., *Ambient Baseline Noise Monitoring Plan, Soledad Mountain Project, Mojave, California*: June 1990, included in Appendix X.

181 Celano, Joseph W., *Preliminary Noise Impact Analysis Report, Golden Queen Mining Company, Soledad Mountain Project*: Hersh Acoustical Engineering, Inc., January 1997, included in Appendix X.

The data contained in Table 3.9-1 indicates that the daily ambient noise levels at the monitoring site were in the range L_{dn} 47 to 71 dB. Monthly average levels were in the range L_{dn} 55 to 62 dB. These noise levels were in compliance with Kern County's L_{dn} 65 dB outdoor criterion for residential uses except for several days in June 1990 and March 1991 when the 65 dB criterion was exceeded. The causes of the excess noise levels are not known.

3.9.2 Direct/Indirect Impacts

According to Appendix G of the State CEQA Guidelines, a project would normally have a significant effect on the environment if it would:

(p) Increase substantially the ambient noise levels for adjoining areas.

For the purposes of this EIR/EIS, a significant impact would normally occur if implementation of the proposed project would:

- violate any established noise or vibration law, regulation or standard;
- cause a permanent increase in ambient noise or vibration levels which would be perceptible to humans in the project vicinity, and which is perceptibly greater than the noise and vibration levels caused by existing development in the project area; or
- cause a temporary or periodic increase in ambient noise or vibration levels which would be perceptible to humans in the project vicinity, and which is perceptibly greater than the noise and vibration levels caused by existing development in the project area.

The noise which would be generated by the proposed project falls into two categories: (1) general mining activity including engine noise and back-up alarms from haul trucks, loaders and other vehicles, rock drills, rock crushing and screening equipment and miscellaneous equipment noise from the process plants, shop and office and (2) blasting. Noise from the haul truck engines and loader operations occurs when the trucks are filled with material in the open pit mines. Truck engine noise is also associated with hauling the materials to the overburden material piles or the crusher. Vehicle back-up alarm noise will be generated in the open pit mines, on the overburden material piles and at the crusher location. Noise from the truck and loader activities will occur 24-hours per day, seven-days per week. Noise from the crushing equipment will occur 24-hours per day, seven-days per week. Blasting will normally occur once a day during daylight hours.

The noise from the mining operations has the potential to cause significant impact to the level of noise in the area of the project. General operational noise during the first year of the project was modeled based on proposed equipment distributed in likely operation locations throughout the site.[182] Nearby existing residential uses are indicated on a plot of predicted noise contours by numerals 1 through 4 and 6 through 9 (Exhibit 3.9-1). All of these residences are located outside the computed L_{dn} 65 dB contours. Estimated noise exposure at residences 1 through 4 would be in the L_{dn} 59 to 63 dB range and noise at residences 6 through 9 would be in the L_{dn} 53 to 58 dB range. The model assumed unobstructed line-of-sight sound transmission from all noise sources with no allowance for shielding of sound by intervening terrain features. As development proceeds and the pit deepens, much of the equipment would operate within the pit where it would be shielded by the pit walls.

Blast noise has been projected based on previous measurements at another mine, which is located in Kern County and is similar to the proposed project.[183] The blast noises were evaluated using C-weighted L_{dn}, a method which discriminates against very high and very low frequencies and is typically utilized to measure high intensity sounds having significant low frequency. A typical blast would be below C-weighted 65 dB at 1,000 feet from the center of the blast. The nearest occupiable residence is 2,900 feet from the area where blasts would occur.

To evaluate the overall noise environment, the C-weighted L_{dn} due to blast noise can be added logarithmically to the A-weighted noise exposure due to the operations. Modeling demonstrates that on a day that a typical blast occurs, the composite noise exposure would be below L_{dn} 64 dB at the nearest occupiable residences.

The anticipated noise levels generated by typical operations at the Soledad Mountain Project are within the limits recommended by the Noise Element of the Kern County General Plan. During the operating life of the project, there would be an increase in ambient noise levels which would be perceptible to humans in the project vicinity, but these levels would not exceed maximum existing levels measured in the vicinity of the project area and the impact of the project on noise would be Less Than Significant.

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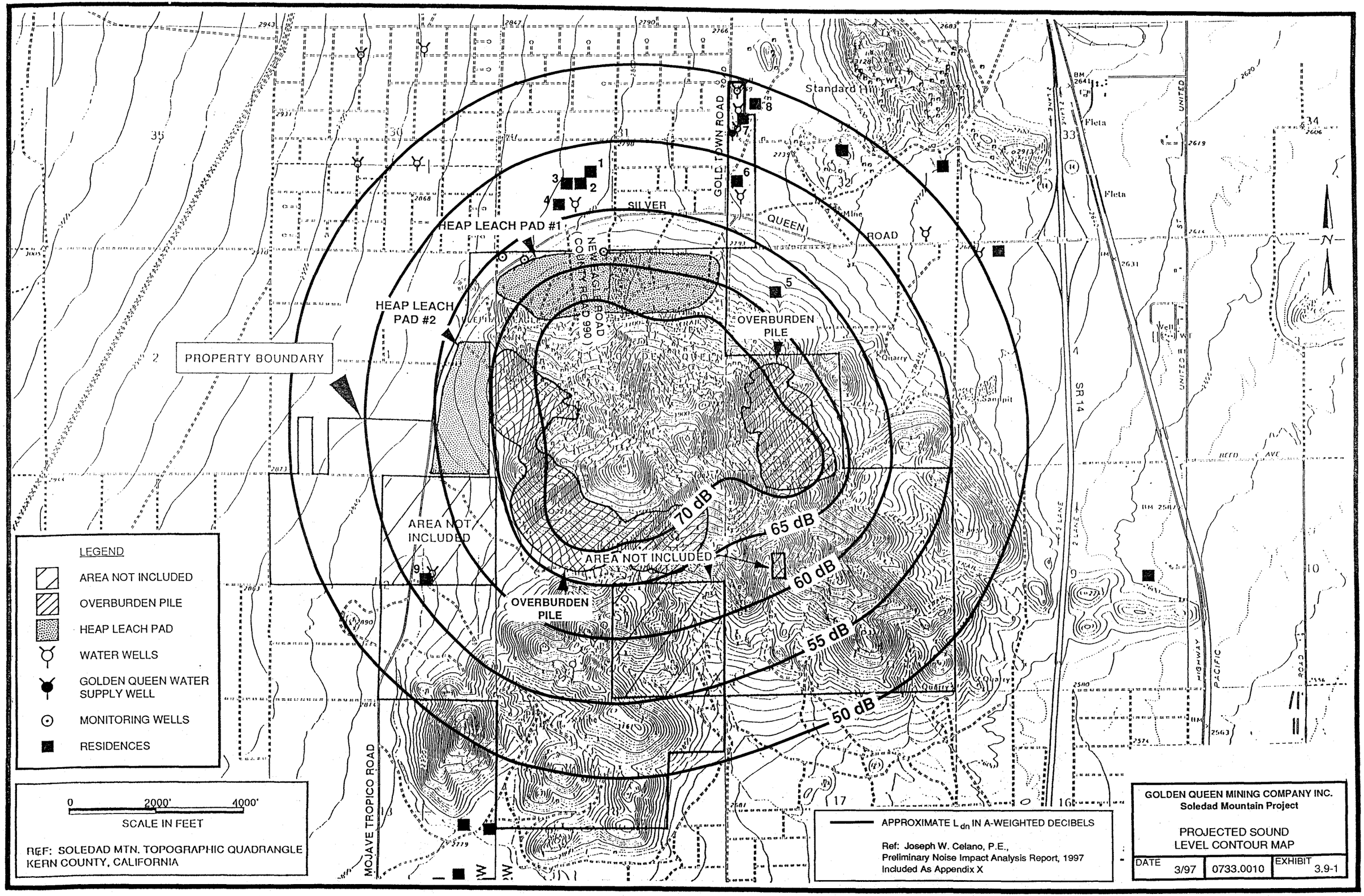
[182] Ibid.

[183] Ibid.


HEAP LEACH PAD #1
HEAP LEACH PAD #2
PROPERTY BOUNDARY
OVERBURDEN PILE
OVERBURDEN PILE
AREA NOT INCLUDED
AREA NOT INCLUDED
70 dB
65 dB
60 dB
55 dB
50 dB
SILVER QUEEN ROAD
GOLD TOWN ROAD
NEW GOLD TOWN ROAD
MOJAVE TROPICO ROAD
Standard Hill
Fleta
SR 14
UNITED
PACIFIC
HIGHWAY
LEGEND
AREA NOT INCLUDED
OVERBURDEN PILE
HEAP LEACH PAD
WATER WELLS
GOLDEN QUEEN WATER SUPPLY WELL
MONITORING WELLS
RESIDENCES
0 2000' 4000'
SCALE IN FEET
REF: SOLEDAD MTN. TOPOGRAPHIC QUADRANGLE
KERN COUNTY, CALIFORNIA
APPROXIMATE L_{dn} IN A-WEIGHTED DECIBELS
Ref: Joseph W. Celano, P.E.,
Preliminary Noise Impact Analysis Report, 1997
Included As Appendix X
GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project
PROJECTED SOUND LEVEL CONTOUR MAP
DATE 3/97
0733.0010
EXHIBIT 3.9-1

3.9.3 Irreversible/Irretrievable Commitment of Resources

There is no irreversible or irretrievable commitment of noise resources associated with the project.

3.9.4 Cumulative Impacts

Compliance with the Kern County Noise Ordinance will ensure the cumulative impacts from the past, present and foreseeable projects are Less Than Significant.

3.9.5 Summary of Regulatory Requirements

The following is a summary of regulatory requirements which will be in place to regulate the project with regard to noise. The requirements have been included here for the purpose of the preceding impact analysis.

- The noise levels at nearby residences will remain within the recommendations of the Noise Element of the Kern County General plan.
- Machinery, equipment and vehicles will be equipped with mufflers in accordance with MSHA requirements.

3.9.6 Summary of Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The following is a summary of the design features which are included by the applicant in addition to those required by regulations, and are included in the impact analysis of the project on noise.

- Approximately 75 to 80 percent of construction activities will take place during daylight.
- Blasting will occur during daylight one time per day and will be engineered to minimize the amount of explosives used, according to United States Bureau of Mines guidelines.[184]

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[184] Nickells, H. R., C. F. Johnson and W. I. Duvall, *Blasting Vibration and Their Effects on Structures*: U.S. Department of Interior, U.S. Bureau of Mines, 1971.

3.9.7 Recommended Mitigation

Impacts to noise resources are Less Than Significant and no mitigation measures are recommended.

3.9.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance of impact to noise would be Less Than Significant.

3.10 Land Use (Land Use/Population/Housing)

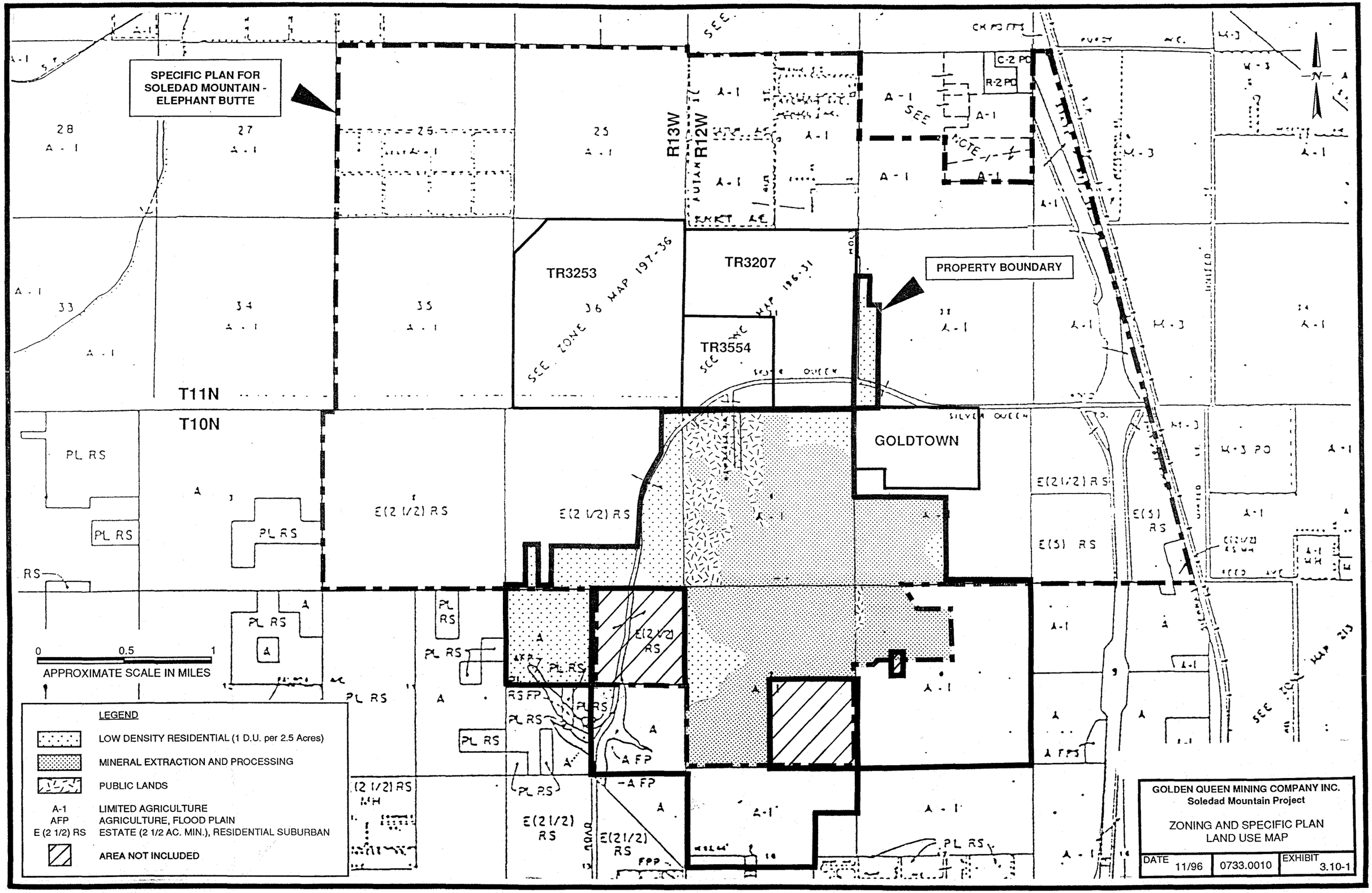
3.10.1 Setting

The primary land use within the project area consists of mineral exploration, mineral development and open space. The surrounding adjacent land is primarily undeveloped desert land. The project area does not contain any prime agricultural land. Access to the site is from Silver Queen Road, an existing, paved county road. Silver Queen Road is an east-west road which runs approximately 600 feet north of the project site. Golden Queen's entrance road will intersect Silver Queen Road near the eastern boundary of Section 6, Township 10 North, Range 12 West, SBBM, directly opposite Goldtown Road.

New Eagle Road, a dedicated county road, extends southerly from Silver Queen Road into the northwest one-quarter of Section 6, Township 10 North, Range 12 West, SBBM, approximately 1,670 feet to its terminus at the base of Soledad Mountain. This project includes the vacation of the portion of New Eagle Road that lies within Section 6, Township 10 North, Range 12 West, SBBM.

The majority of the project area lies within the "Specific Plan for Soledad Mountain - Elephant Butte and Vicinity - South of Mojave," which was adopted by the Board of Supervisors of the County of Kern, State of California by Resolution 73-278. Subsequently, Resolution 73-485 was adopted by the Board of Supervisors on June 18, 1973, to correct clerical errors in the plan. The plan area for the Specific Plan is shown on Exhibit 3.10-1. The existing Specific Plan recognizes the mineral resources within the area. The plan states in part that "No industry is proposed within the Plan Area with the exception of mining and possible processing of silver and gold ores" and that "Those areas known to contain potential commercial value ores and deposits should be restricted from potential incompatible use and protected for their beneficial future use." The only agricultural use mentioned in the Specific Plan is grazing.

As shown in Exhibit 3.10-1, the majority of the land within Sections 5, 6, 7 and 8, Township 10 North, Range 12 West, SBBM, contains a land use designation of "Mineral Extraction and Processing," on the Specific Plan. The remainder of the land in these sections contains land use designations of "Public Lands" and "Low Density Residential" (one dwelling unit per two and one-half acres). The project also includes a portion of Section 1, Township 10 North,


SPECIFIC PLAN FOR SOLEDAD MOUNTAIN - ELEPHANT BUTTE
PROPERTY BOUNDARY
TR3253
TR3207
TR3554
GOLDTOWN
R13W
R12W
T11N
T10N
N
0 0.5 1
APPROXIMATE SCALE IN MILES
LEGEND
LOW DENSITY RESIDENTIAL (1 D.U. per 2.5 Acres)
MINERAL EXTRACTION AND PROCESSING
PUBLIC LANDS
A-1 LIMITED AGRICULTURE
AFP AGRICULTURE, FLOOD PLAIN
E (2 1/2) RS ESTATE (2 1/2 AC. MIN.), RESIDENTIAL SUBURBAN
AREA NOT INCLUDED
GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project
ZONING AND SPECIFIC PLAN LAND USE MAP
DATE 11/96
0733.0010
EXHIBIT 3.10-1

Range 13 West, SBBM, which has a land use designation of Low Density Residential (one dwelling unit per two and one-half acres).

The Specific Plan states that lot sizes should be limited to a minimum of two and one-half acres. Three residential tract maps have been recorded on property directly north of the project (Exhibit 3.10-1). These tracts are zoned E (two and one-half acres), and the lot sizes on these tracts are approximately two and one-half acres each. Tracts 3554 and 3207 are located in Section 31, Township 11 North, Range 12 West, SBBM. The California Business and Professions Code[185] requires the issuance of public reports from the California Real Estate Commissioner before unimproved land which has been subdivided into five or more lots in unincorporated areas can be sold, leased or offered for sale.[186] These requirements extend to the purchaser of five or more lots in an existing subdivision. A California Department of Real Estate report was filed on Tract 3554, but was never completed and was eventually abandoned.[187] The Department of Real Estate does not have a record of a report for Tract 3207. One of the factors that may have contributed to the low level of residential development in the area is the lack of a potable water supply primarily due to the high arsenic concentrations.

Tract 3253 is located in Section 36, Township 11 North, Range 13 West, SBBM. A Department of Real Estate report was first issued on February 7, 1992, and was last amended on May 16, 1996.[188] The report states that individual septic systems will be used for sewage disposal and that private water wells are the only source of water. The report further states that, "There is no guarantee of quality, quantity or availability of water on each lot or parcel."

The Townsite of Goldtown is zoned A-1 and lies east of the project site within the North one-half of Section 5, Township 10 North, Range 12 West, SBBM (Exhibit 3.10-1). The subdivision map for the Townsite of Goldtown was filed in 1923. Goldtown remains undeveloped except for a single structure located at 2805 Ophir Ave. Kern County issued a building permit for a

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185 California Business and Professions Code §11000 et. seq.

186 California Business and Professions Code §11018.2

187 California Department of Real Estate File 023742

188 California Department of Real Estate File 009371SA-A16

single family residence at this location in 1992, however, a certificate of occupancy has not been issued. The file remains pending with Kern County.

The lots within Goldtown are 25 feet by 110 feet, therefore, most property owners own more than one lot. The Specific Plan for Soledad Mountain - Elephant Butte and Vicinity -South of Mojave states that, "The Townsite of 'Goldtown' must be recognized as unique within the Plan area since the existing lot sizes and resultant ownerships create densities that are not consistent with adopted precise zoning nor the recommended density for residential development. Alternatives must be proposed and adopted to provide for the health, safety and welfare of future residents within the 'Goldtown' area, due to the scarcity and questionable quality of the water supply." The Townsite of Goldtown does not have paved streets, a potable water supply or sewer system. The Specific Plan states "With the exception of Goldtown, water supply within the Plan area will be by individual wells." At this time, there is no alternative water supply to Goldtown.

Zoning within the project area is administered by Kern County. The majority of the land acquired by Golden Queen is zoned A-1 (Limited Agriculture) (Exhibit 3.10-1). The land east and south of the project site is also zoned A-1 while the land to the north and west is zoned E (two and one-half) (estate residential, minimum parcel size two and one-half acres).

The zoning district for each of the areas in which Golden Queen has acquired an interest is shown below:

Township 11 North, Range 12 West, SBBM

Section 32	A-1 (Limited Agriculture)

Township 10 North, Range 12 West, SBBM

Section 5	A-1 (Limited Agriculture)
Section 6	A-1 (Limited Agriculture)
Section 7	A-1 (Limited Agriculture)
Section 8	A-1 (Limited Agriculture)
Section 18	A-1 (Limited Agriculture)

Township 10 North, Range 13 West, SBBM

Section 1	E (2-1/2) RS (Estate and Residential Suburban Combining)
Section 12	A (Exclusive Agriculture)

The Kern County Zoning Ordinance permits mining and mineral extraction in the existing zoning districts within the project area subject to approval of a Conditional Use Permit for a Surface Mining/ Reclamation Plan. The specific chapters of the zoning ordinance for each of the referenced Kern County zoning districts are: Chapter 19.12 (A), Chapter 19.14 (A-1), Chapter 19.16 (E) and Chapter 19.6 (RS).

Golden Queen has acquired or is in final negotiation for all necessary interests for the project. A complete list of the interests acquired for this project is contained in Appendix III, Attachment A. The consolidation of mining rights facilitates mineral mining in the area of acquisition. Within the Golden Queen project area, the California State Lands Commission has a reserved one-sixteenth mineral interest in Lots 2 and 20 in Section 6, Township 10 North, Range 12 West, SBBM (Kern County Assessors Parcel Numbers 429-190-4, 5 and 6).

The mineral interest of the State Lands Commission affects approximately 68 gross acres in the northeast quarter of Section 6. The reserved mineral interest entitles the state to a one-sixteenth royalty from minerals produced from this land. This portion of the project area would not be a part of the mine, therefore, no minerals are anticipated to be removed from land on which the State Lands Commission has an interest. The surface would be used for a heap leach pad, overburden piles or other activities related to mining.

3.10.2 Direct/Indirect Impacts

According to Appendix G of the State CEQA Guidelines, a project would normally have a significant effect on the environment if it would:

(a) Conflict with adopted environmental plans and goals of the community where it is located.

(u) Disrupt or divide the physical arrangement of an established community.

(w) Conflict with established recreational, educational, religious or scientific uses of the area.

(y) Convert prime agricultural land to non-agricultural use or impair the agricultural productivity of prime agricultural land.

For the purposes of this EIR/EIS, a significant impact would normally occur if implementation of the proposed project would:

- conflict with adopted land use plans or policies applicable to the project site or the project vicinity; or
- conflict with open space, low-income housing, or the adopted land use goals which are applicable to the project location;

The proposed use within the project site is consistent with the Specific Plan for the area. The proposed use is also a permitted use, upon approval of a Conditional Use Permit for a Surface Mining/Reclamation Plan, in the existing zoning districts. Therefore, the project is not in conflict with the adopted specific plan of the community and the Kern County Zoning Ordinance and there is No Impact.

The project area or adjacent land has not been designated for low income housing. The existing and historical land use within the project site is mineral exploration, mining and open space. The project site would be reclaimed at the conclusion of mining activities. Therefore, the land use after reclamation would be similar to the current land use.

There is no prime agricultural land within the project area, therefore, there is no impact. The proposed use does not conflict with existing recreational, educational, religious or scientific uses of the area, therefore, there would be No Impact.

The vacation of the portion of New Eagle Road within Section 6, Township 10 North, Range 12 West is a direct impact attributable to this project. The vacation of New Eagle Road may eliminate access to certain privately owned parcels of land.

3.10.3 Irreversible/Irretrievable Commitment of Resources

The project would not prevent other types of land uses, such as residential, on adjacent properties. Agriculture is not considered feasible on the project site due to the lack of soil and

the steep slopes. Commercial and industrial facilities are possible in the area but would require a zone change and amendment to the Specific Plan. The Specific Plan for Soledad Mountain - Elephant Butte and Vicinity - South of Mojave does not propose any industry within the plan area other than mining and ore processing.

The vacation of New Eagle Road would result in the permanent loss of approximately 1,670 feet of roadway. The road terminates in Section 6 and does not connect to any other public road or streets. However, access is not necessary during the course of mining.

3.10.4 Cumulative Impacts

The proposed project in conjunction with other past, present and reasonably foreseeable future projects would result in No Impact. The past, present and reasonably foreseeable future projects are consistent with the respective Specific Plans and General Plans for industrial and residential development.

3.10.5 Summary of Regulatory Requirements

The following is a summary of the regulatory requirements which will be in place to regulate land use. These regulatory requirements have been considered in the preceding impact analysis.

- Compliance with all regulatory permits and plans as sited in the Introduction (Section 1.2.4).
- Surface mining is a permitted use in the existing zoning districts subject to the requirement of obtaining approval of a Conditional Use Permit for a Surface Mining/Reclamation Plan.
- Compliance with the Noise Element of the Kern County General Plan (Section 3.9).
- Compliance with permits issued by the Kern County Air Pollution Control District, including the use of Best Available Control Technology (Section 3.5).
- Drainage will be controlled according to a Site Drainage Plan which is reviewed and approved by Kern County (Section 3.4.1).
- The acquisition of legal interests in minerals is required to conduct mining activities.

3.10.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The following is a summary of design features, in addition to those required by regulations, which are included by the applicant and were considered in the impact analysis of the proposed project on land use.

- Buildings and structures will be painted with non-reflective earthtone colors to blend with the predominant background.
- Outdoor lighting will be shielded and directed downward to reduce reflective light.
- Low-pressure sodium bulbs or other appropriate technology will be used for outdoor lighting.

3.10.7 Recommended Mitigation

~~Upon cessation of mining activities, the applicant shall reestablish access, either public or private, to all parcels affected by the vacation of New Eagle Road.~~ There are no significant impacts, therefore, there are no mitigation measures recommended.

3.10.8 Level of Significance After Mitigation (Residual Impacts)

The proposed project does not conflict with existing land uses, therefore, there would be No Impact.

The proposed project area does not contain prime agricultural land, therefore, there would be No Impact.

3.11 Socioeconomics (Economic Development/Fiscal Analysis)

3.11.1 Setting

The project is expected to employ approximately 250 people during the construction phase, and up to 230 people during the operation of the facility. A majority of the full-time employees for the project are expected to be drawn from people who already live in the area. Many are expected to be former or current employees of other similar operations in the county that have ceased operations or are in the process of ceasing operations.

Because of its location, the project may affect both Kern and Los Angeles Counties, and adjustments have been made in this analysis to reflect this situation. For the purposes of this study it has been assumed that approximately one-half of those employed by the project will live in Los Angeles County and will spend their disposable income where they live.

During the construction phase, expenditures for labor and materials would infuse approximately 13.7 million dollars into the regional economy.[189] Two hundred and fifty construction workers would be employed, earning approximately 9.9 million dollars in wages. This economic activity would support an additional 166 workers with wages of 3.7 million dollars.

The project will create an estimated 230 full-time jobs, which will pay 7.6 million dollars in wages, exclusive of benefits. The expenditures made by Golden Queen on goods, labor and other services will support another 136 jobs, which are expected to pay wages of 3.3 million dollars. As shown in Table 3.11-1, the value added by the direct and indirect effects of this activity are forecast at 11 million dollars.

There are three groupings of residential areas near the proposed project area: (1) those adjacent to the project area along Silver Queen Road and Mojave-Tropico Road (e.g., those within roughly one-third to one-half mile, at the base of the mountain); (2) the community of Camelot two and one-half miles to the north and (3) residents along the Backus Road corridor

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189 Weaver Haley Mills Consultants, *Analysis of Socioeconomic Impacts of the Proposed Golden Queen Mining Co., Inc. Soledad Mountain Project*, January 1995, included in Appendix XI.

TABLE 3.11-1

Predicted Impacts to Regional Economy (millions of dollars)

	Employment	Wages	Value Added
Direct	230	$7.6	$7.2
Indirect	136	$3.3	$3.8
Total	336	$10.9	$11.0

on the south side of Soledad Mountain. Mining and housing have been coexisting in the project area for the last 10 years. Many homes were built and sold in the vicinity of the Standard Hill and Cactus mines after they started operations in 1987 and 1985, respectively.[190] Standard Hill Mine commenced operations roughly the same time as the 109 Camelot homes were developed. Just north of Soledad Mountain off of Silver Queen Road, there are several homes which were constructed during mining operations at Standard Hill and Cactus.

During the 1980's, the economy of Southern California expanded at a rapid pace as employment and population grew. This economic growth spurred dramatic price appreciation in residential property values in Los Angeles County. As a result, many home builders moved to the Antelope Valley to develop more affordable housing, and thousands of families moved into Palmdale and Lancaster, thereby increasing real estate values through the Antelope Valley. The defense and aerospace industries were major job providers throughout the region, and the Antelope Valley shared in this job growth, with employers such as Edwards Air Force Base and Lockheed Martin. However, the recession of the early to mid-1990's cost Southern California more than 350,000 jobs, and the Antelope Valley area was hard hit by the loss of jobs.[191]

Between 1991 and 1994, Kern County is estimated to have lost 6,500 jobs (3.1 percent). These losses were partly attributable to a large number of job losses in defense and

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190 Sedway Kotin Mouchly Group, *Addendum to the Socio-Economic Study*, October 28, 1996, unpublished report in Appendix XI.

191 Ibid.

aerospace. Mineral resource employment in the county dropped by 3,900 jobs from 1984 to 1994, a 26.4 percent decline. Mineral resource's share of total employment in the county dropped from 8.5 percent in 1984 to 4.4 percent in 1994.[192]

As home values decreased in the 1990's, the development of housing units slowed in both the Mojave and Rosamond areas. From 1990 to 1996, the average home prices reported by TRW/REDI Property Data in the Mojave area decreased from $64,550 to $48,550. Over the same period, the reported sales average in the Rosamond area decreased from $98,740 to $78,740.[193]

3.11.2 Direct/Indirect Impacts

According to Appendix G of the State CEQA Guidelines, a project would normally have a significant effect on the environment if it would:

(k) Induce substantial growth or concentration of population.
(m) Displace a large number of people.

For the purposes of this EIR/EIS, a significant impact would occur if implementation of the proposed project would:

- conflict with population, employment or housing policies or projections established by government agencies with jurisdiction over the project;
- directly or indirectly cause substantial growth or concentration in the population beyond current levels;
- directly or indirectly cause a net loss in the number of jobs in the community or cause substantial job or income losses by changing the employment opportunities in a community;
- require additional police/sheriff staff or equipment to maintain acceptable service ratios, response times or other performance objectives;

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192 Ibid.

193 Ibid.

- require additional fire department staff or equipment to maintain an acceptable level of service;
- increase the population of school-age children in a public school district which is or would be operating without adequate staff, equipment or facilities; or
- create or exacerbate a housing shortage.

A socioeconomic analysis of the proposed project has been performed by Weaver, Hawley, Mills Consultants and is attached as Appendix XI. This analysis represents a "snap shot in time." It was prepared at an early stage in the project scoping process. Some design parameters have undergone minor changes, but these changes do not affect the conclusions of the analysis.

A proportion valuation approach was taken to determine the fiscal impact the project would likely have on the County of Kern. That analysis indicates tax receipts would exceed the expenditures for government services necessitated by the project by approximately $40,700 in Year 1. This assumes a contribution to the County General and Fire Funds of $57,224 and projected service costs of $16,500.[194]

This analysis concludes that the project would enhance the regional economy. The project is not deemed growth inducing because the jobs created would, in all likelihood, replace those being eliminated by the closure of a similar facility within the area. Golden Queen anticipates hiring most, if not all, of its employees from that labor pool. Since the project is not deemed growth inducing, it would not conflict with population, employment or housing policies or projections established by government agencies. The project would create job opportunities in the area; however, since the majority of the employees are expected to come from the existing labor pool, the project would not impact services such as law enforcement, fire protection or public schools. The project site is currently undeveloped, therefore, the project would not displace existing residences or create or exacerbate a housing shortage.

Sedway Kotin Mouchly Group was retained to evaluate the potential impact on values of residential properties in proximity to the proposed Soledad Mountain Project. The report is included in Appendix XI as an Addendum to the Socioeconomic Study. The study concluded

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[194] Weaver Haley Mills Consultants, *Analysis of Socioeconomic Impacts of the Proposed Golden Queen Mining Co., Inc., Soledad Mountain Project*, January 1995, included in Appendix XI.

residential property values in the Mojave/Rosamond area have experienced a downturn in prices due to a general economic depression in the area since 1990. Residential property values within one-half mile of the mining operations along Silver Queen/Mojave-Tropico Road may be impacted by the mining operation, however, there is insufficient data to anticipate the exact magnitude of the price reduction. There would not be a measurable impact on property values in the Camelot community located approximately two and one-half miles north of the proposed project. The residences along the Backus Road corridor located to the south of Soledad Mountain would not experience any measurable value loss. The impacts to property values resulting from the proposed project are considered Less Than Significant.

3.11.3 Irreversible/Irretrievable Commitment of Resources

There is no irreversible/irretrievable commitment of government services.

3.11.4 Cumulative Impacts

The population in the Mojave area is expected to increase to 6,225 by the end of the proposed project in 2015, assuming an annual growth rate of 2.2 percent based on historical growth. The taxes from the proposed project, as well as the possible aggregate quarry operated by Hemperly/Warnack, would help to offset the fiscal impacts of the projected residential development. The cumulative socioeconomic impacts are considered Less Than Significant.

3.11.5 Summary of Regulatory Requirements

No regulatory design features with respect to potential socioeconomic impacts have been identified.

3.11.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The following is a summary of design features, in addition to those required by regulations, which are included by the applicant and were considered in the preceding impact analysis of the proposed project on socioeconomics:

- Golden Queen has committed to hiring from the local population.

3.11.7 Recommended Mitigation

There are no significant impacts, therefore, there are no recommended mitigation measures.

3.11.8 Level of Significance After Mitigation (Residual Impacts)

The proposed project will not conflict with population, employment or housing projects, therefore, the impact would be Less Than Significant.

The proposed project will not cause substantial growth or concentration in the population beyond current levels directly or indirectly, therefore, the impact would be Less Than Significant.

The proposed project will not cause a decrease in jobs, therefore, the impact would be Less Than Significant.

The proposed project will not require additional police/sheriff staff or equipment to maintain acceptable service ratios, therefore, the impact would be Less Than Significant.

The proposed project will not require additional fire department staff or equipment to maintain an acceptable level of service, therefore, the impact would be Less Than Significant.

The proposed project will not result in an increase in the population of school-age children, therefore, the impact would be Less Than Significant.

The proposed project will not create or exacerbate a housing shortage, therefore, the impact would be Less Than Significant.

3.12 Health Hazards/Public Safety (Human Health/Risk of Upset)

3.12.1 Setting

Currently there are only exploratory activities on the Golden Queen project site. Historical mining activity has resulted in intense site disturbance, including abandoned shafts and adits, accumulations of waste rock/low-grade ore materials throughout the site and non-mining wastes in the historical processing areas. The access roads to the site are posted with no trespassing signs. A regulatory data search revealed no known contamination sites within 2,000 feet of the project area. The nearest occupied residence is located approximately 1,100 feet north of the northern edge of the proposed heap leach pad.

3.12.2 Direct/Indirect Impacts

A project would normally have a significant effect on the environment if it would:

> Create a potential public health hazard or involve the use, production or disposal of materials which pose a hazard to people or animal or plant populations in the area affected; or interfere with emergency response plans or emergency evacuation plans.[195]

For the purposes of this EIR/EIS, a significant impact would normally occur if implementation of the proposed project would:

- create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials;
- create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials to the environment;
- interfere with community response plans or emergency evacuation plans in the event of reasonably foreseeable accident or upset conditions involving a hazardous material exposure or release; or

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[195] CEQA Guidelines Appendix G, (v) and (z)

- not have available hazardous material reuse, or hazardous waste treatment or disposal facilities to lawfully accept and handle hazardous wastes generated by the project.

The proposed project will use a number of chemicals considered hazardous under federal and/or state regulations. These chemicals were previously listed in Table 2.2-4. The Proposed Action will comply with all applicable federal, state and local laws, regulations and standards relating to hazardous materials. Hazardous materials transported to the site will be shipped in United States Department of Transportation (DOT)-approved containers.

Design of the proposed project will incorporate all appropriate codes and standards, including:

- Uniform Building Code (UBC)
- National Electrical Code (NEC)
- National Fire Protection Association (NFPA)
- American Society of Mechanical Engineers (ASME)
- Mine Safety and Health Administration (MSHA)
- National Institute for Occupational Safety and Health (NIOSH)
- Uniform Mechanical Code
- Uniform Plumbing Code
- National LP-Gas Association

A Hazardous Materials Business Plan will be prepared and retained onsite. This plan will include an inventory of hazardous chemicals handled, an emergency response plan and an employee training program.

The proposed project will utilize two chemicals which may be subject to Risk Management Program (RMP) requirements: propane and sodium cyanide.

Sodium cyanide will be transported and handled in either solid or liquid form. The cyanide leaching solutions will be maintained in a closed loop system of tanks and piping. The pregnant solution will be retained within the toe of the heap leach pad and the barren solution will be held in one or more tanks. The barren solution tank(s) will be bermed to contain the maximum tank contents in the event of a catastrophic tank failure.

Sodium cyanide dissolved in water forms an equilibrium between ionized sodium cyanide and highly volatile hydrogen cyanide (HCN); a toxic chemical with an OSHA workplace exposure limit of 10 ppm (eight-hour average) in air. HCN formation will be controlled by maintaining an alkaline cyanide solution at 10.5 pH or greater.

Propane will be stored and used in various locations for heaters, ovens, furnaces and retort. These containers will be American Society of Mechanical Engineers (ASME)-approved vessels and will be protected from collision by guard posts, and from fire by deluge sprinkler systems.

Onsite personnel will receive job training and annual refresher course training in emergency response procedures. Adequate access for emergency vehicles will be provided in all areas and fire hydrants will be located as required by the fire code and the Kern County Fire Department. Site tours and site-specific training will be provided for local emergency services.

Fencing and other forms of perimeter control will be established to prohibit public access to the mine, heap leach pads and working areas. Most of the historical adits and shafts lie within the pit area. Those that are not removed by mining will be fenced to protect the public but allow wildlife access or abandoned to prohibit access. The existing waste rock/low grade ore materials from historical mining activities within the project will be reclaimed.

Used oil and solvents will be collected and sent offsite for reprocessing by a licensed recycler.

Domestic waste water will be discharged to a septic system in accordance with Kern County Environmental Health Services Department approvals.

The proposed project has been designed as a "zero discharge" facility for storm water runoff.

Hazardous wastes generated onsite may include laboratory wastes, used oil, oil and grease. Wastes will be characterized and recycled or disposed of offsite at a permitted facility.

3.12.3 Irreversible/Irretrievable Commitment of Resources

There is no irreversible or irretrievable commitment of public health or safety resources. The site will be reclaimed and no hazardous materials or waste will remain.

3.12.4 Cumulative Impacts

There are no cumulative impacts to public health or safety.

3.12.5 Summary of Regulatory Requirements

The following is a summary of the regulatory requirements which will be in place to regulate the proposed project in regard to public health and safety. These regulatory requirements have been considered in the preceding impact analyses.

- Site operations will be conducted in compliance with Federal Mine Safety and Health Administration (MSHA) regulations.
- The routes of hazardous materials being shipped to and away from the proposed project will be coordinated with the California Highway Patrol or other appropriate agencies.
- Transportation of materials and equipment to the site would be regulated under state, federal and/or local laws, regulations and ordinances.
- Storage, use and disposal of all hazardous materials will be in accordance with all federal, state and local regulations, codes and rules.
- Storage and use of explosives will occur in compliance with federal regulations.
- Hazardous Materials Business Plan and inventory will be submitted to Kern County Environmental Health Services Department.
- Onsite personnel will receive annual training in emergency response procedures.
- Used oil and solvents will be collected and sent offsite to a licensed recycler.
- A Process Safety Management (PSM) and Risk Management Plan (RMP) will be prepared, if required.

3.12.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The following is a summary of design features included by the applicant in addition to those required by regulations, which are included in the impact analyses of the proposed project on public health and safety.

- Fences will be erected around potentially hazardous areas to discourage entry by unauthorized mine personnel or visitors.
- Historical mining operations will be removed or closed to the extent feasible.
- Former mine waste will be removed.
- Project design will be in accordance with a preconstruction design study.

3.12.7 Recommended Mitigation

No mitigation measures are recommended.

3.12.8 Level of Significance After Mitigation (Residual Impacts)

The proposed project would not create a significant hazard to the public or the environment through routine transport, use or disposal of hazardous materials. Hazardous materials will be transported in accordance with DOT regulations and stored, handled and disposed of in accordance with all applicable federal, state and local regulations.

The proposed project would not create a significant hazard to the public or the environment through a reasonably foreseeable upset or accident condition involving the likely release of hazardous materials to the environment. As shown in the Preconstruction Design Study,[196] propane and sodium cyanide will be handled such that their use will not create a significant hazard to the public or the environment.

The proposed project would not interfere with community response plans or emergency evacuation plans in the event of a reasonably foreseeable upset or accident condition involving a hazardous material release. Golden Queen employees will be trained such that Golden Queen will be largely self-responding in the event of a hazardous material release. A Hazardous Materials Business Plan, which will include emergency response procedures, will be submitted to the county for use in emergency planning.

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[196] WZI Inc., *Preconstruction Design Study for Potential Incidents Involving Hazardous Materials*, April 1997, included as Appendix XII.

The proposed project would not have any problems with respect to the availability of facilities for hazardous waste reuse, treatment or disposal. All hazardous wastes will be handled in accordance with applicable federal, state and local regulations.

Therefore, the proposed project would have a Less Than Significant impact on health hazards and public safety.

3.13 Traffic and Transportation (Transportation/Circulation)

3.13.1 Setting

The site will be accessed via Silver Queen Road and State Route 14 (Exhibit 3.13-1). Silver Queen Road is designated as an east-west arterial and currently exists as a two-lane road with graded shoulders. It is separated from and interchanges with State Highway 14 by a diamond interchange. State Route 14 is a major north-south route running north from Los Angeles County to Inyokern. Adjacent to the project site it exists as a four-lane divided highway and provides access to Mojave, California City and Ridgecrest to the north and Lancaster, Palmdale and Los Angeles to the south. The 1995 Annual Traffic Census prepared by Kern County states that the average daily trips (ADT) on Silver Queen Road is 410 and the capacity is 15,000 ADT. The Level of Service (LOS) on Silver Queen Road is A. The 1995 ADT on State Route 14, south of State Route 58, was 15,000 with a capacity of 40,000 ADT and a corresponding Level of Service (LOS) of B according to the State of California Department of Transportation (CalTrans) traffic volumes reports.[197] The existing volume and capacity are summarized on Table 3.13-1. Roadways are evaluated by the volume to capacity ratio.

Level of service is defined in Table 3.13-2 according to congestion and volume to capacity ratio.

Traffic volumes on Silver Queen Road and State Route 14 are projected assuming a 4 percent annual traffic growth rate (Table 3.13-1). The traffic volume on Silver Queen Road is estimated to be 775 ADT with a volume capacity ratio of 0.05 which is an LOS of A. State Route 14 traffic volume is estimated to increase to 39,423 ADT with a volume capacity ratio of 0.99 and a LOS of E by the year 2014.

The area is served by the Kern Regional Transit System which links California City, Mojave, Rosamond, Lancaster and Palmdale. Dial-a-Ride is also available for local transportation in the Mojave area.

The project site is undeveloped and there is no established parking area onsite.

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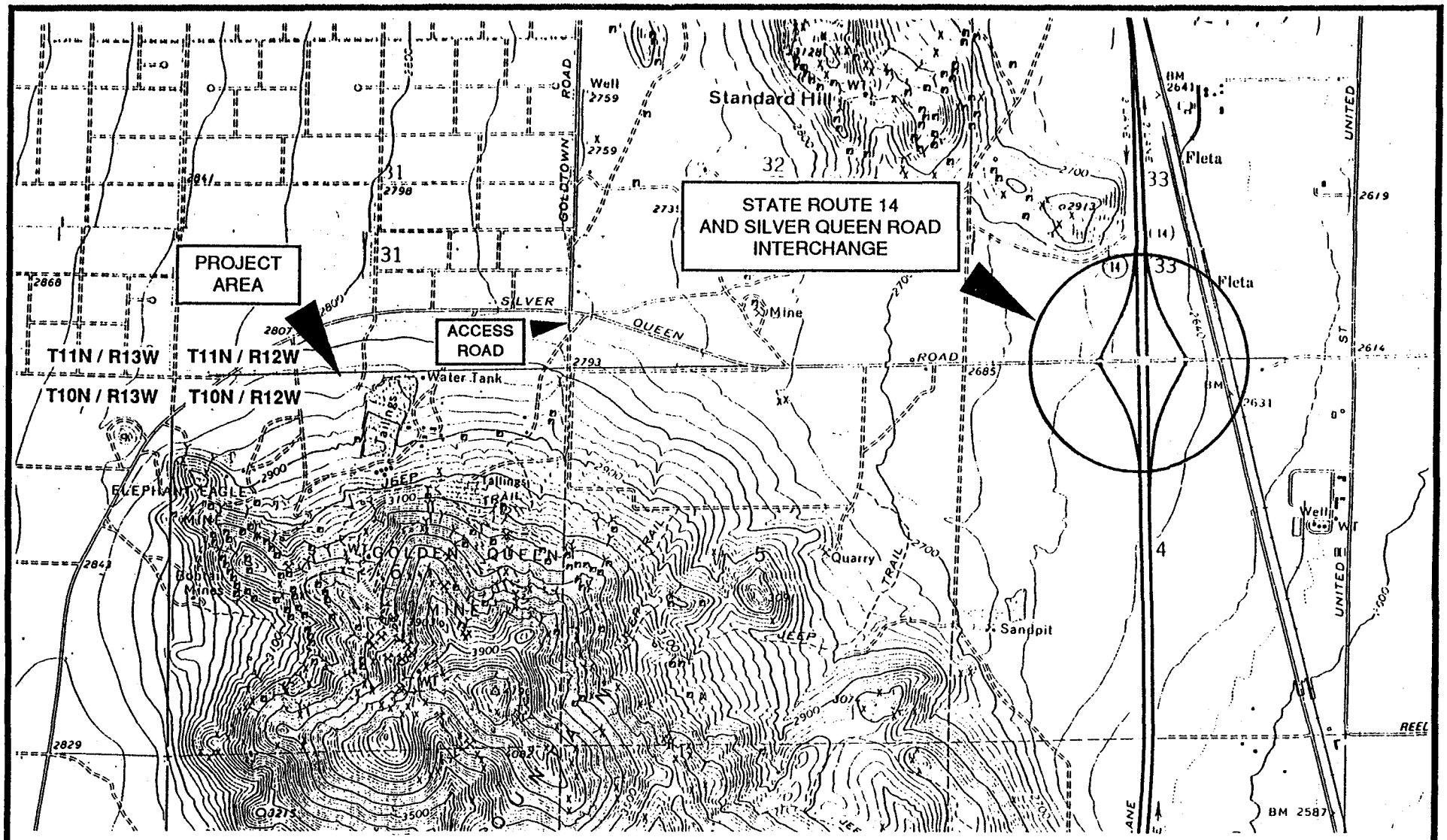
[197] Personal communication with Katy Walton, CalTrans Planning Office.



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0 2000' 4000'

SCALE IN FEET

REF: USGS TOPOGRAPHIC MAPS -
SOLEDAD MOUNTAIN, CA. AND MOJAVE, CA.

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project

INTERCHANGE LOCATION MAP'

DATE		EXHIBIT
3/97	0733.0010	3.13-1

TABLE 3.13-1

Existing and Projected Traffic

Projected 1st Year Traffic[198]					
Road Segment	Capacity	Volume Existing	V/C Existing	Volume Existing & Project[199]	V/C Existing & Project
Silver Queen	15,000	410	0.03	823	0.05
State Route 14 South of Mojave	40,000	15,000	0.37	15,413	0.38
Projected (2014)[200]					
Silver Queen	15,000	775	0.05	1,150	0.08
State Route 14 South of Mojave	40,000	39,423	0.99	39,681	0.99

3.13.2 Direct/Indirect Impacts

According to Appendix G of the State CEQA Guidelines, a project would normally have a significant effect on the environment if it would:

(I) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system.

For the purposes of this EIR/EIS, a significant impact would normally occur if implementation of the proposed project would:

- cause a new violation, or exacerbate an existing violation, of an applicable legal standard or goal relating to traffic levels of service (LOS) or volume/capacity ratios of a state of local agency;

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198 Existing volume for 1995 from CalTrans Planning Office personal communication and Kern County Annual Traffic census. Project traffic volume from construction.

199 Assumes 50 percent of total possible project traffic goes north on State Route 14 from Silver Queen Road and 50 percent goes south on State Route 14 from Silver Queen Road.

200 Projected volume based on a 4 percent annual traffic growth rate. Project traffic volume from operations.

- add traffic to a roadway that has design features or which supports uses which would be incompatible with substantial increases in traffic, that would result in safety problems with the addition of project-related traffic;
- lack adequate internal circulation capacity, including entrance and exit routes, to safely accommodate average and peak-hour traffic loads; or
- not provide sufficient parking capacity for the projected numbers of automobiles and bicycles.

TABLE 3.13-2

Level of Service Definitions

Level of Service	Signalize Intersection	Reserve Capacity	Unsignalized Intersection
"A"	Uncongested operations, all queues clear in a single-signal system. V/C <-0.60	400 or more	Little or no delay
"B"	Uncongested operations, all queues clear in a single cycle. V/C = 0.61 - 0.70	300 to 399	Short traffic delays
"C"	Light congestion, occasional backups on critical approaches. V/C = 0.71 - 0.80	200 to 299	Average traffic delays
"D"	Significant congestion of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed. V/C = 0.81 - 0.90	100 to 199	Long traffic delays
"E"	Severe congestion with some long-standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es). V/C = 0.91 - 1.00	0 to 99	Very long traffic delays, failure, extreme congestion
"F"	Total breakdown, stop-and-go operation. V/C > 1.00	Less than 0	Intersection blocked by external causes

V/C = Volume / Capacity

An increase in traffic due to the proposed project is expected to affect portions of State Route 14 and the portion of Silver Queen Road between the project site and State Route 14.

The facility is expected to employ approximately 250 workers during the construction phase. Approximately 200 trucks per month or 6.6 daily round trips (13 ADT) would deliver supplies to the project site during construction which is expected to take nine to 12 months. Assuming ride sharing of 1.25 people per vehicle, the ADT could be increased by 400 during construction.

The total increase in traffic on Silver Queen Road during the construction phase of the project, including employees and delivery trucks, is 413 ADT or 100 percent. The current volume to capacity ratio of 0.03 would be increased by construction traffic to 0.05. This increase would not affect the LOS on Silver Queen Road and is therefore considered Less Than Significant.

The project is expected to employ 230 workers during the operating phase. During normal operation the facility would operate 24-hours per day. Approximately 100 trucks would deliver supplies to the site each month or about 3.3 daily round trips (seven ADT). Assuming that operations workers would ride share an average of 1.25 people per vehicle, the employee traffic on Silver Queen Road would increase by 368 ADT during operations.

The total increase in traffic from current use during operation of the mine, including employees and supply trucks, is 375 ADT, an increase of 91 percent over the current 410 ADT. The capacity of Silver Queen Road is 15,000 ADT. The volume to capacity ratio would be increased from 0.03 to 0.08 by the year 2014. This increase would not affect the LOS on Silver Queen Road and is, therefore, Less Than Significant.

The removal of overburden may result in material suitable for sale as aggregate. Aggregate sales may result in additional truck traffic of approximately 70 daily round trips (140 ADT). The traffic associated with the possible sale of aggregate together with traffic associated with operation of the mine would add 515 ADT to the current 410 ADT, an increase of 126 percent on Silver Queen Road. The volume to capacity ratio would be increased to 0.09 and is, therefore, Less Than Significant.

The regional access to Silver Queen Road is via State Route 14. It is assumed that 50 percent of the vehicle traffic related to the mine would travel south on State Route 14 and the other 50 percent would travel north to the Mojave and Tehachapi areas when leaving the mine site.

Assuming that 50 percent of the proposed project traffic goes north and 50 percent goes south from Silver Queen Road on State Route 14, the construction phase would increase the ADT on State Route 14 by 206 or 1.3 percent in the year 1997. The operations traffic would increase the ADT by approximately 258 or 1.7 percent in the year 1998. The project traffic would not increase the volume to capacity ratio enough to affect the LOS of State Route 14 and is, therefore, considered Less Than Significant.

The actual impact of the project during normal operations would be less than that stated because it is expected that 80 percent of the workforce will come from the current workforce in the area already traveling State Route 14 to and from work. Therefore, the ADT during the project operation would be increased by only 111, or approximately 0.7 percent.

By the year 2014, State Route 14 is projected to be at Level of Service E and the Golden Queen project would be in the final stages of reclamation, thereby creating a lesser impact than that described.

Silver Queen Road is a county road, therefore, it is maintained by Kern County. All county roads, including Silver Queen Road, are constructed to support truck and car traffic. The project may result in the need for a slight increase in road maintenance on Silver Queen Road. However, any increase in maintenance costs is expected to be mitigated by increased taxes, such as fuel tax and property tax. An analysis of fiscal impacts associated with this project is contained in Appendix XI of this document. The analysis indicates that the project is expected to generate a positive cash flow to Kern County by providing taxes in excess of costs that would be incurred for county services.

The Proposed Action would not result in a new violation, or exacerbate an existing violation, of an applicable legal standard or goal relating to levels of service, or volume/capacity ratios, of a state or local agency. The Proposed Action would not conflict with any applicable

congestion management plan, air quality plan or other plan or policy relating to automobiles or transit systems. The traffic associated with the Soledad Mountain Project is compatible with the current roadway design features and the project would have sufficient internal circulation capacity. Adequate parking would be provided onsite for employees, deliveries and visitors. There would be adequate internal circulation capacity, including entrance and exit, to safely accommodate the average and peak-hour traffic loads. Impacts are considered Less Than Significant.

3.13.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitment of resources related to traffic as a result of the Proposed Action. This project would not result in the need for additional public roads or reconstruction of any existing public roads. This project is expected to last approximately 16 years from the time construction begins; traffic solely associated with the project would be eliminated at the conclusion of the project.

3.13.4 Cumulative Impacts

There are several residential projects in the Mojave area that have been approved by Kern County but have not been developed. The projects discussed in Section 2.1.3 of this Draft EIR/EIS have the potential to add 15,000 housing units to the area. There were 1,542 housing units in Mojave in 1994.[201] Complete buildout and occupancy of these projects could result in a significant increase in traffic. Historical population growth in the area indicates that there would not be a demand for complete buildout of these projects during the life of the Soledad Mountain Project. This Draft EIR/EIS assumes that population growth in the Mojave area during the life of the Soledad Mountain Project would be equal to historical growth. A smaller increase in traffic would occur from implementation of the industrial projects discussed in Section 2.1.3 of this Draft EIR/EIS, namely: California Portland Cement's supplemental fuel project, Granite Construction's temporary asphalt batch plant and the Hemperly/Warnack quarry.

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[201] Kern Council of Governments, *Population and Housing*, July 1994

One of the more recent residential projects was the Billig Amendment to the Camelot Specific Plan. The Billig Amendment provided for 1,576 dwelling units approximately two and one-half miles northeast of the Soledad Mountain Project. The Environmental Impact Report for the Billig Amendment contained a Traffic Study which evaluated several scenarios.[202] One scenario evaluated the effects on local traffic, assuming a complete buildout of the 1,576 dwelling units by the year 2014, together with a 4 percent annual average growth rate of existing traffic. The Traffic Study assumed that buildout of the Billig Amendment would result in an increase of 22,301 average daily trips.[203] It is estimated that 776 new dwelling units would be needed during the life of the Soledad Mountain Project, as described in Section 3.0.2. The trips associated with the new dwelling units are estimated at 9.6 ADT per dwelling unit.[204] The total expected traffic increase on State Route 14 resulting from implementation of the various projects is shown in Table 3.13-3.

TABLE 3.13-3

Projected Cumulative Traffic Increase on State Route 14

Project	ADT
California Portland Cement - supplemental fuel project	4
Granite Construction - temporary asphalt batch plant	36
Hemperly/Warnack Quarry	25
Increase in residential units (776 units x 9.6 ADT/unit)	7,450
Golden Queen - Soledad Mountain Project (north and south of Silver Queen Road on State Route 14)	258
Total	**7,773**

202 Cornerstone Engineering, Inc., *Final Environmental Impact Report, EIR Camelot Specific Plan-Phase VI Billig Amendment*, May 1994, *Technical Appendix C Traffic Study for Amendment to Camelot Plan in Mojave*, December 1993.

203 Ibid.

204 Institute of Transportation Engineers, *Trip Generation Manual*, 5th ed, 1991

The Traffic Study contained in the EIR for Camelot Specific Plan - Phase VI Billig Amendment can be used to provide a conservative evaluation of the Soledad Mountain Project because:

- The estimated increase in ADT of 7,773 is less that the project ADT of 22,301 used in the study.

The Traffic Study predicted the level of service at the intersection of State Route 14 and Silver Queen Road as shown in Table 3.13-4.

TABLE 3.13-4

Projected Cumulative Traffic Level of Service

		Year 2014+ Billig
Intersection of State Route 14 South Bound Ramp and Silver Queen Road		
State Route 14 ramp south bound:	left turn through right turn	A A A
Silver Queen Road west bound:	left turn	A
Intersection of State Route 14 North Bound Ramp and Silver Queen Road		
State Route 14 ramp north bound:	left turn through right turn	A A A
Silver Queen Road east bound:	left turn	A

The intersection of State Route 14 and State Route 58 also has the potential to be affected by increases in traffic. The 1993, peak hour, Level of Service at this intersection was B for the north junction and C for the south junction.[205] It is assumed that 50 percent of the daily traffic entering and leaving the Soledad Mountain Project would be from the south and would not affect the State Route 14 and State Route 58 intersection. The 50 percent of the traffic that is assumed to travel north would result in an estimated increase of 206 ADT during the construction phase and 258 ADT during operation of the mine (expected to begin in 1998). These assumptions indicate that traffic traveling from the mine north on State Route 14 would increase the ADT by less than 2 percent. CalTrans ~~is proposing to~~ will re-route State Route 58 to the north of Mojave ~~to eliminate the State Route 14 and State Route 58 intersection~~.[206] The ~~construction and implementation of a new~~ present State Route 14/State Route 58 interchange ~~or alternate route is expected to occur~~ will become the State Route 14/Business Route 58 interchange during the life of the Soledad Mountain Project. The new ~~interchange and alternate route~~ State Route 58 route is being implemented to maintain an acceptable Level of Service in Mojave. The construction of the new interchange and alternate route is anticipated to start in the year 2000[207] and would alleviate any increase is traffic associated with the Soledad Mountain Project and possible cumulative projects at the State Route 14/Business Route 58 interchange.

The cumulative effects of the Soledad Mountain Project together with the foreseeable implementation of projects would not degrade the LOS on Silver Queen Road. The cumulative effects on the State Route 14 and State Route 58 intersection will be mitigated by the construction of the new interchange and alternate route.

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205 United States Department of Transportation and State of California Department of Transportation, *Draft Tier 1 EIS/EIR, State Route 58 - Mojave Freeway*, March 1994.

206 Personal communication with Glenn Barnhill, Kern County Planning Department.

207 Ibid.

3.13.5 Summary of Regulatory Requirements

The following is a summary of regulatory requirements which will be in place to regulate traffic and which were considered in the preceding impact analysis:

- Kern County policy requires roadways to maintain a level of service of D or better.

3.13.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The following is a summary of design features, in addition to those required by regulations, which are included by the applicant and were considered in the preceding impact analysis of the proposed project on traffic:

- The entrance road from Silver Queen Road to the office area will be paved.
- The applicant will provide a left-turn lane on Silver Queen Road at the entrance to the Soledad Mountain project.

3.13.7 Recommended Mitigation

No mitigation measures are recommended.

3.13.8 Level of Significance After Mitigation (Residual Impacts)

The proposed project would not cause a new violation of a goal relating to traffic LOS. By the year 2014, the LOS on State Route 14 is estimated to be E as a result of regional traffic growth. The proposed project would add slightly to the growth but the overall impact would be Less Than Significant.

The proposed traffic use is compatible with the existing road designs, therefore, the impact would be Less Than Significant.

The proposed project will be designed for adequate parking and circulation, including entrance and exit routes, therefore, the impact is considered Less Than Significant.

4.0 AFFECTED ENVIRONMENT, ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES OF THE ALTERNATIVES

Federal regulations (40 CFR 1502.14) require BLM to rigorously explore and objectively evaluate all reasonable alternatives to the proposed action. The objectives of analyzing alternatives to the Proposed Action is to provide the public and decision makers with a comparative analysis of the impacts of reasonable alternatives, including the No Action Alternative. This provides a clear basis for choice among options that are evenly examined. This process provides the rationale that allows the Lead Agencies, in consultation with all affected interests, to select a Preferred Alternative that best meets its statutory mission.

Reasonable alternatives are the ones determined by BLM and Kern County which may meet the purpose and need of the proposed project.

For NEPA purposes, reasonable alternatives include those that are practical or feasible from technical and economic standpoints (46 Federal Register 18026 3/21/81, as amended, 51 Federal Register 15618;4/25/86).

CEQA requires an EIR to describe a reasonable range of alternatives to the project, or to the location of the project, which could feasibly attain the basic project objectives, and evaluate the comparative merits of these reasonable alternatives (CEQA Guidelines 15126 [d]).

Five alternatives to the Proposed Action were determined to be reasonable for evaluation in this section. Other alternatives, including strip mining, underground mining, sequential backfilling, complete backfilling, conventional milling, vat leaching, in situ leaching, alternate mine location, offsite ore processing and open solution storage ponds, which were considered but eliminated from detailed analysis, are presented in Section 2.3.3.

The reasonable alternatives are:

- No Action
- Increased Mining and Processing Rate
- Decreased Mining and Processing Rate
- Reduced Project Size
- Partial Backfilling of the Open Pit

Of these, the No Action and the Reduced Project Size represent a change in the amount of land that would be disturbed relative to the Proposed Action. The potential impacts of these alternatives may vary from those of the Proposed Action in many of the resource areas evaluated.

The Increased Mining and Processing Rate, the Decreased Mining and Processing Rate and the Partial Backfilling alternatives do not change the overall size of the project from the Proposed Action relative to the land area disturbed or the amount of material mined and processed. Therefore, most of the impacts to resources will be the same as those of the Proposed Action with the exception of the tempo or duration of impacts relative to the set time frame.

The following resources are either not present on the subject lands or if present are not affected by any of the reasonable alternatives:

- Paleontological Resources
- Recreation Resources
- Public Services and Utilities
- Energy

A summary of the alternatives is presented in Table 4.0-1. The potential environmental impacts of the Proposed Action and each of the alternatives is summarized in Table 4.0-2.

TABLE 4.0-1
Summary of Alternatives

	Technically Feasible	Environmentally Superior	Meets County Objectives(1)	Meets BLM Objectives(2)	Remains Under Consideration (3)
Proposed Action	YES	-	YES	YES	YES
No Project Alternative	YES	YES	YES	NO	YES
Increased Mining and Processing Rate Alternative	YES	NO	YES	NO	NO
Decreased Mining and Processing Rate Alternative	YES	SAME	YES	YES	YES
Reduced Project Size Alternative	YES	SAME	YES	NO	YES
Partial Backfilling Alternative	YES	NO	YES	YES	YES

(1) Consistency with General Plan and/or Specific Plan.
(2) BLM multiple use mission.
(3) Remains under consideration after analysis in Section 4.0.

TABLE 4.0-2

Comparison of Environmental Impacts of Project Alternatives

Impact from Proposed Action	Differences in Environmental Impact as Compared to the Proposed Action				
	No Action	Alternative Ore Processing Rates		Reduced Project Size	Partial Backfilling
		Increased Mining and Ore Processing Rate	Decreased Mining and Ore Processing Rate		
MINERAL RESOURCES • The known minable minerals would be mined and processed. • Development would promote further geologic and exploration work on the site, increasing the chance of finding undiscovered minerals. • Exploration and mineral evaluation has been conducted at project facility locations. • Overall impact to mineral resources: **Significant and Unavoidable Adverse.**	**MINERAL RESOURCES** • The known mineral resource would not be recovered or utilized. • No activities which would increase understanding of unknown minerals potential would occur, a negative impact relative to the Proposed Action. • Overall impact to mineral resources: **No Impact.**	**MINERAL RESOURCES** • The known minable minerals would be mined and processed, but at a faster rate. • No material change on unknown mineral resources from Proposed Action. • Overall impact to mineral resources: **Significant and Unavoidable Adverse.**	**MINERAL RESOURCES** • The known minable minerals would be mined and processed, but at a slower rate. • No material change on unknown mineral resources from Proposed Action • Overall impact to mineral resources: **Significant and Unavoidable Adverse.**	**MINERAL RESOURCES** • Thirty percent of the foreseeable reserve would be mined and processed. • Reduced exploration and development for undiscovered minerals. • Overall impact to mineral resources: **Significant and Unavoidable Adverse.**	**MINERAL RESOURCES** • The known minable minerals would be mined and processed. • Gold mineralization left in floor and walls of pit due to current unfeasible economic conditions would be more costly to extract in future. • Overall impact to mineral resources: **Significant and Unavoidable Adverse.**
PHYSIOGRAPHY and GEOLOGY Topography • A change in topography would occur due to creation of mines, heap leach piles, overburden piles and mine facilities. • Preexisting disturbances would be reclaimed. • Primary topographic high of Soledad Mountain would remain undisturbed. Major ridge lines would be disturbed, but not eliminated. • Overall impact to existing topography: **Significant and Unavoidable Adverse.**	**PHYSIOGRAPHY and GEOLOGY** Topography • No change in current topography would occur. • Preexisting disturbances would not be reclaimed. • Overall impact to existing topography: **No Impact.**	**PHYSIOGRAPHY and GEOLOGY** Topography • The change in topography would occur at a faster rate. • No material long-term change from Proposed Action. • Overall impact to existing topography: **Significant and Unavoidable Adverse.**	**PHYSIOGRAPHY and GEOLOGY** Topography • The change in topography would occur at a slower rate. • No material long-term change from Proposed Action. • Overall impact to existing topography: **Significant and Unavoidable Adverse.**	**PHYSIOGRAPHY and GEOLOGY** Topography • A change in topography would occur, but not to significant ridges. • Impact of other project facilities would be similar to Proposed Action • Overall impact to existing topography: **Significant and Unavoidable Adverse.**	**PHYSIOGRAPHY and GEOLOGY** Topography • A change in topography would occur due to creation of a mining pit, heap leach piles, overburden piles and mine facilities. • Ground depressions of the open pit would be filled. • Overall impact to existing topography: **Significant and Unavoidable Adverse.**
PHYSIOGRAPHY and GEOLOGY Seismic Hazards • Design, engineering and construction of project facilities would be in accordance with Zone 4 seismic requirements. • Existing historical structures, features and facilities would be stabilized and/or eliminated. • Overall impact to seismic hazards: **Less Than Significant.**	**PHYSIOGRAPHY and GEOLOGY** Seismic Hazards • No construction of facilities would occur. • Existing hazards would not be eliminated or stabilized. • Overall impact to seismic hazards: **No Impact.**	**PHYSIOGRAPHY and GEOLOGY** Seismic Hazards • No material change from Proposed Action. • Overall impact to seismic hazards: **Less Than Significant.**	**PHYSIOGRAPHY and GEOLOGY** Seismic Hazards • No material change from Proposed Action. • Overall impact to seismic hazards: **Less Than Significant.**	**PHYSIOGRAPHY and GEOLOGY** Seismic Hazards • No material change from Proposed Action. • Overall impact on seismic hazards: **Less Than Significant.**	**PHYSIOGRAPHY and GEOLOGY** Seismic Hazards • No material change from the Proposed Action. • Overall impact on seismic hazards: **Less Than Significant.**

TABLE 4.0-2

Comparison of Environmental Impacts of Project Alternatives

Impact from Proposed Action	Differences in Environmental Impact as Compared to the Proposed Action				
	No Action	Alternative Ore Processing Rates		Reduced Project Size	Partial Backfilling
		Increased Mining and Ore Processing Rate	Decreased Mining and Ore Processing Rate		
SOILS • Construction and operations would disturb two growth media soil types. Surface disturbance would be minimized. • Disturbed soils suitable for growth media would be stockpiled and used in reclamation. • Existing soils erosion would be controlled though implementation of grading plan. • Overall impact to existing soils: **Less Than Significant.**	**SOILS** • No new surface disturbance would occur. • Current uncontrolled erosion patterns would continue, • Overall impact to existing soils: **No Impact.**	**SOILS** • No material long-term change from Proposed Action. • Overall impact to existing soils: **Less Than Significant.**	**SOILS** • No material long-term change from Proposed Action. • Overall impact to existing soils: **Less Than Significant.**	**SOILS** • Less surface disturbance would occur. • No material long-term change from Proposed Action to erosion potential. • Overall impact to existing soils: **Less Than Significant.**	**SOILS** • The same amount of surface disturbance would occur as in the Proposed Action. • More acreage in the pit would be subject to reclamation. • Overall impact to existing soils: **Less Than Significant.**
HYDROLOGY Surface Water • Overburden would not be acid generating and would not release hazardous materials. • Surface run-off would be controlled and contained. • A zero water discharge facility would be constructed. No release would be made to surface water or groundwater. • Overall impact to surface water: **Less Than Significant.**	**HYDROLOGY** Surface Water • No changes from existing surface flow patterns. • Existing surface run-off would not be controlled and contained. • Overall impact to surface water: **No Impact.**	**HYDROLOGY** Surface Water • No material long-term change from Proposed Action. • Overall impact to surface water: **Less Than Significant.**	**HYDROLOGY** Surface Water • No material long-term change from Proposed Action • Overall impact to surface water: **Less Than Significant.**	**HYDROLOGY** Surface Water • No material long-term change from Proposed Action other than shortened mine life. • Overall impact to surface water: **Less Than Significant.**	**HYDROLOGY** Surface Water • No material long-term change from Proposed Action. • Overall impacts to surface water: **Less Than Significant.**

TABLE 4.0-2

Comparison of Environmental Impacts of Project Alternatives

Impact from Proposed Action	Differences in Environmental Impact as Compared to the Proposed Action				
	No Action	Alternative Ore Processing Rates		Reduced Project Size	Partial Backfilling
		Increased Mining and Ore Processing Rate	Decreased Mining and Ore Processing Rate		
HYDROLOGY Groundwater/Water Supply • Project water requirements would create localized drawdown of groundwater table. Area groundwater supplies would not be impacted. • Long-term water table level would not be significantly affected. • Contingency bonding for unforeseen release event would be provided. • Solution handling and leak detection facilities would protect against discharge to groundwater. No effect on groundwater quality. • Overall impact to groundwater/water supply: **Less Than Significant**.	**HYDROLOGY** Groundwater/Water Supply • No change in the amount or quality of water available would occur. • New information would not be available on the local aquifer, a minor impact relative to the Proposed Action. • Overall impact to groundwater/water supply: **No Impact**.	**HYDROLOGY** Groundwater/Water Supply • Project pumping would create localized drawdown of water table at a faster rate than for the Proposed Action. • Total water requirement over life of project will be less than for Proposed Action. • Long-term impact on water supply would be less than Proposed Action. • Overall impact to groundwater/water supply: **Less Than Significant**.	**HYDROLOGY** Groundwater/Water Supply • Project pumping would create localized drawdown of water table at a slower rate than for the Proposed Action. • Total water requirement over life of project will be greater than for Proposed Action. • Long-term impact on water supply would be greater than Proposed Action. • Overall impact to groundwater/water supply: **Less Than Significant**.	**HYDROLOGY** Groundwater/Water Supply • Project pumping would create localized drawdown of water table at the same rate as the Proposed Action but for fewer years. • Total water requirement over life of project would be less than for Proposed Action. • Long-term impact on water supply would be less than Proposed Action. • Overall impact to groundwater/water supply: **Less Than Significant**.	**HYDROLOGY** Groundwater/Water Supply • Project water requirements would create localized drawdown of groundwater at same rate as for Proposed Action. • Water would be required for compaction and dust suppression for more than two years longer. • Overall impacts to groundwater/water supply: **Less Than Significant**.
AIR QUALITY • Analysis of emissions potential indicates that air quality impacts would be within state and federal standards. • Reclamation of existing tailings, mine waste and disturbed areas would reduce existing negative effect on air quality. • Toxic air contaminants emissions would not cause a significant short- or long-term health risk or cause an increase cancer risk greater than ten per million. • Overall impact to air quality: **Less Than Significant**.	**AIR QUALITY** • No change in current air quality would occur. • Existing uncontrolled dust generation would continue. • Reclamation of preexisting disturbances would not occur, a negative long-term impact relative to the Proposed Action. • No change in current toxic air contaminants. • Overall impact to air quality: **Less Than Significant**.	**AIR QUALITY** • Modeling indicates that PM_{10} air quality standards may be exceeded • Toxic air contaminant emissions would not cause a significant short- or long-term risk or cause an increase cancer risk greater than ten per million. • Overall impact to air quality: **Significant and Unavoidable Adverse**.	**AIR QUALITY** • Impacts to air quality would be less than Proposed Action. • Toxic air contaminant emissions would not cause a significant short- or long-term risk or cause an increase cancer risk greater than ten per million. • No material long-term change from Proposed Action. • Overall impact to air quality: **Less Than Significant**.	**AIR QUALITY** • Project would impact air quality as in Proposed Action, but for a reduced period. • Toxic air contaminant emissions would not cause a significant short- or long-term risk or cause an increase cancer risk greater than ten per million. • No material long-term change in air quality from Proposed Action. • Overall impact to air quality: **Less Than Significant**.	**AIR QUALITY** • Project would impact air quality as in Proposed Action during mining operations. • Backfilling would cause an extended period of mobile vehicle emissions and fugitive dust. • Overall impact to air quality: **Less Than Significant**.
BIOLOGICAL RESOURCES Vegetative Resources • Little vegetation and no listed species are on the project site. • Reclamation of preexisting disturbances would be positive. • Overall impact to vegetation: **Less Than Significant**.	**BIOLOGICAL RESOURCES** Vegetative Resources • No new surface disturbance affecting vegetation would occur. • Reclamation of preexisting disturbances will not occur. • Overall impact to vegetation: **No Impact**.	**BIOLOGICAL RESOURCES** Vegetative Resources • No material long-term change from Proposed Action. • Overall impact to vegetation: **Less Than Significant**.	**BIOLOGICAL RESOURCES** Vegetative Resources • No material long-term change from Proposed Action. • Overall impact to vegetation: **Less Than Significant**.	**BIOLOGICAL RESOURCES** Vegetative Resources • Project activities would disturb less total surface and less total vegetation. • Overall impact to vegetation: **Less Than Significant**.	**BIOLOGICAL RESOURCES** Vegetative Resources • Fifty-two more acres of the open pit would be reseeded than in the Proposed Action. • Overall impact to vegetative resources: **Less Than Significant**.

TABLE 4.0-2

Comparison of Environmental Impacts of Project Alternatives

Impact from Proposed Action	Differences in Environmental Impact as Compared to the Proposed Action				
	No Action	Alternative Ore Processing Rates		Reduced Project Size	Partial Backfilling
		Increased Mining and Ore Processing Rate	Decreased Mining and Ore Processing Rate		
BIOLOGICAL RESOURCES Wildlife Resources • Project activities Could disturb wildlife on site. No listed species have been found onsite. • Reclamation of preexisting disturbances would be positive. • Overall impact to wildlife: **Less Than Significant**.	**BIOLOGICAL RESOURCES** Wildlife Resources • No new surface disturbance affecting wildlife will occur. • Reclamation of preexisting disturbances will not occur. • Overall impact to wildlife: **No Impact**.	**BIOLOGICAL RESOURCES** Wildlife Resources • No material long-term change from Proposed Action. • Overall impact to wildlife: **Less Than Significant**.	**BIOLOGICAL RESOURCES** Wildlife Resources • No material long-term change from Proposed Action. • Overall impact to wildlife: **Less Than Significant**.	**BIOLOGICAL RESOURCES** Wildlife Resources • Project activities would disturb less wildlife habitat. • Project activities will disturb wildlife on site for a shorter period of time. • Overall impact to wildlife: **Less Than Significant**.	**BIOLOGICAL RESOURCES** Wildlife Resources • Fifty-two more acres of the open pit would be returned to wildlife habitat than in the Proposed Action. • Overall impact to wildlife: **Less Than Significant**.
CULTURAL & HISTORICAL RESOURCES • Project activities would disturb four sites which have scientific and historical value. • Data recovery would be conducted at these sites as mitigation. • Historic display and informational overlook would be created. • Overall impact to cultural and historical resources: Project impact would be **Significant**, but reduced to **Less Than Significant** through mitigation efforts.	**CULTURAL & HISTORICAL RESOURCES** • No disturbance of sites with historical or scientific value will occur. • No salvage or recording of data relating to these sites would occur. • Current rate of deterioration would continue with loss of resource likely. • Overall impact to cultural and historical resources: **No Impact**.	**CULTURAL & HISTORICAL RESOURCES** • No material long-term change from Proposed Action. • Overall impact to cultural and historical resources: **Less Than Significant**.	**CULTURAL & HISTORICAL RESOURCES** • No material long-term change from Proposed Action. • Overall impact to cultural and historical resources: **Less Than Significant**.	**CULTURAL & HISTORICAL RESOURCES** • Project activities will disturb less total surface. • Three of the four important sites will not be disturbed. • Data recovery will be implemented where needed, assuring no loss of information. • Overall impact to cultural and historical resources: **Less Than Significant**.	**CULTURAL & HISTORICAL RESOURCES** • No material long-term change from Proposed Action. • Overall impact to cultural and historical resources: **Less Than Significant**.
VISUAL RESOURCES • Project would have some visual impact. • Viewed in relation to preexisting and current conditions the contrast would be low. • Due to viewing distance, viewer sensitivity would be low to moderate. • Overall impact to visual resources: **Less Than Significant**.	**VISUAL RESOURCES** • No change in visual resources would occur, except for reclamation of disturbances for which Golden Queen is responsible. • Reclamation of preexisting disturbances would not occur. • Overall impact to visual resources: **No Impact**.	**VISUAL RESOURCES** • Rate of visual change would be faster, and time until reclamation is completed would be shorter. • No material long-term change from Proposed Action. • Overall impact to visual resources: **Less Than Significant**.	**VISUAL RESOURCES** • Rate of visual change would be slower and time until reclamation is completed would be longer. • No material long-term change from Proposed Action. • Overall impact to visual resources: **Less Than Significant**.	**VISUAL RESOURCES** • Visual impact reduced with respect to the Proposed Action. • The ridge line of Soledad Mountain would not change. • Overall impact to visual resources: **Less Than Significant**.	**VISUAL RESOURCES** • No change in visual resources from the Proposed Action. • Overall impact to visual resources: **Less Than Significant**.

TABLE 4.0-2

Comparison of Environmental Impacts of Project Alternatives

Impact from Proposed Action	Differences in Environmental Impact as Compared to the Proposed Action				
	No Action	Alternative Ore Processing Rates		Reduced Project Size	Partial Backfilling
		Increased Mining and Ore Processing Rate	Decreased Mining and Ore Processing Rate		
NOISE • Project would be in compliance with established regulations and standards. • Overall impact to noise: **Less Than Significant**.	NOISE • No change from existing conditions would occur. • Overall impact to noise: **No Impact**.	NOISE • Project generated noise would occur for a shorter period of time. • Noise level would be increased slightly. • No material long-term change from Proposed Action. • Overall impact to noise: **Less Than Significant**.	NOISE • Project generated noise would extend for a longer period of time. • Slight reduction in noise level. • No material long-term change from Proposed Action. • Overall impact to noise: **Less Than Significant**.	NOISE • Operating noise level the same as Proposed Action. • Project generated noise would occur for a shorter period of time. • Overall impact to noise: **Less Than Significant**.	NOISE • Operating noise level would be the same as the Proposed Action, but for more than two more years. • Overall impact to noise: **Less Than Significant**.
LAND USE • Project would be compatible with local zoning and land use. • Project would have all permits and approvals for construction and operation. • Overall impact to land use: **No Impact**.	LAND USE • Area zoning would remain as is. • The General Plan and Specific Plan would not change. • Overall impact to land use: **No Impact**.	LAND USE • No material change from Proposed Action. • Overall impact to land use: **No Impact**.	LAND USE • No material change from Proposed Action. • Overall impact to land use: **No Impact**.	LAND USE • No material change from Proposed Action. • Overall impact to land use: **No Impact**.	LAND USE • No material change from Proposed Action. • Overall impact to land use: **No Impact**.
SOCIOECONOMICS • The project will enhance the regional economy without inducing growth, which would require additional housing, schools and related services. • Project would provide 230 long-term jobs and pay taxes for government services in excess of service requirements. • Would create at least 136 indirect jobs. • Would contribute at least $11.0 MM to economy annually. • Overall impact to socioeconomics: **Less Than Significant**.	SOCIOECONOMICS • Currently existing project related jobs and associated positive effects on the region would be eliminated. • With respect to the Proposed Action, the benefits of 230 jobs and related expenditures (more than $11.0 MM/year) would not occur. • Overall impact to socioeconomics: **Less Than Significant**.	SOCIOECONOMICS • Project would provide more jobs, but for a shorter period of time. • Tax rates may be increased, but for a shorter period of time. • Overall impact to socioeconomics: **Less Than Significant**.	SOCIOECONOMICS • Project would provide fewer jobs, but for an extended period of time. • Tax rates may be reduced. • May adversely affect project development. • Overall impact to socioeconomics: **Less Than Significant**.	SOCIOECONOMICS • Project will provide the same number of primary and secondary jobs as Proposed Action, but for a shorter period of time. • Would likely put project feasibility and development in jeopardy. • Property tax rates will be reduced due to decreased project value. • If the project is developed the overall impact to socioeconomics would remain: **Less Than Significant**.	SOCIOECONOMICS • Project will provide some jobs for more than two years longer than Proposed Action. • Backfilling would decrease project value by $13 million. • Overall impact to socioeconomics: **Less Than Significant**.

TABLE 4.0-2

Comparison of Environmental Impacts of Project Alternatives

Impact from Proposed Action	Differences in Environmental Impact as Compared to the Proposed Action				
	No Action	Alternative Ore Processing Rates		Reduced Project Size	Partial Backfilling
		Increased Mining and Ore Processing Rate	Decreased Mining and Ore Processing Rate		
HEALTH HAZARDS/PUBLIC SAFETY • The project use of hazardous materials would be permitted for and in compliance with all federal, state and local laws, standards and regulations. • Much of the public safety hazards (old mine openings and building, unstable slopes, tailings and waste dumps) would be eliminated, stabilized or fenced. • Overall impact to health hazards and public safety: **Less Than Significant.**	**HEALTH HAZARDS/PUBLIC SAFETY** • No new potential health hazards or public safety hazards would occur. • Public access to existing hazards would not be restricted. • Existing hazards, particularly those associated with historic tailings, would not be remediated, a negative impact relative to the Proposed Action. • Overall impact to health hazards and public safety: **Significant and Unavoidable Adverse.**	**HEALTH HAZARDS/PUBLIC SAFETY** • No material long-term change from Proposed Action. • Overall impact to health hazards and public safety: **Less Than Significant.**	**HEALTH HAZARDS/PUBLIC SAFETY** • No material long-term change from Proposed Action. • Overall impact to health hazards and public safety: **Less Than Significant.**	**HEALTH HAZARDS/PUBLIC SAFETY** • Hazard and safety reduction activities will be similar to Proposed Action, but will have a reduced scale. • Overall impact to health hazards and public safety: **Less Than Significant.**	**HEALTH HAZARDS/PUBLIC SAFETY** • No material long-term change from Proposed Action. • Overall impacts to health hazards and public safety: **Less Than Significant.**
TRAFFIC AND TRANSPORTATION • The increase in traffic due to the proposed project will not affect the level of service on Silver Queen Road and State Route 14. • Ample parking area would be available. • Local transit would not be affected because most employees would be local residents. • Overall impact to traffic and parking: **Less Than Significant.**	**TRAFFIC AND TRANSPORTATION** • Existing traffic patterns would not change. • Overall impact to traffic and transportation: **No Impact.**	**TRAFFIC AND TRANSPORTATION** • Average Daily Trips will increase on Silver Queen Road and State Route 14, but will occur for a shorter period of time. • The level of service will not change. • No material long-term change from Proposed Action. • Overall impact to traffic and transportation: **Less Than Significant.**	**TRAFFIC AND TRANSPORTATION** • Average Daily Trips will decrease on Silver Queen Road and State Route 14, but will occur for a longer period of time. • The level of service will not change. • No material long-term change from Proposed Action. • Overall impact to traffic and transportation: **Less Than Significant.**	**TRAFFIC AND TRANSPORTATION** • No change in Average Daily Trips on Silver Queen Road and State Route 14 from Proposed Action. • No material long-term change from Proposed Action. • Overall impact to traffic and transportation: **Less Than Significant.**	**TRAFFIC AND TRANSPORTATION** • No change in Average Daily Trips on Silver Queen Road and State Route 14 from Proposed Action. • No material long-term change from Proposed Action. • Overall impact to traffic and transportation: **Less Than Significant.**

4.1 No Action Alternative

4.1.1 Description of Alternative

Consideration of the No Action alternative, which is disapproval of the Conditional Use Permit/Plan of Operations by authorized officials, forms the basis from which impacts of alternatives, including the Proposed Action, are evaluated. For comparative analysis purposes, design features, applicant-proposed mitigation and regulatory requirements are not analyzed under the No Action alternative since they are not applicable to that scenario.

4.1.2 Mineral Resources (Natural Resources)

4.1.2.1 Setting

The setting of the No Action alternative as it relates to mineral resources is the same as for the Proposed Action as presented in Section 3.1.1.

4.1.2.2 Direct/Indirect Impacts

Under the No Action alternative, the existing mineral resources would remain as they are. Limited ecconomic benefits would result. There would be no increased access to or improved understanding of the potential for additional, currently unknown, mineral resources.

4.1.2.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitment of resources as a result of the No Action alternative.

4.1.2.4 Cumulative Impacts

There would be no additional cumulative impacts to mineral resources of the area as a result of the No Action alternative.

4.1.3 Physiography and Geology (Earth Resources)

4.1.3.1 Topography

4.1.3.1.1 Setting

The setting of the No Action alternative as it relates to topography is the same as for the Proposed Action as presented in Section 3.2.1.1.

4.1.3.1.2 Direct/Indirect Impacts

There would be no change to current topography except for reclamation by Golden Queen of surfaces disturbed by Golden Queen's exploration activities. The No Action alternative would have no impact on existing topography.

4.1.3.1.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitment of resources as a result of the No Action alternative.

4.1.3.1.4 Cumulative Impacts

There would be no additional cumulative impacts to topography of the area as a result of the No Action alternative.

4.1.3.2 Seismic Hazards

4.1.3.2.1 Setting

The setting of the No Action alternative as it relates to seismic hazards is the same as for the Proposed Action as presented in Section 3.2.2.1.

4.1.3.2.2 Direct/Indirect Impacts

There would be no construction of buildings, facilities or operating areas that could pose a risk due to seismic activity. Seismic hazards would continue to be present at their existing level. Hazards would continue to exist with old structures and mine openings that would otherwise be stabilized or eliminated by the Proposed Action. This alternative would constitute a negative environmental impact as compared to the Proposed Action.

The No Action alternative would have no impact on existing seismic hazards.

4.1.3.2.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitment of resources as a result of the No Action alternative.

4.1.3.2.4 Cumulative Impacts

There would be no additional cumulative impacts to seismic hazards of the area as a result of the No Action alternative.

4.1.4 Soils (Earth Resources)

4.1.4.1 Setting

The setting of the No Action alternative as it relates to existing soils is the same as for the Proposed Action as presented in Section 3.3.1.

4.1.4.2 Direct/Indirect Impacts

No new surface or soils disturbance would occur. Existing exploration disturbances associated with Golden Queen activities would be reclaimed by Golden Queen. Current losses of soils in areas of previous disturbance, due to wind and water erosion, would continue.

The environmental impact of the No Action alternative would have no impact on existing soils.

4.1.4.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitment of resources as a result of the No Action alternative.

4.1.4.4 Cumulative Impacts

There would be no additional cumulative impacts to soils of the area as a result of the No Action alternative.

4.1.5 Hydrology (Water Resources)

4.1.5.1 Surface Water

4.1.5.1.1 Setting

The setting of the No Action alternative as it relates to surface water is the same as for the Proposed Action as presented in Section 3.4.1.1.

4.1.5.1.2 Direct/Indirect Impacts

No changes from existing surface water flow patterns would occur. Storm water flows will continue to contact some waste materials from previous mining and development efforts and current erosion patterns will continue. The proposed redirection of surface water away from many of these areas will not occur. The No Action alternative would have no impact on existing surface water.

4.1.5.1.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitment of resources as a result of the No Action alternative.

4.1.5.1.4 Cumulative Impacts

There would be no additional cumulative impacts to surface water of the area as a result of the No Action alternative.

4.1.5.2 Groundwater/Water Supply

4.1.5.2.1 Setting

The setting of the No Action alternative as it relates to groundwater is the same as for the Proposed Action as presented in Section 3.4.2.1.

4.1.5.2.2 Direct/Indirect Impacts

Under the No Action alternative, existing impacts relating to the amount and quality of water withdrawn from the local groundwater supply would not change. No new information would be developed from which a greater understanding of the aquifer in this region could be gained. The No Action alternative would have no impact on existing groundwater supply or quality.

4.1.5.2.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitment of resources as a result of the No Action alternative.

4.1.5.2.4 Cumulative Impacts

There would be no additional cumulative impacts to groundwater of the area as a result of the No Action alternative.

4.1.6 Air Quality

4.1.6.1 Setting

The setting of the No Action alternative as it relates to air quality is the same as for the Proposed Action as presented in Section 3.5.1.

4.1.6.2 Direct/Indirect Impacts

The project is located on a mountain in the Kern County portion of the Mojave Desert Air Basin. As such, the weather conditions are hot and dry leading to the potential for wind erosion emissions from existing disturbed surfaces. There are approximately 215 acres of existing disturbed areas relating to past underground mining operations, including a large tailings pile on the northern flank of the mountain, which are subject to wind erosion emissions. The surface of the tailings pile consists of more finely textured material than will be exposed at the heap leach pads or the overburden piles proposed for this project. The current sources of air pollution would continue to exist as a result of the No Action alternative. The long-term effect of the No Action alternative is considered Less Than Significant.

4.1.6.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitment of resources as a result of the No Action alternative.

4.1.6.4 Cumulative Impacts

Cumulative impacts to air quality of the area would continue under the No Action alternative.

4.1.7 Biology

4.1.7.1 Vegetative Resources

4.1.7.1.1 Setting

The setting of the No Action alternative as it relates to vegetative resources is the same as for the Proposed Action as presented in Section 3.6.1.1.

4.1.7.1.2 Direct/Indirect Impacts

No additional surface disturbance would occur. Benefits from reclamation of previously disturbed areas, other than those associated with Golden Queen development activities, would not be realized. The No Action alternative would have No Impact on existing vegetative resources.

4.1.7.1.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitment of resources as a result of the No Action alternative.

4.1.7.1.4 Cumulative Impacts

There would be no additional cumulative impacts to vegetative resources as a result of the No Action alternative.

4.1.7.2 Wildlife Resources

4.1.7.2.1 Setting

The setting of the No Action alternative as it relates to wildlife resources is the same as for the Proposed Action as presented in Section 3.6.2.1.

4.1.7.2.2 Direct/Indirect Impacts

There would be no additional disturbance to wildlife or wildlife habitat. No reclamation of previously disturbed habitat would occur, other than that associated with Golden Queen's exploration activities. The beneficial aspect for wildlife of reclamation of previously disturbed areas would not be realized. There would be No Impact to wildlife under the No Action alternative.

4.1.7.2.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitment of resources as a result of the No Action alternative.

4.1.7.2.4 Cumulative Impacts

There would be no additional cumulative impacts to wildlife resources of the area as a result of the No Action alternative.

4.1.8 Cultural and Historical Resources (Cultural Resources)

4.1.8.1 Setting

The setting of the No Action alternative as it relates to cultural and historic resources is the same as for the Proposed Action as presented in Section 3.7.1.

4.1.8.2 Direct/Indirect Impacts

There would be no change in the status of the existing structural remains, surficial and sub-surface deposits, shafts and adits, or other historical sites. No salvage excavation and recording of data would occur and there would be no erection of an informational display concerning historical mining activities on the site and in surrounding areas (as proposed under the Proposed Action). The present rate of deterioration of the resources would continue until the significance of the sites was lost.

The No Action alternative would have no impact on existing cultural and historical resources.

4.1.8.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitment of resources as a result of the No Action alternative.

4.1.8.4 Cumulative Impacts

There would be no additional cumulative impacts to cultural and historic resources of the area as a result of the No Action alternative.

4.1.9 Visual Resources (Light and Glare/Aesthetics)

4.1.9.1 Setting

The setting of the No Action alternative as it relates to visual resources is the same as for the Proposed Action as presented in Section 3.8.1.

4.1.9.2 Direct/Indirect Impacts

There would be no change in the current visual impact of the project site to either residents or passers-by. The existing historical mine disturbance would not be reclaimed. The No Action alternative would have No Impact on existing visual resources.

4.1.9.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitment of resources as a result of the No Action alternative.

4.1.9.4 Cumulative Impacts

There would be additional cumulative impacts to visual resources of as a result of the No Action alternative.

4.1.10 Noise

4.1.10.1 Setting

The setting of the No Action alternative as it relates to noise is the same as for the Proposed Action as presented in Section 3.9.1.

4.1.10.2 Direct/Indirect Impacts

There would be no change to the current noise level of the area.

4.1.10.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitment of resources as a result of the No Action alternative.

4.1.10.4 Cumulative Impacts

There would be additional cumulative impacts relating to noise in the area as a result of the No Action alternative.

4.1.11 Land Use (Land Use/Population/Housing)

4.1.11.1 Setting

The setting of the No Action alternative as it relates to land use is the same as for the Proposed Action as presented in Section 3.10.1.

4.1.11.2 Direct/Indirect Impacts

The No Action alternative would have No Impact on existing zoning. The No Action alternative would have No Impact on the existing General Plan and Specific Plan.

There would be no change in the legal restraints that now exist at the project site. The No Action alternative would have No Impact on the legal restraints.

4.1.11.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitment of resources as a result of the No Action alternative.

4.1.11.4 Cumulative Impacts

There would be no cumulative impacts to land use as a result of the No Action alternative.

4.1.12 Socioeconomics (Economic Development/Fiscal Analysis)

4.1.12.1 Setting

The setting of the No Action alternative as it relates to socioeconomics is the same as for the Proposed Action as presented in Section 3.11.1.

4.1.12.2 Direct/Indirect Impacts

The No Action alternative would result in the loss of new jobs at the project site or within the region and would eliminate most of those that currently exist. Economic benefits to the project proponent and the business community would not be realized. The annual value added to the regional economy would not occur. Tax contributions to the County of Kern would not occur.

The impact of the No Action alternative on existing socioeconomics would result in little change to the existing socioeconomic environment, and would be considered Less Than Significant.

4.1.12.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitment of resources as a result of the No Action alternative.

4.1.12.4 Cumulative Impacts

There would be no additional cumulative impacts to socioeconomics of the area as a result of the No Action alternative.

4.1.13 Health Hazards/Public Safety (Human Health/Risk of Upset)

4.1.13.1 Setting

The setting of the No Action alternative as it relates to health hazards and public safety is the same as for the Proposed Action as presented in Section 3.12.1.

4.1.13.2 Direct/Indirect Impacts

With the No Action alternative there would be no change in any of the current health/safety hazards that may exist on the site, which include old mine openings and deteriorating mine structures. The No Action alternative would result in the loss of the site control Golden Queen currently exercises over access to these hazards. This could negatively impact public safety.

With respect to the Proposed Action, any health or safety hazards presented by existing conditions that would be remedied by the Proposed Action would not occur, including demolition of unsafe structures, removal and/or reclamation of tailings and waste, demolition of unsafe mine openings and stabilization of unsafe slopes.

The environmental impact of the No Action alternative on existing health hazards/ public safety would be Significant and Unavoidable.

4.1.13.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitment of resources as a result of the No Action alternative.

4.1.13.4 Cumulative Impacts

There would be no additional cumulative impacts to health hazards and public safety of the area as a result of the No Action alternative.

4.1.14 Traffic and Transportation (Transportation/Circulation)

4.1.14.1 Setting

The setting of the No Action alternative as it relates to traffic and transportation is the same as for the Proposed Action as presented in Section 3.13.1.

4.1.14.2 Direct/Indirect Impacts

The No Action alternative would not affect existing traffic. The No Action alternative would have no impact on existing traffic and transportation.

The No Action alternative would have no impact on the local transit system.

4.1.14.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitment of resources as a result of the No Action alternative.

4.1.14.4 Cumulative Impacts

There would be no additional cumulative impacts to traffic and transportation of the area as a result of the No Action alternative.

4.2 Increased Mining and Processing Rate Alternative

4.2.1 Description of Alternative

This section describes a project alternative based upon increasing the planned ore mining and processing rate from six millions tons per year in the Proposed Action to an annual rate of 7.2 million tons per year. It may also result in increasing the total amount of material mined (ore plus overburden) to 36 million tons per year, which will decrease total project life from 10 years to eight years. This alternative provides a basis for comparing the environmental impacts that would result from a change in project rate as well as project duration.

For purposes of analysis, the following assumptions are made regarding the Increased Mining and Processing Rate alternative:

- Total ore and overburden tons mined would be the same as for the Proposed Action, but the annual mining and ore processing rate would be increased by 20 percent as compared to the Proposed Action, thereby decreasing the operational life of the project by 17 percent (approximately two years).
- Surface disturbance and the site layout for this alternative would be the same as in the Proposed Action. Excavation of the same total tonnage of ore and overburden would require the same mine, overburden stockpile and heap leach pad configurations. Disturbances for onsite roads and ancillary facilities would be similar, if not identical, because the same basic transportation needs, site access needs and support activities would occur. While individual buildings or pieces of equipment may be larger, for example, a larger crushing circuit might be used, differences in disturbances would be negligible.

The changes in environmental impact that occur due to an increased ore mining and processing rate would be primarily related to the duration of mining activities, air quality and the consumptive uses associated with project operation.

The following environmental resources associated with the Increased Mining and Processing Rate alternative would have the same impacts as the Proposed Action, as discussed in Section 3.0 and summarized in Table 4.0-2:

Mineral Resources (Natural Resources)	Section 3.1
Physiography and Geology (Earth Resources)	Section 3.2
Soils (Earth Resources)	Section 3.3
Biology	Section 3.6
Cultural and Historical Resources (Cultural Resources)	Section 3.7
Visual Resources (Light and Glare/Aesthetics)	Section 3.8
Land Use (Land Use/Population/Housing)	Section 3.10

Only the resources which are affected by the alternative are discussed below.

4.2.2 Hydrology (Water Resources)

4.2.2.1 Surface Water

4.2.2.1.1 Setting

The setting of the Increased Mining and Processing Rate alternative as it relates to surface water is the same as for the Proposed Action as presented in Section 3.4.1.1.

4.2.2.1.2 Direct/Indirect Impacts

This alternative would have a minor beneficial impact on surface water as compared to the Proposed Action. The same grading and drainage patterns would be used in either case. Erosion potential and contact of surface waters with overburden piles would be similar, except, due to the rate of project development and overburden deposition, the period of time for surface water contact with unreclaimed materials would be less for the alternative. Given that the project site materials have been shown to not have acid generation potential and an approved drainage plan would be utilized, the impact upon the environment of the increased mining and processing rate alternative would be Less Than Significant, the same as for the Proposed Action.

4.2.2.1.3 Irreversible/Irretrievable Commitment of Resources

The irreversible and/or irretrievable commitment of resources associated with the Increased Mining and Processing Rate alternative as it relates to surface water would be the same as for the Proposed Action as presented in Section 3.4.1.3.

4.2.2.1.4 Cumulative Impacts

There would be additional cumulative impacts to surface hydrology as a result of the Increased Mining and Processing Rate alternative.

4.2.2.1.5 Summary of Regulatory Requirements

The regulatory requirements associated with the Increased Mining and Processing Rate alternative as relates to surface water would be the same as for the Proposed Action, presented in Section 3.4.1.5.

4.2.2.1.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Increased Mining and Processing Rate alternative as relates to surface water would be the same as for the Proposed Action, presented in Section 3.4.1.6.

4.2.2.1.7 Recommended Mitigation

No mitigation measures are recommended.

4.2.2.1.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance of the Increased Mining and Processing Rate alternative as relates to surface water would be the same as the Proposed Action, presented in Section 3.4.1.8.

The impact to the surface water quality as a result of the placement of the overburden directly on the ground surface would be Less Than Significant.

Impacts to the surface drainage would be Less Than Significant as a result of the regulatory requirements and design features.

The potential for discharge of hazardous materials to land would be Less Than Significant as a result of regulatory requirements and design features.

4.2.2.2 Groundwater/Water Supply

4.2.2.2.1 Setting

The setting of the Increased Mining and Processing Rate alternative as it relates to groundwater is the same as for the Proposed Action as presented in Section 3.4.2.1.

4.2.2.2.2 Direct/Indirect Impacts

The rate at which groundwater is required for the project and the total amount of water required over the life of the project varies according to the rate at which ore is mined and processed. Water requirements for the agglomeration and leaching processes vary in direct proportion to quantity of ore processed. Water used for dust control on roads and within the crushing process is more closely related to the number of operating hours required. The increased rate alternative would require that water be pumped from wells at a higher rate, but for a shorter length of time. The overall requirement for water over the life of the project would be about the same as the Proposed Action.

The estimated well pumping rate for this alternative is 825 gallons per minute over a project life of 8.33 years. The maximum projected drawdown at the water supply wells would be 90 feet which is 9 percent greater than the maximum drawdown projected under the Proposed Action; a negative short-term impact. The drawdown analysis is included in the Hydrology Study.[208] The long-term environmental impact on the existing groundwater/water supply environment relative to the Proposed Action would be positive but Less Than Significant.

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[208] WZI Inc., *Groundwater Supply Evaluation, Soledad Mountain Project*, December 1996, included in Appendix V.

Both the Proposed Action and the alternative would use the same design, construction and monitoring technology for the control of a potential release of contaminants to groundwater. There would be no differential effect upon the groundwater quality as a result of the process rate.

This alternative would have a minor beneficial impact on groundwater/water supply as compared to the Proposed Action. Overall, the environmental impact of the increased mining and processing rate alternative on existing groundwater/water supply would be Less Than Significant, the same as for the Proposed Action.

4.2.2.2.3 Irreversible/Irretrievable Commitment of Resources

As with the Proposed Action, the use of water represents an irretrievable use of resources. However, the groundwater will be replaced in the basin by future recharge.

4.2.2.2.4 Cumulative Impacts

The Increased Mining and Processing Rate alternative would have an average water consumption of approximately 1,300 acre-feet per year supplied by up to three production groundwater wells; 7 percent more than the Proposed Project. Other projects in the area requiring water are discussed in Section 3.4.2.4. Cumulative impacts to the groundwater quantity would be Less Than Significant.

4.2.2.2.5 Summary of Regulatory Requirements

The regulatory requirements associated with the Increased Mining and Processing Rate alternative as relates to groundwater would be the same as for the Proposed Action as presented in Section 3.4.2.5.

4.2.2.2.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Increased Mining and Processing Rate alternative as relates to groundwater would be the same as for the Proposed Action as presented in Section 3.4.2.6.

4.2.2.2.7 Recommended Mitigation

No mitigation measures are recommended.

4.2.2.2.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance of the Increased Mining and Processing Rate alternative would be the same as the Proposed Action as presented in Section 3.4.2.8; Less Than Significant.

4.2.3 Air Quality

4.2.3.1 Setting

The setting of the Increased Mining and Processing Rate alternative as it relates to air quality is the same as for the Proposed Action as presented in Section 3.5.1.

4.2.3.2 Direct/Indirect Impacts

Under this scenario, mining and processing rates would increase by 20 percent, resulting in increased PM_{10} emissions, but for a shorter time period than the Proposed Action. A review of the PM_{10} emissions sources was made to determine which sources would increase and which would remain the same as in the Proposed Action. For calculation of the 24-hour PM_{10} concentration, the blasting and wind erosion sources will remain the same as in the Proposed Action. Blasting would only occur once per day, but on more days than in the Proposed Action. Wind erosion is based on the surface area of exposed overburden piles, which would be similar to the Proposed Action. Emissions from all other sources would increase by approximately 20 percent from the increased activity.

For the dispersion model prepared for the Proposed Action, the individual sources were evaluated for their contribution to the maximum impact. A sensitivity analysis was conducted by scaling the appropriate variable sources by 20 percent and keeping the unaffected sources unchanged to estimate the impact of the increase in production rate on the maximum

calculated PM_{10} concentration.[209] The PM_{10} emission calculations assume the use of Best Available Control Technology for all required sources, including roads and equipment, similar to the Proposed Action. The estimated 24-hour PM_{10} concentration resulting from the increased processing is a maximum of 50.13 $\mu g/m^3$, which exceeds the California 24-hour standard of 50 $\mu g/m^3$.

As part of the Proposed Action, meteorological and PM_{10} monitoring will be established to show compliance with ambient air quality standards. It may be possible, through onsite data collection, to show that the dispersion modeling overestimates the maximum concentration, thus allowing an increased mining and processing rate. However, the estimated maximum 24-hour PM_{10} emissions preclude obtaining an air permit for the increased rate alternative at this time.

A sensitivity analysis was conducted on the incremental excess health risk from toxic air contaminants in the Proposed Action to evaluate any changes resulting from the increased mining and processing rate alternative.[210] The increased mining and processing rate is not designed as a larger project. It is the same project completed in a shorter time period.

Incremental health risk is based on the project life as well as the amount of particulate emissions. For all sources except wind erosion, the total emissions from the project would not change in the accelerated rate scenario, thus the incremental risk from these sources would be the same as in the Proposed Action. Wind erosion emissions are based on the surface area of the overburden piles exposed for a certain time period. Since the increased processing rate alternative would have a 17 percent shorter life, wind erosion emissions and their contribution to the total risk would be reduced by approximately 17 percent. Wind erosion emissions represent approximately 9.8 percent of the risk at the maximum exposed location. Reducing the project life by 17 percent would reduce the overall health risk from the project by about 1.7 percent to 4.9×10^{-6} from 5.0×10^{-6} for the Proposed Action. These results are essentially the same within the accuracy of the emissions estimates and the air dispersion model.

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209 WZI Inc., *Golden Queen Mining Company, Soledad Mountain Project Estimated PM_{10} and Air Toxics Emissions and Impact Assessment*, December 1996, included as Appendix VII.

210 Ibid.

The environmental impact to existing air quality of this alternative would be Significant and Unavoidable Adverse at this time, given current Best Available Control Technology and estimated emissions.

4.2.3.3 Irreversible/Irretrievable Commitment of Resources

As described for the Proposed Action in Section 3.5.3, the Increased Mining and Processing Rate alternative would not represent an irreversible or irretrievable commitment of air quality resources.

4.2.3.4 Cumulative Impacts

As explained above in Section 4.2.2.2, the Increased Mining and Processing Rate alternative by itself would represent a Significant and Unavoidable Adverse impact to air quality. Other residential and industrial projects, besides the Proposed Action, proposed for the project area were discussed in Section 3.5.4. The cumulative environmental impacts to air quality from those other projects in combination with the Increased Mining and Processing Rate alternative would also be Significant and Unavoidable Adverse.

4.2.3.5 Summary of Regulatory Requirements

The regulatory requirements associated with the Increased Mining and Processing Rate alternative as relates to air quality would be the same as for the Proposed Action as presented in Section 3.5.5.

4.2.3.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Increased Mining and Processing Rate alternative as relates to air quality would be the same as for the Proposed Action as presented in Section 3.5.6.

4.2.3.7 Recommended Mitigation

No mitigation measures are recommended.

4.2.3.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance of this alternative would be Significant and Unavoidable Adverse.

4.2.4 Noise

4.2.4.1 Setting

The setting of the Increased Mining and Processing Rate alternative as it relates to noise is the same as for the Proposed Action as presented in Section 3.9.1.

4.2.4.2 Direct/Indirect Impacts

The noise generated by this alternative would be related to the mining and processing rate and the effect the rates have on the length of the project. During operations, the primary difference between this alternative and the Proposed Action would be the amount of material blasted, the size and amount of mining equipment needed and the size and amount of the crushing/screening facility equipment.

For the increased production rate alternative, the present schedule of one blast per day, an average of five days per week, may be increased to blasting six to seven days per week. This would result in no change in the noise generated by blasting on a daily basis.

This alternative would result in the use of more pieces of mining equipment similar in size to that used in the Proposed Action, or it would use a similar number of pieces of larger size equipment. The equipment would be run 24-hours per day, the same as the Proposed Action. If more equipment is used, it would likely add six significant pieces of equipment to the mining fleet. The increase in mining equipment used may increase the noise generated.

The crushing facilities would produce somewhat more noise than the Proposed Action, but not in proportion to the production rates. It is expected that a larger jaw crusher, one cone crusher, one impact crusher and one screen would be added to the equipment needed for the Proposed Action.

The increased rate alternative would result in the generation of more noise, but over a shorter project life. The level of increase in the noise generated should be small and offset somewhat by the resultant shorter project life. It is estimated that a 20 percent increase in equipment will result in an increase in overall noise of approximately one to two dB at the sensitive receptors. In certain areas of the mine it may be necessary to limit the hours of operation to meet the noise standard for Kern County.

Given the distance from residences, the ambient area noise and the requirement that the alternative must conform to Kern County noise regulations, the impact of this alternative on existing noise would be Less Than Significant, the same as for the Proposed Action.

4.2.4.3 Irreversible/Irretrievable Commitment of Resources

As with the Proposed Action, there would be irreversible or irretrievable commitment of resources associated with the Increased Mining and Processing Rate alternative as it relates to noise.

4.2.4.4 Cumulative Impacts

Additional noise impacts would result as compared to the Proposed Action. Compliance with the Kern County Noise Ordinance would ensure that the cumulative impacts from the present and foreseeable projects would be Less Than Significant.

4.2.4.5 Summary of Regulatory Requirements

The regulatory requirements associated with the Increased Mining and Processing Rate alternative as relates to noise would be the same as for the Proposed Action as presented in Section 3.9.5.

4.2.4.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Increased Mining and Processing Rate alternative as relates to noise would be the same as for the Proposed Action as presented in Section 3.9.6.

4.2.4.7 Recommended Mitigation

Compliance with the Kern County Noise Ordinance will ensure that the cumulative impacts from the present and foreseeable projects would be Less Than Significant. No mitigation measures are recommended.

4.2.4.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance of impact to noise for this alternative would be Less Than Significant.

4.2.5 Socioeconomics (Economic Development/Fiscal Analysis)

4.2.5.1 Setting

The setting of the Increased Mining and Processing Rate alternative as it relates to socioeconomics is the same as for the Proposed Action as presented in Section 3.11.1.

4.2.5.2 Direct/Indirect Impacts

The effect of the Increased Mining and Processing Rate alternative on construction expenditures would be an increase in equipment expenditures due to the increased size and/or amount of equipment required. Construction employment and duration would be about the same as in the Proposed Action.

During the operating life of the project, employment would be about 245, or 7 percent more than for the Proposed Action. Total wages and operating expenditures would be increased on an annual basis, providing a short-term increase in expenditures.

Total property taxes would not change significantly because the same resource would be mined. Other use taxes would likely increase, but be paid for a shorter time. With an eight to nine year project life, the effect upon property values would likely be similar to the effect of the Proposed Action.

This alternative would have a similar environmental impact on socioeconomics as compared to the Proposed Action. The reduced project life would result in greater short-term benefits, but less economic stability as compared to the Proposed Action. The environmental impact of the increased ore mining and processing rate alternative on existing socioeconomics would be Less Than Significant; the same as for the Proposed Action.

4.2.5.3 Irreversible/Irretrievable Commitment of Resources

As with the Proposed Action, there would be no irreversible or irretrievable commitment of government resources associated with the Increased Mining and Processing Rate alternative.

4.2.5.4 Cumulative Impacts

Although the project employment during the operating life would be about 7 percent more than the Proposed Action, the shorter project duration would cause this alternative to have a similar environmental impact on socioeconomics. The environmental impact of the Increased Mining and Processing Rate alternative on socioeconomics would be Less Than Significant.

4.2.5.5 Summary of Regulatory Requirements

No regulatory design features with respect to socioeconomic impacts have been identified.

4.2.5.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Increased Mining and Processing Rate alternative as relates to socioeconomics would be the same as for the Proposed Action as presented in Section 3.11.6.

4.2.5.7 Recommended Mitigation

As with the Proposed Action, impacts to socioeconomics would be Less Than Significant and no mitigation measures would be proposed.

4.2.5.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance after mitigation would be the same as for the Proposed Action, as described in Section 3.11.8. The impact of the Increased Mining and Processing Rate alternative would be Less Than Significant.

4.2.6 Health Hazards/Public Safety (Human Health/Risk of Upset)

4.2.6.1 Setting

The setting of the Increased Mining and Processing Rate alternative as it relates to health hazards and public safety is the same as for the Proposed Action as presented in Section 3.12.1.

4.2.6.2 Direct/Indirect Impacts

Due to the increased scale of the operation, more reagents, chemicals and other supplies would be delivered to and stored at the project site. This would create a slight increase in exposure potential relative to the Proposed Action. However, spill prevention and containment design and planning would accommodate increased shipments and storage, therefore, the effect would be insignificant.

As in the Proposed Action, this alternative would eliminate and/or reduce access to many of the existing hazards to public safety posed by untended and deteriorating mine openings and structures.

Overall, the environmental impact of health hazards and public safety of this alternative would be the same as for the Proposed Action; Less Than Significant.

4.2.6.3 Irreversible/Irretrievable Commitment of Resources

As with the Proposed Action, there would be no irreversible or irretrievable commitment of public health and safety resources associated with the Increased Mining and Processing Rate alternative.

4.2.6.4 Cumulative Impacts

As with the Proposed Project, there would be no cumulative impacts to public health and safety.

4.2.6.5 Summary of Regulatory Requirements

Regulatory requirements for the Increased Mining and Processing Rate alternative would be the same as for the Proposed Action as presented in Section 3.12.5.

4.2.6.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Increased Mining and Processing Rate alternative as relates to public health and safety would be the same as for the Proposed Action as presented in Section 3.12.6.

4.2.6.7 Recommended Mitigation

No mitigation measures would be recommended.

4.2.6.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance after mitigation would be the same as for the Proposed Action, as described in Section 3.11.8. The impact of the Increased Mining and Processing Rate alternative on public health and safety would be Less Than Significant.

4.2.7 Traffic and Transportation (Transportation/Circulation)

4.2.7.1 Setting

The setting of the Increased Mining and Processing Rate alternative as it relates to traffic and transportation is the same as for the Proposed Action as presented in Section 3.13.1.

4.2.7.2 Direct/Indirect Impacts

The primary effect on traffic of the increased production rate alternative would be by the number of employees working at the site. Fifteen more employees than in the Proposed Action would result in more traffic and the need for more parking. The project site has sufficient area to provide ample parking. The increased scale of operations would increase deliveries of supplies by up to 20 percent; an increase of one or two trips per day.

With these increases, the net result would be 28 additional average daily trips (ADT's) spread over a 24-hour period. Given that the Proposed Action volume to capacity ratio for Silver Queen Road is 0.05, this additional traffic would raise it about 0.002; a negligible effect.

The increase at the State Route 14 and State Route 58 intersection would be approximately 14 ADT over a 24-hour period; a negligible effect.

The environmental impact of the Increased Mining and Processing Rate alternative on existing traffic and parking would be Less Than Significant; the same as for the Proposed Action.

4.2.7.3 Irreversible/Irretrievable Commitment of Resources

As explained above, the difference between the impacts of this alternative and the Proposed Action are negligible. Therefore, there would be no irreversible or irretrievable commitments of traffic and transportation resources from the Increased Mining and Processing Rate alternative, as presented in Section 3.13.3.

4.2.7.4 Cumulative Impacts

As explained above, the difference between the impacts of this alternative and the Proposed Action are negligible. Therefore, the cumulative impacts from the Increased Mining and Processing Rate alternative as it relates to traffic and transportation would be the same as for the Proposed Action as presented in Section 3.13.4; Less Than Significant.

4.2.7.5 Summary of Regulatory Requirements

Regulatory requirements for the Increased Mining and Processing Rate alternative would be the same as for the Proposed Action as presented in Section 3.13.5.

4.2.7.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Increased Mining and Processing Rate alternative as relates to traffic and transportation would be the same as for the Proposed Action as presented in Section 3.13.6.

4.2.7.7 Recommended Mitigation

No mitigation measures are recommended.

4.2.7.8 Level of Significance After Mitigation (Residual Impacts)

Because the difference between the impacts of this alternative and the Proposed Action are negligible, the impact of the Increased Mining and Processing Rate alternative on traffic and transportation would be Less Than Significant, as explained in Section 3.13.8.

If operational air quality monitoring should indicate that the results of pre-operational modeling were not indicative of actual conditions, consideration of increased rates should not be precluded.

4.3 Decreased Mining and Processing Rate Alternative

4.3.1 Description of Alternative

This section describes a project alternative based upon decreasing the planned ore mining and processing rate from six million tons per year in the Proposed Action to an annual rate of 4.8 million tons per year. This may also result in a decrease of the total amount of material (ore plus overburden) mined per year to 24 million tons. This alternative provides a basis for comparing the environmental impacts that would result from a change in project scale as well as project duration.

For purposes of analysis, the following assumptions are made regarding the Decreased Mining and Processing Rate alternative:

- Total ore and overburden tons mined would be the same as estimated for the Proposed Action, but the annual mining and ore processing rate would be decreased by 20 percent as compared to the Proposed Action, thereby increasing the operational life of the project by 25 percent (approximately two to three years).
- Surface disturbance and the site layout for this alternative would be the same as for the Proposed Action. Excavation of the same total tonnage of ore and overburden would require the same mine, overburden stockpile and heap leach pad configurations. Disturbances for onsite roads and ancillary facilities would be similar, if not identical, because the same basic transportation needs, site access needs and supporting activities would occur. While individual buildings or pieces of equipment may be smaller, for example, a smaller crushing circuit might be used, differences in disturbances would be negligible.

The changes in environmental impact that may occur due to a decreased mining and processing rate are primarily related to the duration of mining activities and the consumptive uses associated with project operation.

The following environmental resources associated with the Decreased Mining and Processing Rate alternative have the same impacts as the Proposed Action as discussed in Section 3.0 and summarized in Table 4.0-2:

Mineral Resources (Natural Resources)	Section 3.1
Physiography and Geology (Earth Resources)	Section 3.2
Soils (Earth Resources)	Section 3.3
Biology	Section 3.6
Cultural and Historical Resources (Cultural Resources)	Section 3.7
Visual Resources (Light and Glare/Aesthetics)	Section 3.8
Land Use (Land Use/Population/Housing)	Section 3.10

Only the resources affected by the alternative are discussed below.

4.3.2 Hydrology (Water Resources)

4.3.2.1 Surface Water

4.3.2.1.1 Setting

The setting of the Decreased Mining and Processing Rate alternative as it relates to surface water is the same as for the Proposed Action as presented in Section 3.4.1.1.

4.3.2.1.2 Direct/Indirect Impacts

The Decreased Mining and Processing Rate alternative and the Proposed Action would both have negligible impacts upon surface water hydrology. The same grading and drainage patterns would be used in either case. Erosion potential and contact of surface waters with overburden piles would be similar, except in the alternative, due to the rate of project development and overburden deposition, the period of time for contact with unreclaimed materials would be increased. The project site materials have been shown to not have acid generation potential and an approved drainage plan would be utilized. The environmental impact of the Decreased Mining and Processing Rate alternative on existing surface water would be Less Than Significant; the same as for the Proposed Action.

4.3.2.1.3 Irreversible/Irretrievable Commitment of Resources

The irreversible and/or irretrievable commitment of resources associated with the Decreased Mining and Processing Rate alternative as it relates to surface water would be the same as for the Proposed Action as presented in Section 3.4.1.3.

4.3.2.1.4 Cumulative Impacts

There would be no additional impacts to surface hydrology as a result of the Decreased Mining and Processing Rate alternative.

4.3.2.1.5 Summary of Regulatory Requirements

The regulatory requirements associated with the Decreased Mining and Processing Rate alternative as relates to surface water would be the same as for the Proposed Action, presented in Section 3.4.1.5.

4.3.2.1.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Decreased Mining and Processing Rate alternative as relates to surface water would be the same as for the Proposed Action, presented in Section 3.4.1.6.

4.3.2.1.7 Recommended Mitigation

No mitigation measures are recommended.

4.3.2.1.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance of the Decreased Mining and Processing Rate alternative as relates to surface water would be the same as the Proposed Action, presented in Section 3.4.1.8.

The impact to the surface water quality as a result of the placement of the overburden directly on the ground surface would be Less Than Significant.

Impacts to the surface drainage would be Less Than Significant as a result of the regulatory requirements and design features.

The potential for discharge of hazardous materials to land would be Less Than Significant as a result of regulatory requirements and design features.

4.3.2.2 Groundwater/Water Supply

4.3.2.2.1 Setting

The setting of the Decreased Mining and Processing Rate alternative as it relates to groundwater is the same as for the Proposed Action as presented in Section 3.4.2.1.

4.3.2.2.2 Direct/Indirect Impacts

The rate at which groundwater is required for the project and the total amount of water required over the life of the project will vary according to the rate at which the project ore is mined and processed. Water requirements for the agglomeration and leaching processes vary in direct proportion with the quantity of ore processed. Water used for dust control on roads and within the crushing process is more closely related to the number of operating hours required. The decreased rate alternative would require that water be pumped from wells at a lower rate but for a longer period of time. The overall requirement for water over the life of the project would be about 12 percent greater than for the Proposed Action.

The estimated well pumping rate for this alternative is 675 gallons per minute for a project life of 12.5 years. The maximum projected drawdown at the water supply wells would be 76 feet, which is 9 percent less than the maximum drawdown projected under the Proposed Action. The drawdown analysis is included in the Hydrology Study.[211]

This alternative would have a beneficial short-term impact on groundwater/water supply as compared to the Proposed Action, but its overall long-term impact on the environment would be Less Than Significant; the same as for the Proposed Action.

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[211] WZI Inc., *Groundwater Supply Evaluation, Soledad Mountain Project*, December 1996, included in Appendix V.

Both the Proposed Action and the alternative would result in the same design, construction and monitoring technology for the control of a potential release of contaminants to groundwater. There would be no differential effect upon the groundwater as a result of either process rate. This alternative would have no significant environmental impact on water quality as compared to the Proposed Action.

The environmental impact of the Decreased Mining and Processing Rate alternative on existing groundwater/water supply would be Less Than Significant, the same as for the Proposed Action.

4.3.2.2.3 Irreversible/Irretrievable Commitment of Resources

As with the Proposed Action, the use of water represents an irretrievable use of resources. However, the groundwater will be replaced in the basin by future recharge.

4.3.2.2.4 Cumulative Impacts

The Decreased Mining and Processing Rate alternative would have an average water consumption of approximately 590 acre-feet per year supplied by up to three production groundwater wells. The impact in terms of drawdown of the aquifer is estimated to be 9 percent less, but the cumulative withdrawal is approximately 12 percent more. Other projects in the area requiring water are discussed in Section 3.4.2.4. Cumulative impacts to the groundwater quantity would be Less Than Significant.

4.3.2.2.5 Summary of Regulatory Requirements

The regulatory requirements associated with the Decreased Mining and Processing Rate alternative as relates to groundwater are the same as for the Proposed Action as presented in Section 3.4.2.5.

4.3.2.2.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Decreased Mining and Processing Rate alternative as relates to groundwater would be the same as for the Proposed Action as presented in Section 3.4.2.6.

4.3.2.2.7 Recommended Mitigation

No mitigation measures are recommended.

4.3.2.2.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance of the Decreased Mining and Processing Rate alternative would be the same as the Proposed Action as presented in Section 3.4.2.8; Less Than Significant.

4.3.3 Air Quality

4.3.3.1 Setting

The setting of the Decreased Mining and Processing Rate alternative as it relates to air quality is the same as for the Proposed Action as presented in Section 3.5.1.

4.3.3.2 Direct/Indirect Impacts

Under this scenario, mining and processing rates would decrease by 20 percent, resulting in lower emissions for a longer time period than in the Proposed Action. A review of the PM_{10} emissions sources was made to determine which sources would decrease and which would remain the same as in the Proposed Action. For calculation of the 24-hour PM_{10} concentration, the blasting and wind erosion sources will remain the same as in the Proposed Action. Blasting occurs once per day, but on fewer days than in the Proposed Action. Wind erosion is based on the surface area of exposed overburden piles, which would be similar to the Proposed Action. Emissions from all other sources would decrease by approximately 20 percent from the decreased activity.

For the dispersion model prepared for the Proposed Action, the individual sources were evaluated for their contribution to the maximum impact. A sensitivity analysis was conducted to estimate the impact of the decrease in production rate on the maximum calculated PM_{10} concentration by scaling the appropriate variable sources by 20 percent and keeping the unaffected sources unchanged.[212] The estimated 24-hour PM_{10} concentration resulting from the decreased processing is a maximum of 41.12 $\mu g/m^3$. This is below the California 24-hour standard of 50 $\mu g/m^3$, and less than the estimated PM_{10} concentration of 45.62 $\mu g/m^3$ for the Proposed Action.

Neither the federal or state air quality standards would be exceeded by the alternative. Therefore, implementation of the decreased rate alternative is similar to the Proposed Action and would have a Less Than Significant air quality impact.

Similarly, sensitivity analysis was conducted on the incremental excess health risk from toxic air contaminants from the Proposed Action to evaluate any changes resulting from the Decreased Mining and Processing Rate alternative.[213] The decreased mining and processing rate is not designed as a smaller project. It is the same project completed over a longer period of time.

Incremental risk is based on project life as well as the amount of particulate emissions. For all sources except wind erosion, the total emissions from the project would not change in a reduced rate scenario, thus the incremental risk from these sources would be the same as in the Proposed Action. Wind erosion emissions are based on the surface area of the overburden piles exposed for a certain time period. Since the decreased processing rate alternative would have a 25 percent longer life, wind erosion emissions and their contribution to the total risk would be increased by approximately 25 percent. Wind erosion emissions represent approximately 9.8 percent of the risk at the maximum exposed location. Increasing the project life by 25 percent would increase the overall risk from the project by about 2 percent to 5.1×10^{-6} from 5.0×10^{-6} for the Proposed Action. These results are essentially the same within the accuracy of the emissions estimates and the air dispersion model and would have a Less Than Significant impact.

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212 WZI Inc., *Golden Queen Mining Company, Soledad Mountain Project Estimated PM_{10} and Air Toxic Emissions and Impact Assessment*, December 1996, included as Appendix VII.

213 Ibid.

4.3.3.3 Irreversible/Irretrievable Commitment of Resources

As described for the Proposed Action in Section 3.5.3, the Decreased Mining and Processing Rate alternative would not represent an irreversible or irretrievable commitment of air quality resources.

4.3.3.4 Cumulative Impacts

As explained above in Section 4.2.3.2, the Decreased Mining and Processing Rate alternative by itself would represent a lesser impact to air quality. Other residential and industrial projects, besides the Proposed Action, proposed for the project area were discussed in Section 3.5.4. The cumulative environmental impacts to air quality from those other projects in combination with the Decreased Mining and Processing Rate alternative would be Less Than Significant; the same as the Proposed Action.

4.3.3.5 Summary of Regulatory Requirements

The regulatory requirements associated with the Decreased Mining and Processing Rate alternative as relates to air quality would be the same as for the Proposed Action as presented in Section 3.5.5.

4.3.3.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Decreased Mining and Processing Rate alternative as relates to air quality would be the same as for the Proposed Action as presented in Section 3.5.6.

4.3.3.7 Recommended Mitigation

No mitigation measures are recommended.

4.3.3.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance of this alternative would be Less Than Significant.

4.3.4 Noise

4.3.4.1 Setting

The setting of the Decreased Mining and Processing Rate alternative as it relates to noise is the same as for the Proposed Action as presented in Section 3.9.1.

4.3.4.2 Direct/Indirect Impacts

The noise generated by this alternative would be related to the mining and processing rate and the effect the rates have on the length of the project. During operations, the primary difference between this alternative and the Proposed Action would be the amount of material blasted, the size and amount of mining equipment needed and the size and amount of the crushing/screening facility equipment.

For the decreased production rate alternative, the present schedule of one blast per day, an average of five days per week, may be decreased to blasting about four days per week. This would result in no change in the maximum noise generated by blasting on a daily basis.

This alternative would require fewer pieces of mining equipment, although similar in size, than needed in the Proposed Action. It would likely reduce six significant pieces of equipment from the mining fleet, but the mine would still operate 24-hours per day.

The crushing facilities would produce somewhat less noise than the Proposed Action, but not in proportion to the production rates. It is expected that a smaller jaw crusher, one less standard cone crusher and one less impact crusher would be used relative to the Proposed Action. A 20 percent decrease in equipment would result in a decrease of approximately one to two dB in overall noise at sensitive receptors.

The decreased rate alternative would result in the generation of less noise, but for over a longer project life. For this alternative and for the Proposed Action, noise generated would meet Kern County requirements. The environmental impact on noise of this alternative, as compared to the Proposed Action, would be positive.

Given the distance from residences, the ambient area noise and the requirement that the alternative must conform to the Kern County noise regulations, the impact of this alternative on existing noise would be Less Than Significant; the same as for the Proposed Action.

4.3.4.3 Irreversible/Irretrievable Commitment of Resources

As with the Proposed Action, there would be no irreversible or irretrievable commitment of resources associated with the Decreased Mining and Processing Rate alternative as it relates to noise.

4.3.4.4 Cumulative Impacts

Less impact relating to noise would result as compared to the Proposed Action.

4.3.4.5 Summary of Regulatory Requirements

The regulatory requirements associated with the Decreased Mining and Processing Rate alternative as relates to noise would be the same as for the Proposed Action as presented in Section 3.9.5.

4.3.4.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Decreased Mining and Processing Rate alternative as relates to noise would be the same as for the Proposed Action as presented in Section 3.9.6.

4.3.4.7 Recommended Mitigation

Compliance with the Kern County Noise Ordinance will ensure that the cumulative impacts from the present and foreseeable projects would be Less Than Significant. No mitigation measures are recommended.

4.3.4.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance of impact to noise for this alternative would be Less Than Significant.

4.3.5 Socioeconomics (Economic Development/Fiscal Analysis)

4.3.5.1 Setting

The setting of the Decreased Mining and Processing Rate alternative as it relates to socioeconomics is the same as for the Proposed Action as presented in Section 3.11.1.

4.3.5.2 Direct/Indirect Impacts

The effect of this alternative on construction expenditures would be no material change in construction employment and a decrease in equipment expenditures, due to the decreased size and/ or amount of equipment required. The construction duration would be about the same as in the Proposed Action.

During the operating life of the project, employment would be about 203 people, a decrease of 7 percent from the Proposed Action. Total wages and operating expenditures would be decreased on an annual basis, providing a reduced annual effect with respect to the Proposed Action, but occurring for more years.

Total property taxes would not change significantly because the same resource would be mined. Other use taxes would likely decrease, but be paid for a longer time. The effect on property values would be similar to the Proposed Action.

The environmental impact of the Decreased Mining and Processing Rate alternative on existing socioeconomics would be Less Than Significant, the same as for the Proposed Action. The alternative would enhance the regional economy; similar to the Proposed Action.

4.3.5.3 Irreversible/Irretrievable Commitment of Resources

As with the Proposed Action, there would be no irreversible or irretrievable commitment of government services associated with the Decreased Mining and Processing Rate alternative.

4.3.5.4 Cumulative Impacts

Although the project employment during the operating life would be about 7 percent more than the Proposed Action, the longer project duration would cause this alternative to have a similar environmental impact on socioeconomics. The environmental impact of the Decreased Mining and Processing Rate alternative on socioeconomics would be Less Than Significant.

4.3.5.5 Summary of Regulatory Requirements

No regulatory design features with respect to socioeconomic impacts have been identified.

4.3.5.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Decreased Mining and Processing Rate alternative as relates to socioeconomics would be the same as for the Proposed Action as presented in Section 3.11.6.

4.3.5.7 Recommended Mitigation

No mitigation measures are recommended.

4.3.5.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance after mitigation would be the same as for the Proposed Action, as described in Section 3.11.8. The impact of the Decreased Mining and Processing Rate alternative would be Less Than Significant.

4.3.6 Health Hazards/Public Safety (Human Health/Risk of Upset)

4.3.6.1 Setting

The setting of the Decreased Mining and Processing Rate alternative as it relates to health hazards and public safety is the same as for the Proposed Action as presented in Section 3.12.1.

4.3.6.2 Direct/Indirect Impacts

Due to the decreased scale of the operation, fewer reagents, chemicals and other supplies would be delivered to and stored at the project site daily. This is a slight decrease in exposure potential relative to the Proposed Action. The project design provides for spill prevention and containment, therefore, the impact of this alternative would be Less Than Significant.

Similar to the Proposed Action, public access to hazards associated with historical mining activity, such as open adits and shafts, mine wastes and buildings, will be eliminated. These protective measures will be beneficial, similar to the Proposed Action.

4.3.6.3 Irreversible/Irretrievable Commitment of Resources

As with the Proposed Action, there would be no irreversible or irretrievable commitment of public health and safety resources associated with the Decreased Mining and Processing Rate alternative.

4.3.6.4 Cumulative Impacts

As with the Proposed Project, there would be no cumulative impacts to public health and safety.

4.3.6.5 Summary of Regulatory Requirements

Regulatory requirements for the Decreased Mining and Processing Rate alternative would be the same as for the Proposed Action as presented in Section 3.12.5.

4.3.6.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Decreased Mining and Processing Rate alternative as relates to public health and safety would be the same as for the Proposed Action as presented in Section 3.12.6.

4.3.6.7 Recommended Mitigation

No mitigation measures are recommended.

4.3.6.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance would be the same as for the Proposed Action, as described in Section 3.11.8. The impact of the Decreased Mining and Processing Rate alternative on public health and safety would be Less Than Significant.

4.3.7 Traffic and Transportation (Transportation/Circulation)

4.3.7.1 Setting

The setting of the Decreased Mining and Processing Rate alternative as it relates to traffic and transportation is the same as for the Proposed Action as presented in Section 3.13.1.

4.3.7.2 Direct/Indirect Impacts

The primary effect on traffic of the decreased production rate alternative would be on the number of employees working at the site. Fewer employees and a lower rate of production would result in 7 percent less traffic than the Proposed Action which is considered negligible. The environmental impact of the decreased mining and processing rate alternative on existing traffic and transportation, therefore, would be Less Than Significant, the same as for the Proposed Action.

4.3.7.3 Irreversible/Irretrievable Commitment of Resources

As explained above, the difference between the impacts of this alternative and the Proposed Action are negligible. Therefore, there would be no irreversible or irretrievable commitments of traffic and transportation resources from the Decreased Mining and Processing Rate alternative, as presented in Section 3.13.3.

4.3.7.4 Cumulative Impacts

As explained above, the difference between the impacts of this alternative and the Proposed Action are negligible. Therefore, the cumulative impacts from the Decreased Mining and Processing Rate alternative as it relates to traffic and transportation would be the same as for the Proposed Action as presented in Section 3.13.4; Less Than Significant.

4.3.7.5 Summary of Regulatory Requirements

Regulatory requirements for the Decreased Mining and Processing Rate alternative would be the same as for the Proposed Action as presented in Section 3.13.5.

4.3.7.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Decreased Mining and Processing Rate alternative as relates to traffic and transportation would be the same as for the Proposed Action as presented in Section 3.13.6.

4.3.7.7 Recommended Mitigation

No mitigation measures are recommended.

4.3.7.8 Level of Significance After Mitigation (Residual Impacts)

Because the difference between the impacts of this alternative and the Proposed Action are negligible, the impact of the Decreased Mining and Processing Rate alternative on traffic and transportation would be Less Than Significant, as explained in Section 3.13.8.

4.4 Reduced Project Size Alternative

4.4.1 Description of Alternative

This alternative evaluates the changes that would be made to the Proposed Action if it were to be designed to reduce or eliminate the topographic and visual resource impacts of the project. It is based upon the avoidance of mining in areas that would affect the primary ridge lines of Soledad Mountain, thus maintaining the basic silhouette of Soledad Mountain and reducing the impact on the visual character of the mountain. This alternative also illustrates the effect of a general reduction in size of the project that might be proposed for any other purpose.

In this alternative, the amount of ore mined would be reduced to 17.4 million tons, a reduction of 70 percent from the reasonably foreseeable minable ore reserve. Overburden mined in conjunction with this amount of ore would total 44 million tons, a reduction of 80 percent.

Based upon an operating rate that would produce and process up to six million tons of ore per year (the same as for the Proposed Action), the mining life of this alternative would be reduced to about three years.

The change in potential environmental impacts resulting from this alternative would be primarily related to the change in the amount of surface disturbance and the reduced mine life.

The percentage reduction in total tonnage mined would not be reflected in a proportional reduction in the surface area disturbed. This is because the volume to surface area relationship of the overburden piles and the heap leach pads tend to become less efficient with decreasing size and because the same basic amount of area is needed for facilities such as the process plant, offices, maintenance shops and other ancillary and support requirements.

For this alternative, however, the west heap leach pad would not be built, the north heap leach pad would be reduced in size by about 50 percent and one of the overburden piles might be eliminated.

The annual operating requirements for this alternative would be similar to the Proposed Action with regard to the number of employees, the annual scale of the operation and consumption of reagents, water, operating supplies and maintenance supplies. Other operating impacts on the environment would also be similar to the Proposed Action, with the total effect on some, such as total water consumed, being reduced due to the shorter project life.

The following environmental resources associated with the reduced project size have the same impacts as the Proposed Action, as discussed in Section 3.0 and summarized in Table 4.0-2.

Land Use (Land Use/Population/Housing) Section 3.10

Only the resources which are affected by the alternative are discussed below.

4.4.2 Mineral Resources (Natural Resources)

4.4.2.1 Setting

The setting of the Reduced Project Size alternative as it relates to mineral resources is the same as for the Proposed Action as presented in Section 3.1.1.

4.4.2.2 Direct/Indirect Impacts

As a result of the reduction in the scope of the project, mining would not proceed to the extent it would in the Proposed Action, and a smaller volume of mineral resources would be removed. This would result in less geologic understanding of the mineral resources being gained because less opportunity for examination and correlation of the geologic features of the site would be possible. Also, since the extent of the deposit that can be mined would be limited due to topography, there would be less incentive to continue exploration drilling and geologic work.

The environmental impact of this alternative upon mineral resources would be a Significant and Unavoidable Adverse impact, the same as for the Proposed Action, since it would represent a removal of minerals. It would present some opportunity for the discovery of currently unknown mineralization.

4.4.2.3 Irreversible/Irretrievable Commitment of Resources

Extraction of the ore represents irreversible development of known precious metals reserves. The Reduced Project Size alternative would extract 70 percent less of the known reserve.

4.4.2.4 Cumulative Impacts

There would be no additional cumulative impacts related to mineral resources of the area.

4.4.2.5 Summary of Regulatory Requirements

The regulatory requirements associated with the Reduced Project Size alternative would be the same as the Proposed Action, as presented in Section 3.1.5.

4.4.2.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Reduced Project Size alternative as related to mineral resources would be the same as the Proposed Action, presented in Section 3.1.6.

4.4.2.7 Recommended Mitigation

No mitigation measures are recommended.

4.4.2.8 Level of Significance After Mitigation (Residual Impacts)

The extraction of gold reserves, estimated at 450,000 ounces of gold, would be a residual impact which is a Significant and Unavoidable Adverse impact, but the commercial utilization of the mineral is beneficial, the same as with the Proposed Action.

4.4.3 Physiography and Geology (Earth Resources)

4.4.3.1 Topography

4.4.3.1.1 Setting

The setting of the Reduced Project Size alternative as it relates to topography would be the same as for the Proposed Action, as presented in Section 3.2.1.1.

4.4.3.1.2 Direct/Indirect Impacts

This alternative would, by definition, have a beneficial impact on topography as compared to the Proposed Action. The main ridges that define the silhouette of the mountain would remain. The overburden piles and the north ore heap leach pad would be built in the same locations, but they would be smaller in area, if not in height. The west heap leach pad would not be built and one overburden pile might be eliminated. Reclamation of the existing disturbances would be beneficial.

The net effect would be a reduction in impact, both visually and topographically, from the Proposed Action. The impact of this alternative on the existing environment would be Less Than Significant.

4.4.3.1.3 Irreversible/Irretrievable Commitment of Resources

The irreversible and/or irretrievable commitment of resources associated with the Reduced Project Size alternative as it relates to topography would be less than that for the Proposed Action as presented in Section 3.2.1.3.

4.4.3.1.4 Cumulative Impacts

There would be no additional cumulative impacts to topography as a result of the Reduced Project Size alternative.

4.4.3.1.5 Summary of Regulatory Requirements

The regulatory requirements associated with the Reduced Project Size alternative as relates to topography would be the same as for the Proposed Action, presented in Section 3.2.1.5.

4.4.3.1.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Reduced Project Size alternative as relates to topography would be the same as for the Proposed Action, presented in Section 3.2.1.6.

4.4.3.1.7 Recommended Mitigation

No mitigation measures are recommended.

4.4.3.1.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance of the Reduced Project Size alternative as relates to topography while less than the Proposed Action, presented in Section 3.2.1.8, would still be Significant and Unavoidable Adverse.

4.4.3.2 Geology and Seismology

4.4.3.2.1 Setting

The setting of the Reduced Project Size alternative as it relates to geology and seismology is the same as for the Proposed Action as presented in Section 3.2.2.1.

4.4.3.2.2 Direct/Indirect Impacts

The same design and construction criteria and procedures would be used as in the Proposed Action. In both cases, existing structures, features and facilities would be stabilized and/or eliminated, reducing the hazard that would exist with a No Action alternative, although somewhat fewer of the old mine workings might be impacted with the Reduced Project Size

alternative. The environmental impact of the Reduced Project Size alternative on existing seismic hazards would be Less Than Significant; the same as for the Proposed Action.

4.4.3.2.3 Irreversible/Irretrievable Commitment of Resources

As with the Proposed Action, there would be no irreversible/irretrievable commitment of geologic resources.

4.4.3.2.4 Cumulative Impacts

There would be no additional cumulative seismic impacts associated with this alternative.

4.4.3.2.5 Summary of Regulatory Requirements

The regulatory requirements associated with the Reduced Project Size alternative in regard to geology and seismology would be the same as for the Proposed Action as presented in Section 3.2.2.5.

4.4.3.2.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Reduced Project Size alternative as relates to geology and seismology would be the same as for the Proposed Action as presented in Section 3.2.2.6.

4.4.3.2.7 Recommended Mitigation

No mitigation measures are recommended.

4.4.3.2.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance of the Reduced Project Size alternative would be the same as for the Proposed Action as presented in Section 3.2.2.8; Less Than Significant.

4.4.4 Soils (Earth Resources)

4.4.4.1 Setting

The setting of the Reduced Project Size alternative as it relates to soils is the same as for the Proposed Action as presented in Section 3.3.1.

4.4.4.2 Direct/Indirect Impacts

Other than a reduction in surface area disturbed, the effect of this alternative on soils would be the same as in the Proposed Action. Approximately 100 acres of Arizo soil and 525 acres of Torriorthent soil would be disturbed. The Arizo soil would be salvaged for use as reclamation growth media. The environmental impact of the Reduced Project Size alternative on existing soils resources would be Less Than Significant due to regulatory requirements and project design features, the same as for the Proposed Action.

4.4.4.3 Irreversible/Irretrievable Commitment of Resources

As described for the Proposed Action in Section 3.3.3, the Reduced Project Size alternative would represent an irreversible or irretrievable commitment of soils resources.

4.4.4.4 Cumulative Impacts

Other residential and industrial projects proposed for the project area were discussed in Section 3.3.4. The combined projects, including the Reduced Project Size alternative, would disturb approximately 900 acres of soils. The cumulative long-term disturbance may be up to 500 acres after reclamation. The cumulative environmental impacts to soils from those other projects in combination with the Reduced Project Size alternative would be Less Than Significant.

4.4.4.5 Summary of Regulatory Requirements

The regulatory requirements associated with the Reduced Project Size alternative as relates to soils would be the same as for the Proposed Action as presented in Section 3.3.5.

4.4.4.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Reduced Project Size alternative as relates to soils would be the same as for the Proposed Action as presented in Section 3.3.6.

4.4.4.7 Recommended Mitigation

No mitigation measures are recommended.

4.4.4.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance of this alternative would be Less Than Significant.

4.4.5 Hydrology (Water Resources)

4.4.5.1 Surface Water

4.4.5.1.1 Setting

The setting of the Reduced Project Size alternative as it relates to surface water is the same as for the Proposed Action, as presented in Section 3.4.1.1

4.4.5.1.2 Direct/Indirect Impacts

Essentially the same grading and drainage patterns would be used as those planned for the Proposed Action. The location of the mine, overburden piles and other facilities would be similar, although requiring somewhat less surface area. The western heap leach pad, portions of the north heap leach pad and one of the overburden piles would be eliminated, leaving existing erosion patterns intact.

Erosion potential and contact of surface waters with overburden piles would be similar, except that the number of years available for contact with unreclaimed materials would be less than for the Proposed Action. Given that the project site materials have been shown to not have

acid generation potential, the environmental impact of the reduced project size alternative on existing surface water resources would be Less Than Significant, the same as for the Proposed Action.

4.4.5.1.3 Irreversible/Irretrievable Commitment of Resources

The surface drainage pattern will be permanently altered. However, the same regulatory requirements and design features as for the Proposed Action, Section 3.4.1.3, would be utilized.

4.4.5.1.4 Cumulative Impacts

There would be no additional cumulative impacts to surface water as a result of the Reduced Project Size alternative.

4.4.5.1.5 Summary of Regulatory Requirements

The regulatory requirements associated with the Reduced Project Size alternative as relates to surface water would be the same as for the Proposed Action, presented in Section 3.4.1.5.

4.4.5.1.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Reduced Project Size alternative as relates to surface water would be the same as for the Proposed Action, presented in Section 3.4.1.6.

4.4.5.1.7 Recommended Mitigation

No mitigation measures are recommended.

4.4.5.1.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance of the Reduced Project Size alternative as relates to surface water would be less than the Proposed Action, as presented in Section 3.4.1.8, and Less Than Significant.

The impact to the surface water quality as a result of the placement of the overburden directly on the ground surface would be Less Than Significant. Impacts to the surface drainage would be Less Than Significant as a result of the regulatory requirements and design features. The potential for discharge of hazardous materials to land would be Less Than Significant as a result of regulatory requirements and design features.

4.4.5.2 Groundwater/Water Supply

4.4.5.2.1 Setting

The setting of the Reduced Project Size alternative as it relates to groundwater is the same as for the Proposed Action as presented in Section 3.4.2.1.

4.4.5.2.2 Direct/Indirect Impacts

The rate at which groundwater is required for the project and the total amount of water required over the life of the project vary according to the rate at which ore is mined and processed and the number of years the project is active. In this alternative, the annual operating rate for the project would be the same as for the Proposed Action. Therefore, the operating rate of drawdown would be the same as for the Proposed Action, but would last for fewer years.

The estimated well pumping rate for this alternative is 750 gallons per minute, with a project life of three years. The maximum projected drawdown versus time will be 76 feet after three years, the same as under the Proposed Action. The drawdown analysis is included in the Hydrology Study.[214] The cumulative water requirements would be 70 percent less than the Proposed Action. Overall, this alternative would have less effect upon the existing groundwater/water supply than the Proposed Action, and the impact to the existing groundwater/water supply would be Less Than Significant, the same as for the Proposed Action.

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[214] WZI Inc., *Groundwater Supply Evaluation, Soledad Mountain Project*, December 1996, included in Appendix V.

Similarly, the effect of this alternative on groundwater quality would be the same as for the Proposed Action. The environmental effect of the alternative on the existing groundwater quality would be Less Than Significant, the same as for the Proposed Action.

4.4.5.2.3 Irreversible/Irretrievable Commitment of Resources

As with the Proposed Action, the use of water represents an irretrievable use of resources. However, the cumulative water requirements of the Reduced Project Size alternative would be 70 percent less than the Proposed Action. The groundwater will be replaced in the basin by future recharge.

4.4.5.2.4 Cumulative Impacts

The Reduced Project Size alternative would have an average water consumption of approximately 1,200 acre-feet per year supplied by up to three production groundwater wells; the same as the proposed project for three years. Other projects in the area requiring water are discussed in Section 3.4.2.4. Cumulative impacts to the groundwater quantity would be Less Than Significant.

4.4.5.2.5 Summary of Regulatory Requirements

The regulatory requirements associated with the Reduced Project Size alternative as relates to groundwater would be the same as for the Proposed Action as presented in Section 3.4.2.5.

4.4.5.2.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Reduced Project Size alternative as relates to groundwater would be the same as for the Proposed Action as presented in Section 3.4.2.6.

4.4.5.2.7 Recommended Mitigation

No mitigation measures are recommended.

4.4.5.2.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance of the Reduced Project Size alternative would be less than the Proposed Action as presented in Section 3.4.2.8 and Less Than Significant.

4.4.6 Air Quality

4.4.6.1 Setting

The setting of the Reduced Project Size alternative as it relates to air quality is the same as for the Proposed Action as presented in Section 3.5.1.

4.4.6.2 Direct/Indirect Impacts

Under this scenario, the total size of the project would be reduced by 70 to 80 percent, but the daily and annual processing rates would be approximately the same as the Proposed Action. For calculation of the 24-hour PM_{10} concentration, all emission sources would remain the same as in the Proposed Action. Therefore, no change would be expected in the maximum estimated 24-hour PM_{10} concentration of 45.62 $\mu g/m^3$. A sensitivity analysis was conducted on the incremental excess risk from the Proposed Action to evaluate any changes resulting from the Reduced Project Size alternative.[215] The incremental risk is based on the project life as well as the amount of emissions. A 70 percent reduction in project size and a 70 percent reduction in project life will result in a 70 percent reduction in maximum excess cancer risk compared to the Proposed Action. Therefore, the maximum expected excess cancer risk from this alternative would be 1.5×10^{-6} compared to the risk of 5.0×10^{-6} from the Proposed Action, both less than the significance threshold of 10.0×10^{-6}. The short-term and long-term effect of the Reduced Project Size alternative would be Less Than Significant.

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[215] WZI Inc., *Golden Queen Mining Company, Soledad Mountain Project Estimated PM_{10} and Air Toxic Emissions and Impact Assessment*, December 1996, included in Appendix VII.

4.4.6.3 Irreversible/Irretrievable Commitment of Resources

The Reduced Project Size alternative would not represent an irreversible or irretrievable commitment of air quality resources, the same as the Proposed Action, discussed in Section 3.5.3.

4.4.6.4 Cumulative Impacts

As explained above in Section 4.4.2.5.2, the Reduced Project Size alternative would represent a Less Than Significant impact to air quality. Other residential and industrial projects, besides the Proposed Action, proposed for the project area were discussed in Section 3.5.4. The cumulative environmental impacts to air quality from those other projects in combination with the Reduced Project Size alternative would be Less Than Significant.

4.4.6.5 Summary of Regulatory Requirements

The regulatory requirements associated with the Reduced Project Size alternative as relates to air quality would be the same as for the Proposed Action as presented in Section 3.5.5.

4.4.6.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Reduced Project Size alternative as relates to air quality would be the same as for the Proposed Action as presented in Section 3.5.6.

4.4.6.7 Recommended Mitigation

No mitigation measures are recommended.

4.4.6.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance of this alternative would be Less Than Significant.

4.4.7 Biology

4.4.7.1 Vegetative Resources

4.4.7.1.1 Setting

The setting of the Reduced Project Size alternative as it relates to vegetative resources is the same as for the Proposed Action as presented in Section 3.6.1.

4.4.7.1.2 Direct/Indirect Impacts

This alternative would result in less surface area being disturbed and less total disturbance to existing vegetative resources as compared to the Proposed Action. Similarly, because less mining would occur in this alternative, the amount of reclamation and time to accomplish reclamation will be reduced. The same procedures, as in the Proposed Action, would be implemented to protect vegetation and to affect revegetation in this alternative. The environmental impact of the Reduced Project Size alternative on existing vegetative resources would be Less Than Significant, the same as for the Proposed Action.

4.4.7.1.3 Irreversible/Irretrievable Commitment of Resources

As with the Proposed Action, there would be irreversible or irretrievable commitment of resources associated with the Reduced Project Size alternative as it relates to vegetation. Although the project would be reduced in size, the steepness of the pit walls and side slopes will limit revegetation in these areas, the same as the Proposed Action, resulting in potentially different revegetation patterns.

4.4.7.1.4 Cumulative Impacts

The cumulative impacts from the present and foreseeable projects would be Less Than Significant, the same as the Proposed Action, as discussed in Section 3.6.1.4.

4.4.7.1.5 Summary of Regulatory Requirements

The regulatory requirements associated with the Reduced Project Size alternative as relates to vegetative resources would be the same as for the Proposed Action as presented in Section 3.6.1.5.

4.4.7.1.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Reduced Project Size alternative as relates to vegetative resources would be the same as for the Proposed Action as presented in Section 3.6.1.6.

4.4.7.1.7 Recommended Mitigation

No mitigation measures are recommended.

4.4.7.1.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance of impact to vegetative resources for this alternative would be Less Than Significant.

4.4.7.2 Wildlife Resources

4.4.7.2.1 Setting

The setting of the Reduced Project Size alternative as it relates to wildlife resources is the same as for the Proposed Action as presented in Section 3.6.2.1.

4.4.7.2.2 Direct/Indirect Impacts

This alternative would result in less total surface area being disturbed and less overall disturbance to wildlife resources, as compared to the Proposed Action, although the amount of disturbance would be the same for the first three years in either case because the mining rate is the same. Because less mining would occur in this alternative, the amount of

reclamation and time to accomplish reclamation would be reduced relative to the Proposed Action. The same procedures as in the Proposed Action would be implemented to protect wildlife. The environmental impact of the Reduced Project Size alternative on existing wildlife resources would be Less Than Significant; the same as for the Proposed Action.

4.4.7.2.3 Irreversible/Irretrievable Commitment of Resources

As with the Proposed Action, there would be no irreversible or irretrievable commitment of resources associated with the Reduced Project Size alternative.

4.4.7.2.4 Cumulative Impacts

The alternative and other proposed projects in the area would represent a cumulative disturbance of approximately 900 acres. The environmental impact of the Reduced Project Size alternative on wildlife resources would be Less Than Significant, as a result of reclamation requirements and a large surrounding area of undisturbed habitat.

4.4.7.2.5 Summary of Regulatory Requirements

The regulatory design features with respect to wildlife resources would be the same as for the Proposed Action, as described in Section 3.6.2.5.

4.4.7.2.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Reduced Project Size alternative as relates to wildlife resources would be the same as for the Proposed Action as presented in Section 3.6.2.6.

4.4.7.2.7 Recommended Mitigation

No mitigation measures are recommended.

4.4.7.2.8 Level of Significance After Mitigation (Residual Impacts)

The impact of the Reduced Project Size alternative would be Less Than Significant, the same as for the Proposed Action, described in Section 3.6.2.8.

4.4.8 Cultural and Historical Resources (Cultural Resources)

4.4.8.1 Setting

The setting of the Reduced Project Size alternative as it relates to cultural and historic resources is the same as for the Proposed Action as presented in Section 3.7.1.

4.4.8.2 Direct/Indirect Impacts

This alternative would result in the disturbance of less land surface than in the Proposed Action, and would reduce or avoid the disturbance of at least three of the four sites which have been judged to be significant with respect to the history and development of this area. The same data recovery and preservation measures would be implemented, where needed, in this alternative as are planned for the Proposed Action.

This alternative would have less impact on cultural and historical resources than the Proposed Action and provide for less data recovery. The environmental impact of the Reduced Project Size alternative on existing cultural and historical resources would be Less Than Significant after the Phase III Data Recovery is completed on the sites identified as having scientific and historical value.

4.4.8.3 Irreversible/Irretrievable Commitment of Resources

As with the Proposed Action, the historical sites located in the project area will be disturbed. The sites would be subjected to Phase III Data Recovery prior to disturbance.

4.4.8.4 Cumulative Impacts

As with the Proposed Project, the cumulative impacts to cultural and historic resources would be Less Than Significant.

4.4.8.5 Summary of Regulatory Requirements

Regulatory requirements for the Reduced Project Size alternative would be the same as for the Proposed Action as presented in Section 3.7.5.

4.4.8.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Reduced Project Size alternative would be the same as for the Proposed Action as presented in Section 3.7.6.

4.4.8.7 Recommended Mitigation

The same mitigation measures would be recommended for this alternative as for the Proposed Action, Section 3.7.7.

4.4.8.8 Level of Significance After Mitigation (Residual Impacts)

The impact of the Reduced Project Size alternative would be Less Than Significant and would be the same as the Proposed Action, Section 3.7.8.

4.4.9 Visual Resources (Light and Glare/Aesthetics)

4.4.9.1 Setting

The setting of the Reduced Project Size alternative as it relates to visual resources is the same as for the Proposed Action as presented in Section 3.8.1.

4.4.9.2 Direct/Indirect Impacts

This alternative has been designed to reduce the visual resources impact of the project by avoiding mining of the ridge lines which frame the silhouette of the mountain. It would, therefore, have less visual impact on the project site as compared to the Proposed Action. The alternative would have a Less Than Significant impact.

4.4.9.3 Irreversible/Irretrievable Commitment of Resources

As explained above, the difference between the impacts of this alternative and the Proposed Action are significant. The Reduced Project Size alternative was designed to minimize the irretrievable commitment of visual resources while still mining some of the existing precious metals. The landscape would still have a permanent change, however, the ridge lines would remain unchanged.

4.4.9.4 Cumulative Impacts

The cumulative impacts from the Reduced Project Size alternative as it relates to visual resources would be less than the Proposed Action as presented in Section 3.8.4 and Less Than Significant.

4.4.9.5 Summary of Regulatory Requirements

Regulatory requirements for the Reduced Project Size alternative would be the same as for the Proposed Action as presented in Section 3.8.5.

4.4.9.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Reduced Project Size alternative as relates to visual resources would be the same as for the Proposed Action as presented in Section 3.8.6.

4.4.9.7 Recommended Mitigation

No mitigation measures are recommended.

4.4.9.8 Level of Significance After Mitigation (Residual Impacts)

The difference between the impacts to visual resources of this alternative and the Proposed Action are significant. The impact of the Reduced Project Size alternative on visual resources would be Less Than Significant and less than the impact for the Proposed Action, Section 3.8.8.

4.4.10 Noise

4.4.10.1 Setting

The setting of the Reduced Project Size alternative as it relates to noise is the same as for the Proposed Action as presented in Section 3.9.1.

4.4.10.2 Direct/Indirect Impacts

Noise generated from the project would be a function of the location of operations within the site and the scale of the mining and processing operations. Since this alternative would have operations being conducted at the same locations and at the same scale as in the Proposed Action, the noise resulting from operations would be equivalent to that of the Proposed Action. The primary difference is that the length of time that noise would be generated in this alternative would be reduced.

This alternative would have a similar noise impact as the Proposed Action. The impact of the Reduced Project Size alternative on existing noise would be Less Than Significant, the same as for the Proposed Action.

4.4.10.3 Irreversible/Irretrievable Commitment of Resources

As with the Proposed Action, there would be no irreversible or irretrievable commitment of resources associated with the Reduced Project Size alternative as it relates to noise.

4.4.10.4 Cumulative Impacts

Impacts related to noise would be less than the Proposed Action. Compliance with the Kern County Noise Ordinance will ensure that the cumulative impacts from the present and foreseeable projects would be Less Than Significant.

4.4.10.5 Summary of Regulatory Requirements

The regulatory requirements associated with the Reduced Project Size alternative as relates to noise would be the same as for the Proposed Action as presented in Section 3.9.5.

4.4.10.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Reduced Project Size alternative as relates to noise would be the same as for the Proposed Action as presented in Section 3.9.6.

4.4.10.7 Recommended Mitigation

No mitigation measures are recommended.

4.4.10.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance of impact to noise for this alternative would be Less Than Significant.

4.4.11 Socioeconomics (Economic Development/Fiscal Analysis)

4.4.11.1 Setting

The setting of the Reduced Project Size alternative as it relates to socioeconomics is the same as for the Proposed Action as presented in Section 3.11.1.

4.4.11.2 Direct/Indirect Impacts

Since the annual scope of this alternative is the same as for the Proposed Action, the socioeconomic effect of the project during construction and its operating life would be essentially the same as that for the Proposed Action. After that, employment would be eliminated and additional construction associated with continued operations would be foregone. This would effectively eliminate about seven years of employment for an estimated 230 people from the local economy, relative to the Proposed Action.

Property taxes would be reduced since the overall value of the project would be reduced with respect to the Proposed Action. Other use taxes would be unchanged from the Proposed Action, but would be paid for a shorter period of time.

The net result of this alternative would be a reduction in the economic value and economic stability of the project to the local economy. It would also result in a major decrease in the value of the project to Golden Queen, which would likely put the project into jeopardy. This alternative would have an overall detrimental effect, as compared to the Proposed Action. If, however, the project were to proceed under this alternative, the effect on existing local socioeconomics would continue to be positive, although less so than the Proposed Action. The impact to socioeconomics is Less Than Significant.

4.4.11.3 Irreversible/Irretrievable Commitment of Resources

As with the Proposed Action, there would be no irreversible or irretrievable commitment of government resources associated with the Reduced Project Size alternative.

4.4.11.4 Cumulative Impacts

Although the project employment during the operating life would be the same as the Proposed Action, the longer project duration would cause this alternative to have a less positive impact on socioeconomics. The environmental impact of the Reduced Project Size alternative on socioeconomics would be Less Than Significant.

4.4.11.5 Summary of Regulatory Requirements

No regulatory design features with respect to socioeconomic impacts have been identified.

4.4.11.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Reduced Project Size alternative as relates to socioeconomics would be the same as for the Proposed Action as presented in Section 3.11.6.

4.4.11.7 Recommended Mitigation

No mitigation measures are recommended.

4.4.11.8 Level of Significance After Mitigation (Residual Impacts)

The impact of the Reduced Project Size alternative would be Less Than Significant, the same as for the Proposed Action, as explained in Section 3.11.8.

4.4.12 Health Hazards/Public Safety (Human Health/Risk of Upset)

4.4.12.1 Setting

The setting of the Reduced Project Size alternative as it relates to health hazards and public safety is the same as for the Proposed Action as presented in Section 3.12.1.

4.4.12.2 Direct/Indirect Impacts

The processing rate would be the same as the Proposed Action, therefore, the volume of reagents, chemicals and other supplies delivered to and stored at the project site would be the same as the Proposed Action.

Similar to the Proposed Action, public access to hazards associated with historical mining activities, such as open adits and shafts, would be eliminated. Some of the existing mine waste would remain in place due to the reduction in heap leach pads and overburden piles. The protective measures are positive, but less so than the Proposed Action. Thus, the environmental impact to health hazards and public safety of this alternative would be Less Than Significant.

4.4.12.3 Irreversible/Irretrievable Commitment of Resources

As with the Proposed Action, there would be no irreversible or irretrievable commitment of public health and safety resources associated with the Reduced Project Size alternative.

4.4.12.4 Cumulative Impacts

As with the Proposed Action, there would be no additional cumulative impacts to public health and safety.

4.4.12.5 Summary of Regulatory Requirements

Regulatory requirements for the Reduced Project Size alternative would be the same as for the Proposed Action as presented in Section 3.12.5.

4.4.12.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Reduced Project Size alternative as relates to public health and safety would be the same as for the Proposed Action as presented in Section 3.12.6.

4.4.12.7 Recommended Mitigation

No mitigation measures are recommended.

4.4.12.8 Level of Significance After Mitigation (Residual Impacts)

The impact of the Reduced Project Size alternative on public health and safety would be Less Than Significant, the same as for the Proposed Action, as explained in Section 3.12.8.

4.4.13 Traffic and Transportation (Transportation/Circulation)

4.4.13.1 Setting

The setting of the Reduced Project Size alternative as it relates to traffic and transportation is the same as for the Proposed Action as presented in Section 3.13.1.

4.4.13.2 Direct/Indirect Impacts

The only difference between this alternative and the Proposed Action would be the length of time the project would be in operation. This alternative would have no effect on the amount of parking required, relative to the Proposed Action, since there would be no difference in construction or operations employment. It would not have any effect on traffic either, except that traffic as a result of the project would last fewer years. The effect of this alternative on existing traffic and parking would also be Less Than Significant.

4.4.13.3 Irreversible/Irretrievable Commitment of Resources

As explained above, the difference between the impacts of this alternative and the Proposed Action are negligible. Therefore, there would be no irreversible or irretrievable commitments of traffic and transportation resources from the Reduced Project Size alternative, as presented in Section 3.13.3.

4.4.13.4 Cumulative Impacts

As explained above, the difference between the impacts of this alternative and the Proposed Action are negligible. Therefore, the cumulative impacts from the Reduced Project Size alternative as it relates to traffic and transportation would be the same as for the Proposed Action as presented in Section 3.13.4; Less Than Significant.

4.4.13.5 Summary of Regulatory Requirements

Regulatory requirements for the Reduced Project Size alternative would be the same as for the Proposed Action as presented in Section 3.13.5.

4.4.13.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Reduced Project Size alternative as relates to traffic and transportation would be the same as for the Proposed Action as presented in Section 3.13.6.

4.4.13.7 Recommended Mitigation

No mitigation measures are recommended.

4.4.13.8 Level of Significance After Mitigation (Residual Impacts)

Because the difference between the impacts of this alternative and the Proposed Action are negligible, the impact of the Reduced Project Size alternative on traffic and transportation would be Less Than Significant, as explained in Section 3.13.8.

4.5 Partial Backfilling Alternative

4.5.1 Description of Alternative

Complete backfilling was discussed and eliminated from further consideration as a reasonable alternative in Section 2.3.3.2. This section describes a Partial Backfilling alternative where overburden, and possibly the processed and neutralized ore, would be backfilled into the open depressions created by the proposed mining activities. The Partial Backfilling alternative differs from complete backfilling where all of the overburden/waste rock and processed ore would be replaced to the original location.

For the purposes of analysis, the following assumptions are made regarding the Partial Backfilling alternative:

- Total ore and overburden tons mined would be the same as estimated for the Proposed Action;
- Surface disturbance and the site layout for this alternative would be the same as for the Proposed Action; and
- Approximately 19 million cubic yards (30.5 million tons) would be replaced to the open pit;.

The Partial Backfilling alternative has similar impacts on the following resources as discussed in Section 3.0 and summarized in Table 4.0-2:

Soils (Earth Resources)	Section 3.3
Hydrology (Water Resources), Surface Water	Section 3.4.1
Cultural and Historical Resources (Cultural Resources)	Section 3.7
Land Use (Land Use/Population/Housing)	Section 3.10
Health Hazards/Public Safety (Human Health/Risk of Upset)	Section 3.12
Traffic and Transportation (Transportation/Circulation)	Section 3.13

Only the resources affected by the alternative are discussed below.

4.5.2 Mineral Resources (Natural Resources)

4.5.2.1 Setting

The setting of the Partial Backfilling alternative as it relates to mineral resources is the same as for the Proposed Action as presented in Section 3.1.1.

4.5.2.2 Direct/Indirect Impacts

As with the Proposed Action, the Partial Backfilling alternative would not change the final production rates (up to 60 million tons of ore material yielding an estimated one and one-half million ounces of gold). The mining of the ore would result in the removal of the extracted minerals which is a Significant and Unavoidable Adverse impact.

Commercial utilization of the geologic resources constitutes a beneficial use of available resources. If additional minerals could be extracted from the open pit in the future, partial backfilling may be in conflict with the objectives of federal and state mining policies. The Specific Plan for Soledad Mountain - Elephant Butte and Vicinity - South of Mojave recognizes gold and silver mining operations as important past land uses. SMARA states that ".. the reclamation of mined lands ...will permit the continued mining of minerals and will provide for the protection and subsequent beneficial use of the mined and reclaimed lands."[216] The protection of remaining mineralization at a reclaimed mined site is also incorporated into federal regulations, such that "reclamation may not be required where the retention of a stable highwall or other mine workings is needed to preserve evidence of mineralization."[217]

Precious metal mineralization extends beyond the planned limits of the open pit floors and walls. The walls and floor of the open pit contain gold mineralization which appears to be unfeasible to mine with current economic conditions and technology. However, changes in external conditions such as fluctuating metals prices and improvements in technology, may result in revised open pit designs which increase the amount of economically extractable ore.

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[216] SMARA §2711(b)

[217] 43 CFR §3809.05(g); 3809.1-3(d)(2)&(5)

If these materials left behind in the open pit floor and walls are buried due to backfilling requirements, the cost of recovering them in the future may be so high that they become lost as a resource. Additionally, backfilling the pit and, subsequently, the evidence of mineralization, would preclude future investigation by geologists.

4.5.2.3 Irreversible/Irretrievable Commitment of Resources

Extraction of the ore under this alternative represents irreversible development of known precious metals reserves.

The partial backfilling of the depressions created by open pit mining could represent an irreversible/irretrievable commitment of mineral resources if future recovery efforts, which would otherwise be economically feasible, are infeasible due to costs associated with re-excavating backfill from the open pit.

4.5.2.4 Cumulative Impacts

This alternative would result in additional limitations imposed on future access to mineral resources.

4.5.2.5 Summary of Regulatory Requirements

Same as for the Proposed Action.

4.5.2.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

Project design features for the Partial Backfilling alternative would be the same as for the Proposed Action as presented in Section 3.1.6.

4.5.2.7 Recommended Mitigation

No mitigation measures are recommended.

4.5.2.8 Level of Significance After Mitigation (Residual Impacts)

The extraction of gold reserves is a residual impact which is a Significant and Unavoidable Adverse impact, but the commercial utilization of the minerals is beneficial. The gold and silver would be available for use by industry and society. The Partial Backfilling alternative may prohibit the future recovery and utilization of resources that may become otherwise recoverable due to fluctuating metals prices and/or technological advances.

4.5.3 Physiography and Geology (Earth Resources)

4.5.3.1 Topography

4.5.3.1.1 Setting

The setting of the Partial Backfilling alternative as it relates to topography is the same as for the Proposed Action as presented in Section 3.2.1.1.

4.5.3.1.2 Direct/Indirect Impacts

This alternative would backfill the depressions resulting from the open pit mining activities. Approximately 19 million cubic yards of material from the overburden piles and possibly the heap leach piles would be removed and placed back into the depressions. Approximately 126 million cubic yards of material would remain in the overburden and heap leach piles. The reduction in pile sizes would be marginal. The topographical impacts associated with the Partial Backfilling alternative would be similar to the Proposed Action.

The overall topographic impact of the Partial Backfilling alternative to topography would be less than for the Proposed Action. However, the impact would be Significant and Unavoidable Adverse.

4.5.3.1.3 Irreversible/Irretrievable Commitment of Resources

The changes in topography would be permanent and represent an irreversible alteration of the existing landscape.

4.5.3.1.4 Cumulative Impacts

The cumulative impacts to the topography would be beneficial since more acreage within the open pit would be subject to reshaping and recontouring to blend with the surrounding landscape.

4.5.3.1.5 Summary of Regulatory Requirements

The regulatory requirements for the Partial Backfilling alternative as relates to topography are the same as for the Proposed Action as presented in Section 3.2.1.5.

4.5.3.1.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The project design features for the Partial Backfilling alternative as relates to topography would be the same as for the Proposed Action as presented in Section 3.2.1.6.

4.5.3.1.7 Recommended Mitigation

No mitigation measures are recommended.

4.5.3.1.8 Level of Significance After Mitigation (Residual Impacts)

The topography would be permanently altered, thus, the residual impact would be Significant and Unavoidable Adverse.

4.5.3.2 Geology and Seismology

4.5.3.2.1 Setting

The setting of the Partial Backfilling alternative as it relates to geology and seismology is the same as for the Proposed Action as presented in Section 3.2.2.1.

4.5.3.2.2 Direct/Indirect Impacts

As described in Section 3.2.2.2 for the Proposed Action, the impacts to geology and seismology from the Partial Backfilling alternative would be Less Than Significant.

4.5.3.2.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible/irretrievable commitment of geologic resources.

4.5.3.2.4 Cumulative Impacts

There would be no additional cumulative impacts to the seismic hazard of the area as a result of this alternative.

4.5.3.2.5 Summary of Regulatory Requirements

The regulatory requirements for this alternative would be the same as for the Proposed Project as presented in Section 3.2.2.5.

4.5.3.2.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The project design features for the Partial Backfilling alternative would be the same as for the Proposed Action, presented in Section 3.2.2.6.

4.5.3.2.7 Recommended Mitigation

No mitigation measures are recommended.

4.5.3.2.8 Level of Significance After Mitigation (Residual Impacts)

As with the Proposed Action, the geologic impacts due to the Partial Backfilling alternative are Less Than Significant.

4.5.4 Hydrology (Water Resources)

4.5.4.1 Groundwater/Water Supply

4.5.4.1.1 Setting

The setting of the Partial Backfilling alternative as it relates to groundwater is the same as for the Proposed Action as presented in Section 3.4.2.1.

4.5.4.1.2 Direct/Indirect Impacts

The backfilling activities of this alternative would extend impacts to the ground water supply an additional 2.25 years longer than the Proposed Action, during which water would be required for backfill compaction and dust suppression. These water requirements would be minimal when compared to recovery process needs which would no longer be underway. Therefore, the impact to groundwater from the alternative would be Less Than Significant.

4.5.4.1.3 Irreversible/Irretrievable Commitment of Resources

The use of 18,000 acre-feet of water during the main phase of the alternative represents an irretrievable use of resources, as does the additional water used during the 2.25 year backfilling phase. However, the groundwater would be replaced in the basin by future recharge as explained in Section 3.4.2.3.

4.5.4.1.4 Cumulative Impacts

There would be an additional impact (above the extraction of 18,000 acre/feet for the mining operation) to the ground water resources of the area from the 2.25 year extention of operations. However, this amount is expected to be very small since the water will be used for dust control and compaction and no water would be used for processing at this stage.

4.5.4.1.5 Summary of Regulatory Requirements

The applicable regulatory requirements in regard to groundwater for the Partial Backfilling alternative would be the same as for the Proposed Action as explained in Section 3.4.2.5.

4.5.4.1.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The project design features measures for the Partial Backfilling alternative would be the same as for the Proposed Action as explained in Section 3.4.2.6.

4.5.4.1.7 Recommended Mitigation

No mitigation measures are recommended.

4.5.4.1.8 Level of Significance After Mitigation (Residual Impacts)

As for the Proposed Action, the impacts to groundwater supply are Less Than Significant for the Partial Backfilling alternative. However, the alternative would extend the duration of project-related withdrawal of groundwater an additional 2.25 years when compared to the Proposed Action.

4.5.5 Air Quality

4.5.5.1 Setting

The setting of the Partial Backfilling alternative as it relates to air quality resources is the same as for the Proposed Action as presented in Section 3.5.1.

4.5.5.2 Direct/Indirect Impacts

Air quality impacts from the Partial Backfilling alternative during the construction and main phases would be the same as for the Proposed Action, detailed in Section 3.5.2. However, when the Proposed Action would be complete, the Partial Backfilling alternative would last an additional 2.25 years while the depressions created by open pit mining activities were backfilled. As a result, pollutant emissions from mobile vehicles (e.g., loaders, haul trucks, etc.) involved with the hauling of overburden and ore materials back into the depressions, as well as compaction activities, would continue. Overburden and ore pile surface areas would

not be significantly reduced, thus, fugitive emissions from the piles due to wind erosion would be similar to the Proposed Action.

Although this alternative would add approximately 2.25 years to the project life when compared to the Proposed Action, the rate of activity would not increase. The extended duration of activities under the Partial Backfilling alternative would not result in a violation of the CAAQS or NAAQS. The alternative would not significantly impact the visibility and ambient air quality of a Class I Wilderness Area. Also, the extended duration of activities under the alternative would not result in a significant excess cancer risk, or short- or long-term health risk. Therefore, the Partial Backfilling alternative would result in Less Than Significant impacts with respect to air quality.

4.5.5.3 Irreversible/Irretrievable Commitment of Resources

There are no irreversible or irretrievable commitments of air quality resources.

4.5.5.4 Cumulative Impacts

The extended operations would increase additional impacts to the air resources of the area for 2.25 years.

4.5.5.5 Summary of Regulatory Requirements

Applicable air quality regulatory requirements for the Partial Backfilling alternative would be the same as for the Proposed Action, discussed in Section 3.5.5.

4.5.5.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The project design features measures for the Partial Backfilling alternative would be the same as for the Proposed Action, outlined in Section 3.5.6.

4.5.5.7 Recommended Mitigation

There are no recommended mitigation measures.

4.5.5.8 Level of Significance After Mitigation (Residual Impacts)

As for the Proposed Action, the residual impacts to air quality in the project area from this alternative would be Less Than Significant.

4.5.6 Biology

4.5.6.1 Vegetative Resources

4.5.6.1.1 Setting

The setting of the Partial Backfilling alternative as relates to vegetative resources is the same as for the Proposed Action Setting as presented in Section 3.6.1.1.

4.5.6.1.2 Direct/Indirect Impacts

Generally, the impacts to vegetative resources for the Partial Backfilling alternative would be the same as for the Proposed Action. One difference is that approximately 96 acres of the open pit would be recovered and revegetated under the alternative. This compares with the revegetation of 44 acres of the open pit under the Proposed Action. Therefore, the alternative would reclaim an additional 52 acres.

4.5.6.1.3 Irreversible/Irretrievable Commitment of Resources

Approximately 169 acres of the open pit would not be reseeded due to the steepness of the pit walls and side slopes. This compares to 221 acres of unseeded terrain under the Proposed Action. Revegetation of the overburden piles will be similar to the Proposed Action. Natural revegetation processes would eventually establish vegetation on portions on these areas and provide habitat for wildlife.

4.5.6.1.4 Cumulative Impacts

The cumulative impacts from the alternative are the same as for the Proposed Action which are presented in Section 3.6.1.4. The cumulative impact on vegetation would be Less Than Significant.

4.5.6.1.5 Summary of Regulatory Requirements

The regulatory requirements with regard to vegetative resources would be the same as for the Proposed Action as presented in 3.6.1.5.

4.5.6.1.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The project design features measures for the alternative would be the same as for the Proposed Action as presented in Section 3.6.1.6.

4.5.6.1.7 Recommended Mitigation

No mitigation measures are recommended.

4.5.6.1.8 Level of Significance After Mitigation (Residual Impacts)

The permanent or temporary loss of natural vegetation is a residual impact. Revegetation during reclamation will offset the loss of natural vegetation types. The loss is Less Than Significant because no rare or unique habitats would be affected and there are large amounts of similar undisturbed habitats in the regional area.

As with the Proposed Action, there would be No Impact to environmentally-sensitive habitat areas or "specimen trees" due to the alternative because there are none present on the project site.

4.5.6.2 Wildlife Resources

4.5.6.2.1 Setting

The setting of the Partial Backfilling alternative as relates to wildlife resources is the same as for the Proposed Action setting as presented in Section 3.6.2.1.

4.5.6.2.2 Direct/Indirect Impacts

As explained for the Proposed Action in Section 3.6.2.2, the Partial Backfilling alternative would have No Impact to sensitive species. Potential Impacts to wildlife are considered to be Less Than Significant.

When compared to the Proposed Action, an additional 52 acres of the open pit would be reclaimed under the Partial Backfilling alternative due to the increased floor area. This area would be available for wildlife habitat.

4.5.6.2.3 Irreversible/Irretrievable Commitment of Resources

As explained for the Proposed Action in Section 3.6.2.3, this alternative would not result in an irreversible or irretrievable commitment of wildlife resources.

4.5.6.2.4 Cumulative Impacts

As for the Proposed Action as presented in Section 3.6.2.4, the cumulative impacts to wildlife from the alternative would be Less Than Significant.

4.5.6.2.5 Summary of Regulatory Requirements

The wildlife-related regulatory requirements for this alternative are the same as for the Proposed Action as presented in Section 3.6.2.5.

4.5.6.2.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The project design features for this alternative is the same as for the Proposed Action as presented in Section 3.6.2.6.

4.5.6.2.7 Recommended Mitigation

No mitigation measures are recommended.

4.5.6.2.8 Level of Significance After Mitigation (Residual Impacts)

The level of significance for the Partial Backfilling alternative after mitigation would be the same as for the Proposed Action as presented in Section 3.6.2.7; Less Than Significant.

4.5.7 Visual Resources (Light and Glare/Aesthetics)

4.5.7.1 Setting

The setting of the Partial Backfilling alternative as relates to visual resources is the same as for the Proposed Action Setting as presented in Section 3.8.1.

4.5.7.2 Direct/Indirect Impacts

This alternative would result in the backfilling of depressions resultant from the open pit mining activities. Under this alternative approximately 19 million cubic yards of material from the overburden piles and possibly the heap leach piles would be removed and placed back into the depressions. However, approximately 126 million cubic yards of material would remain in the overburden and heap leach piles. This reduction in pile sizes does not represent a significant change from the Proposed Action. These changes would not be visible outside the project property and, thus, the visual resource impacts for the alternative would be the same as for the Proposed Action as presented in Section 3.8.2; Less Than Significant.

4.5.7.3 Irreversible/Irretrievable Commitment of Resources

The landscape would be permanently changed, however, the basic elements of form, line, color, and texture of Soledad Mountain would be similar to the existing features.

4.5.7.4 Cumulative Impacts

The change in landscape associated with the alternative, the potential residential development and the Hemperly/Warnack aggregate quarry would alter the landscape, but the cumulative visual impact to the overall regional landscape would be Less Than Significant.

4.5.7.5 Summary of Regulatory Requirements

The regulatory requirements related to visual resources would be the same as for the Proposed Action as presented in Section 3.8.5.

4.5.7.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The project design features for this alternative are the same as for the Proposed Action as presented in Section 3.8.6.

4.5.7.7 Recommended Mitigation

No mitigation measures are recommended.

4.5.7.8 Level of Significance After Mitigation (Residual Impacts)

The change in topography and landscape of Soledad Mountain represent residual impacts. After reclamation the change in the visual resources of the project area would not be unlike surrounding areas, repeating the basic visual elements, and may not be noticeable to the casual observer from major traveled routes. The long-term impact would be Less Than Significant.

4.5.8 Noise

4.5.8.1 Setting

The setting of the Partial Backfilling alternative as relates to noise is the same as for the Proposed Action Setting as presented in Section 3.9.1.

4.5.8.2 Direct/Indirect Impacts

The noise generated from the Partial Backfilling alternative during the construction and main phase would be the same as for the Proposed Action. The impacts for these phases are discussed in Section 3.9.2 and would be Less Than Significant. The alternative would last 2.25 years longer than the Proposed Action to backfill the depressions resultant from the open pit mining activities. Therefore, noise associated with heavy duty off road vehicles loading, unloading and hauling materials to backfill the pit would continue during this period. However, noise levels would not exceed those during the operational phase of the mine because no blasting activities would be conducted during this time. Therefore, the impact during backfilling would be similar to the main phase, which would be the same as the Proposed Project; Less Than Significant.

4.5.8.3 Irreversible/Irretrievable Commitment of Resources

There is no irreversible or irretrievable commitment of noise resources associated with the alternative.

4.5.8.4 Cumulative Impacts

As with the Proposed Action, compliance with the Kern County Noise Ordinance would ensure the cumulative impacts from the past, present and foreseeable projects would be Less Than Significant.

4.5.8.5 Summary of Regulatory Requirements

The regulatory requirements related to noise resources would be the same as for the Proposed Action as presented in Section 3.9.5.

4.5.8.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The project design features for this alternative would be the same as for the Proposed Action as presented in Section 3.9.6.

4.5.8.7 Recommended Mitigation

No mitigation measures are recommended.

4.5.8.8 Level of Significance After Mitigation (Residual Impacts)

As for the Proposed Action, the level of significance of noise impacts would be Less Than Significant.

4.5.9 Socioeconomics (Economic Development/Fiscal Analysis)

4.5.9.1 Setting

The setting of the Partial Backfilling alternative as relates to socioeconomics is the same as for the Proposed Action Setting as presented in Section 3.11.1.

4.5.9.2 Direct/Indirect Impacts

The only difference between the Partial Backfilling alternative and the Proposed Action would be that the reclamation phase would be extended 2.25 years to include partial backfilling of the depressions created by the open pit mining activities. As such, the socioeconomic impacts of this alternative are the sum of the impacts from the Proposed Action, described in Section 3.11.2, plus the additional impacts created by the backfilling activities.

The socioeconomic analysis for the Proposed Action concluded that tax receipts would exceed the expenditures for government services necessitated by the project by approximately $40,700 in Year 1. The analysis concluded that the project would enhance the local economy and would induce growth because jobs would come from the local job pool. Also, the addendum to the analysis concluded that the Proposed Action would not measurably impact property values of nearby residences.

These conclusions would also apply to the alternative. However, the Partial Backfilling alternative would decrease the project value by approximately $15 million. This decrease in project value would result from the costs associated with extending the reclamation phase 2.25 years to allow for backfilling activities. The impact of the alternative on socioeconomics would be Less Than Significant.

4.5.9.3 Irreversible/Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitment of government services associated with the alternative.

4.5.9.4 Cumulative Impacts

As for the Proposed Action as presented in Section 3.11.4, the cumulative socioeconomic impacts would be Less Than Significant.

4.5.9.5 Summary of Regulatory Requirements

As for the Proposed Action, no regulatory requirements have been identified with respect to potential socioeconomic impacts.

4.5.9.6 Summary of Project Design Features Proposed by Applicant (Applicant-Proposed Mitigation)

The project design features for this alternative would be the same as for the Proposed Action as presented in Section 3.11.6.

4.5.9.7 Recommended Mitigation

There are no significant impacts, therefore, there are no recommended mitigation measures.

4.5.9.8 Level of Significance After Mitigation (Residual Impacts)

This alternative would not conflict with population, employment or housing projects, therefore, the impact would be Less Than Significant.

4.6 Status of Alternatives

Section 15126(d)(2) of the CEQA implementing guidelines requires that, of the alternatives addressed in an EIR, one be identified as "environmentally superior." If the environmentally superior alternative is the No Action Alternative, then the EIR will also identify an environmentally superior/preferred alternative among the other alternatives.

Federal regulations require that a draft EIS identify the NEPA lead agency's "preferred alternative," if one exists.[218] The preferred alternative must be identified in the final EIS. The preferred alternative is the one that the lead agency believes will fulfill its statutory mission and responsibilities. The EIS must objectively evaluate all of the alternatives. Selection of the preferred alternative is conducted after analysis of impacts of the Proposed Action and the alternatives.

Cost alone is not an overriding consideration for the BLM in their determination of the preferred alternative. The BLM staff, in their recommendations to management, must consider other factors in their examination of the range of alternatives. Other important factors include:

- Determining what is usual, customary and proficient in the mining industry in the western United States.
- Providing for a productive post mining land use area after completion of mining (the management goal for productive post mining use is "no net loss" to overall resource values and land use opportunities).
- Providing for measures to protect human health and safety.
- Providing reasonable measures to protect the scenic, scientific and environmental values of the area impacted by mining.
- Evaluating the potential for future mining from remaining mineralization that is not now economic.
- Considering the long-term and short-term impacts of alternatives as compared to the Proposed Action.
- Considering whether post mining land management by the BLM will require an "active" program (i.e., inspection, compliance and enforcement by the BLM staff) or a "passive"

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[218] 40 CFR §1502.14(3)

program (as was the condition prior to mining).

The EIS should also identify the "environmentally preferable" alternative.[219] The environmentally preferable alternative is the alternative that best promotes the national environmental policy expressed in NEPA. Generally, this means the alternative that causes the least damage to the environment and best protects natural and cultural resources.

4.6.1 No Action Alternative

The National Materials and Minerals Policy, Research and Development Act of 1990 has declared that "it is the continuing policy of the United States to promote an adequate and stable supply of materials necessary to maintain national security, economic well being and industrial production with appropriate attention to a long-term balance between resource production, energy use, a healthy environment, natural resources conservation and social needs." The No Action Alternative would be generally inconsistent with this policy.

SMARA encourages the production of minerals while giving consideration to environmental resources. The specific plan for Soledad Mountain - Elephant Butte and Vicinity - South of Mojave recognizes gold and silver mining operations as important past land uses. However, Kern County could adopt the No Action Alternative if any significant adverse environmental effects are identified which could not be mitigated to a level of Less Than Significant, or a Statement of Overriding Considerations under CEQA could not be justified.

The No Action alternative would constitute denial of the operational permit to develop the project. This alternative is the CEQA environmentally superior alternative and NEPA environmentally preferred alternative. The No Action alternative would result in no change to the current impacts on the resources of the area. The No Action alternative would not benefit the socioeconomic and employment opportunities of the area. Reclamation of 215 acres disturbed by historic mining activities would not be realized under this alternative. This would increase impacts to vegetation, wildlife and visual resources from the current levels. Air and water quality impacts would continue in their current levels if the No Action alternative is implemented. Other benefits to the resources would not be realized as a result of this

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[219] 46 FR §18026 (March 23, 1981), as amended by 51 FR §15618 (April 25, 1986)

alternative, they include: seismic hazard impacts, long-term air quality, cultural and historical resources.

Because it has several beneficial environmental benefits, this alternative is environmentally superior to the Proposed Action. However, the selection of the No Action alternative would not be consistent with federal mining laws and regulations (1976 FLPMA and 43 CFR 3809) unless operations result in undue and unnecessary degradation of the subject lands. Some state and county policies encourage mineral development. While the Specific Plan for Soledad Mountain - Elephant Butte and Vicinity - South of Mojave, recognizes gold and silver mining operations as important land uses, a no action alternative would still be consistent with both the County General Plan and the Specific Plan.

4.6.2 Increased Mining and Processing Rate

This alternative examines the environmental effects of an increased rate of mining and ore processing relative to the Proposed Action. The Increased Mining and Processing Rate alternative is technically feasible. This alternative would result in the exceedence of PM_{10} standards. This would require implementation of additional mitigation measures associated with dust control. This would result in additional water usage and operational equipment exhaust.

If operational air quality monitoring should indicate that the results of pre-operational modeling were not indicative of actual conditions, consideration of increased rates should not be precluded.

Although this alternative is technically feasible, it is not environmentally superior to the Proposed Action.

4.6.3 Decreased Mining and Processing Rate

This alternative examines the environmental effects of a decreased rate of mining and ore processing relative to the Proposed Action. The Decreased Mining and Processing Rate alternative is technically feasible. This alternative would have a slight beneficial effect on drawdown of groundwater levels, slightly lower noise levels and slightly less traffic. The

alternative would produce a negligible impact on water supply due to the need for an increased total amount of water. With respect to other resources affected, there would be no significant difference between this alternative and the Proposed Action.

Although this alternative is technically feasible and has some beneficial effects, it is not environmentally superior to the Proposed Action. It is comparable to the Proposed Action.

4.6.4 Reduced Project Size

The Reduced Project Size alternative examines the environmental effect of the project designed to minimize topographical impact and improve, incrementally, visual impacts. This alternative would be technically feasible.

This alternative would have a slight beneficial effect on the topographic profiles in relation to the Proposed Action since less disturbed acreage is involved. This alternative would have a slight beneficial effect on the vegetative resources of the affected area. With respect to the visual impact of this alternative, relative to the Proposed Action, there is a slight beneficial difference. Health hazard risks would increase as a result of this Reduced Project Size alternative, mainly due to the decreased acreage subject to reclamation.

For all other resources affected, its environmental impacts are essentially equivalent to the Proposed Action.

Reducing the project size would be slightly beneficial relative to the Proposed Action with respect to topographic profiles and vegetative resources. This, however, does not render this alternative environmentally superior to the Proposed Action since the benefits of reducing existing hazards and reclamation of previously disturbed mining activities would not be fully realized.

4.6.5 Partial Backfilling of the Open Pit

This alternative examines the environmental affects of modifying the Proposed Action to allow for partial backfilling of the depressions created by open pit mining activities. Although this

alternative is technically feasible, it is not considered to be environmentally superior to the Proposed Action because it extends the impacts of the earth-moving operations for an additional 2.25 years.

Partial backfilling would be slightly beneficial relative to the Proposed Action with respect to topographic profiles and vegetative resources. However, this alternative is slightly less beneficial relative to the Proposed Action with respect to noise, air quality and water quantity.

5.0 CEQA STATUTORY SECTIONS

The environmental impact analysis of the Proposed Action considered the impact to environmental resources as required by CEQA and NEPA. This chapter presents a summary of environmental impacts and discusses short-term versus long-term productivity and growth inducing impacts of the Proposed Action in ways not otherwise addressed in specific detail in the Draft EIR/EIS.

5.1 Summary of Environmental Impacts of the Proposed Action

5.1.1 Impacts Found to Have No Significance

Following would be those resources for which there are no impacts expected, as a result of the proposed project.

Geology and Seismology

There would be no impacts resulting from liquefaction.

Surface Hydrology

There would be no impact related to flooding.

Vegetative Resources

There would be no impact to environmentally sensitive habitat areas or "specimen trees."

Land Use

The proposed project does not conflict with existing land uses.

The proposed project does not contain prime agricultural land.

5.1.2 Impacts Found to Be Less Than Significant

Following are those resources for which the impacts have been designated as less than significant or which have the potential for being significant, but with regulatory requirements and project design features proposed by the applicant, will be reduced to less than significant.

Geology and Seismology

The impacts due to seismic activities would be less than significant, as a result of regulatory and project design features.

The impact from slope failure would be less than significant due to regulatory and project design features.

Subsidence due to old mining properties would be less than significant due to project design features.

Soils

The permanent loss of soil would be less than significant, as a result of regulatory requirements and project design features.

Surface Hydrology

The impact to surface water quality, as a result of the placement of overburden directly on the ground surface, would be less than significant.

Impacts to surface drainage would be less than significant, as a result of regulatory requirements and design features.

The potential for discharge of hazardous materials to land would be less than significant, as a result of regulatory requirements and design features.

Groundwater

Impacts to the groundwater supply would be less than significant, as demonstrated by hydrology studies.

Impacts to the quality of groundwater would be less than significant, as a result of regulatory requirements and design features.

Air Quality

As shown by dispersion modeling, PM_{10} emissions from the proposed project would not cause or contribute to a violation of the NAAQS or CAAQS for PM_{10} in the project area, and the impact would be less than significant.

The proposed project would not violate any approved plan for achieving or maintaining compliance with NAAQS or CAAQS, local or regional growth or congestion plans or local CEQA significance standards for air quality, and the impact would be less than significant.

The proposed project would not result in toxic air contaminant emissions which would cause a significant short- or long-term health risk or cause an increase cancer risk of greater than 10 per million, and the impact would be less than significant.

The proposed project would not concentrate vehicle trips or motor vehicle-related emissions in a localized area which would cause a violation of any CO ambient air quality standard, and the impact would be less than significant.

The proposed project would not cause an odor, visibility or other problem which would create a public nuisance condition, and the impact would be less than significant.

Vegetative Resources

The project would result in the loss of natural vegetation. This impact would be less than significant, as a result of revegetation during reclamation and because no rare or unique habitats will be affected.

Wildlife Resources

Impacts to the small numbers of bats would be reduced by placing gates or grates at the entrance to some existing shafts and adits to allow bat access for roosting. Other impacts to wildlife will be reduced by reclamation of disturbed surfaces to restore habitats.

The proposed project would not violate any environmental law or regulation designed to protect wildlife.

The proposed project would not directly harm a sensitive species or cause a net loss of habitat to the species.

The proposed project would not interfere substantially with the movement of any resident or migratory fish or wildlife species.

The proposed project would not cause any wildlife population to drop below self-sustaining levels.

The proposed project would not cause a net loss of any riparian lands, wetlands, marshes or other environmentally-sensitive habitat areas.

Impacts to wildlife resources would be less than significant after regulatory and proposed project design features are in place.

Visual Resources

The long-term impact to visual resources would be less than significant after reclamation.

Noise

The proposed project will not raise noise levels above standards set by Kern County, and the impact would be less than significant.

Socioeconomics

The proposed project will not conflict with population, employment or housing projects, therefore, the impact would be less than significant.

The proposed project will not cause substantial growth or concentration in the population beyond current levels directly or indirectly, therefore, the impact would be less than significant.

The proposed project will not cause a decrease in jobs, therefore, the impact would be less than significant.

The proposed project will not require additional police/sheriff staff or equipment to maintain acceptable service ratios, therefore, the impact would be less than significant.

The proposed project will not require additional fire department staff or equipment to maintain an acceptable level of service, therefore, the impact would be less than significant.

The proposed project will not result in an increase in the population of school-age children, therefore, the impact would be less than significant.

The proposed project will not create or exacerbate a housing shortage, therefore, the impact would be less than significant.

Health Hazards

The proposed project would not create a significant hazard to the public or the environment through routine transport, use or disposal of hazardous materials.

The proposed project would not create a significant hazard to the public or the environment through a reasonably foreseeable upset or accident condition involving the likely release of hazardous materials to the environment.

The proposed project would not interfere with community response plans or emergency evacuation plans in the event of a reasonably foreseeable upset or accident condition involving a hazardous material release, and the impact would be less than significant.

The proposed project will not have any problems with respect to the availability of facilities for hazardous waste reuse, treatment or disposal, and the impact would be less than significant.

Transportation

The proposed project will not cause a new violation of a goal relating to traffic LOS. By the year 2014, the LOS on State Route 14 is estimated to be E as a result of regional traffic growth. The proposed project will add slightly to the growth, but the overall impact would be less than significant.

The proposed traffic use is compatible with the existing road designs, therefore, the impact would be less than significant.

The proposed project will be designed for adequate parking and circulation, including entrance and exit routes, therefore, the impact would be less than significant.

5.1.3 Impacts Mitigated to a Level of Less Than Significant

Significant impacts are defined as impacts which would cause substantial adverse changes to existing environmental conditions which can be reduced to less than significant by mitigation measures. The following significant impacts have been reduced to less than significant by mitigation measures.

Cultural and Historical Resources

The loss of four historical sites to disturbance will be mitigated by the performance of Phase III Data Recovery work.

5.1.4 Significant and Unavoidable Adverse Impacts

Significant and unavoidable adverse impacts are those which constitute a substantial adverse change to existing environmental conditions that cannot be fully mitigated by implementing all feasible mitigation measures. The following are significant and unavoidable adverse impacts as a result of the proposed project.

Mineral Resources

Precious metals resources would be extracted from a known ore body, reducing the resource.

Topography

The topography would be permanently changed.

5.2 Short-term Uses Versus Long-term Productivity

Federal mining laws encourage mineral development provided appropriate attention is given to a long-term balance between resource production, energy use, a healthy environment, natural resource conservation and social needs. SMARA encourages the production of minerals while giving consideration to environmental resource. The Specific Plan for Soledad Mountain - Elephant Butte and Vicinity - South of Mojave recognizes gold and silver mining operations as important land uses.

The county land use goals for the area in which the Soledad Mountain project is proposed include mining, low density residential and open space. Current use of the land is consistent with these goals. The Proposed Action will return the property to this use following mining. Recreational use of the project area is minimal, due to the nature of the property and the scattered ownership, both public and private, of the project area lands. The Proposed Action, which includes project development, mining and processing operations and reclamation, will be consistent with these land use goals over the short- and long-term.

Over the short-term, the project area will be dedicated for mining use, and will impact existing wildlife and the visual character (open space) of the site. Following mining, reclamation will provide renewed wildlife habitat and open space, although somewhat modified from that which currently exists. Revegetation, which may take several decades to fully establish itself in density and diversity, will be restored to the approximate natural conditions that now exist. The open pit mine would be reclaimed to a level where it would constitute no risk to health and safety and would provide habitat for wildlife not dissimilar to the steep and rocky topography that now exists in some areas of the site. The mine would remain available to future mineral development. Long-term productivity of the site, with regard to land use goals, will be essentially unaffected by the Proposed Action.

The short-term commitment of resources to mineral development, as well as the unavoidable impacts, are justified by the positive socioeconomic and health hazard/public safety impacts that the project will produce.

5.3 Growth Inducing Impacts

It is expected that the Proposed Action will not produce significant growth inducing impacts to the local area. Within a 50-mile commuting distance of the project, adequate housing, utilities, schools and commercial and government services already exist with the capacity to absorb the level of employment and secondary jobs that the project would support. Most (80 percent) of the jobs created at the project are expected to be filled by persons who already live in the area. The recent closure of two mining operations and the current level of economic growth and unemployment in the area will allow this project to begin operations without placing significant new demand for utilities, government services or other support services.

6.0 COMMENTS AND RESPONSE TO COMMENTS

6.1 Public Review Process

Kern County Planning Department filed a Notice of Completion for the Draft Soledad Mountain Project EIR/EIS on June 2, 1997, and copies of the document were sent to the State Clearinghouse for distribution. BLM published a Notice of Availability for the Draft EIR/EIS in the Federal Register on June 2, 1997.

The Soledad Mountain Draft EIR/EIS was distributed the first week of June 1997 for public review and comment. The draft was mailed to interested individuals and companies on lists maintained by Kern County and BLM. Inclusion on the lists resulted from written requests to Kern County or BLM, attendance at the scoping meetings, ownership of affected mineral rights, or comments to the Notice of Preparation and the Internet site. Federal, state, county and local agencies were also provided with copies of the document.

BLM held public meetings in Rosamond on June 24, 1997 and in Mojave on June 25, 1997 at which oral comments on the Draft EIR/EIS were recorded by court reporter.

6.2 Comments Received

Comment letters on the Draft EIR/EIS were received by Kern County and BLM. The letters and itemized comments are summarized in Table 6.2-1 and included in their entirety in Section 6.3.2. Oral comments received through the public meeting process were recorded by a court reporter and the proceedings are summarized in Tables 6.2-2 and 6.2-3, and included in their entirety in Appendix XIII. The comment period closed on August 11, 1997.

Each written letter received by Kern County and BLM was numbered in order by date written. Each substantive comment within each letter was numbered. For example, Comment 6-5 is the fifth comment of the sixth letter received by either Kern County or BLM.

Oral comments made in the two public meetings were numbered in the order of the commentor's appearance. Issues raised through the comments were numbered.

TABLE 6.2-1

Index to Written Comments and Responses			
Date	**Name Agency/Affiliation**	**Comment Code**	**Topic**
	Mayor Mary K. Shineflew, Rosamond	1-1	In support of project. No response necessary.
06/03/97	Jim Hammel, The Gas Company - Northern Region	2-1	Comment noted. No response necessary.
		2-2	Gas pipeline.
06/06/97	Shirley J. Conrad, Secretary, Rosamond Chamber of Commerce	3-1	In support of project. No response necessary.
06/05/97	Dan Spoor, President, Rosamond Chamber of Commerce	4-1	In support of project. No response necessary.
06/11/97	Mayor Larry Adams, California City	5-1	In support of project. No response necessary.
06/12/97	Marilyn J. Beardslee, Kern Council of Governments	6-1	Operations.
		6-2	Parking.
		6-3	Road maintenance.
		6-4	References.
		6-5	Traffic and transportation.
		6-6	Traffic and transportation
06/12/97	Pete Sturn, President, Mojave Chamber of Commerce	7-1	In support of project. No response necessary.
06/16/97	Deric English, resident of Boron	8-1	In support of project. No response necessary.
06/16/97	Gerald L. & Patricia Moseley, residents of California City	9-1	In support of project. No response necessary.
06/17/97	Mayor William R. Lalor, Ridgecrest	10-1	In support of project. No response necessary.
06/18/97	Dan Stone, DeNardi Equipment, Bakersfield	11-1	In support of project. No response necessary.
06/19/97	William J. Pete Knight, California State Senator, 17th District	12-1	In support of project. No response necessary.
06/20/97	Keith Olberg, Assemblyman, 34th District	13-1	In support of project. No response necessary.
06/23/97	Dennis W. DeWalt, President, DeWalt Corporation, Bakersfield	14-1	In support of project. No response necessary.

TABLE 6.2-1 (Continued)

Index to Written Comments and Responses			
Date	**Name Agency/Affiliation**	**Comment Code**	**Topic**
06/27/97	Department of Conservation, Office of Mine Reclamation	15-1	SMARA format.
		15-2	Slope stability.
		15-3	Revegetation.
		15-4	Revegetation.
		15-5	Revegetation.
		15-6	Revegetation.
		15-7	Revegetation.
06/30/97	Michael T. Gnekow, Chief EHS, Kern County Environmental Health Services Department	16-1	Noise.
07/08/97	Fay VanHorn, Native American Heritage Preservation Council of Kern County	17-1	Cultural resources.
07/09/97	Stan Haye, Chair, Sierra Club	18-1	Alternatives.
		18-2	Land use.
		18-3	Reclamation.
		18-4	Reclamation.
07/12/97	Rodney & Cathy Sedam, residents of Mojave	19-1	Groundwater.
		19-2	Air quality.
		19-3	Blasting.
		19-4	Bonding and reclamation.
		19-5	Number of residences.
	Robert Gomez, Jr., Kern River Paiute Council	20-1	Cultural resources.
07/13/97	David & Terri Stickel, residents of Mojave	21-1	Groundwater levels.
		21-2a	Noise background levels.
		21-2b	Nighttime noise levels.
		21-3	Land use and zoning.

TABLE 6.2-1 (Continued)

Index to Written Comments and Responses			
Date	**Name Agency/Affiliation**	**Comment Code**	**Topic**
07/13/97	Gretchen Winfrey	22-1	Groundwater quantity.
		22-2	Groundwater quantity.
		22-3	Conditional Use Permit.
		22-4	Air Quality.
		22-5	Number of residences.
		22-6	Conditional Use Permit.
		22-7	Plant species.
		22-8	Revegetation.
		22-9	Revegetation.
		22-10	General comment.
07/14/97	Adele Baldwin, Southern San Joaquin Valley Information Center	23-1	Cultural resources.
		23-2	Cultural resources.
	Virginia Knight, resident of Los Angeles	24-1	In support of the project. No response necessary.
	Michael R. Madden, Manager, All American Pipeline Company	25-1	Pipeline in area.
		25-2	No comments.
07/17/97	Antero A. Rivasplata, Governor's Office of Planning & Research	26-1	No comments.
07/23/97	Carola Rupert Enriquez, Kern County Museum	27-1	Cultural resources.
07/29/97	Stephen A. Mathis, resident of Mojave	28-1a	Air quality.
		28-1b	Air quality.
		28-1c	Air quality.
		28-2	Water supply and quality.
		28-3	Property values.
	Dean Webb, resident of Lancaster	29-1	Underground mining alternative.
		29-2	Project design.
		29-3	Valley committee to review issues.
		29-4	Air quality monitoring.
		29-5	Reclamation.
		29-6	General comment.

TABLE 6.2-1 (Continued)

Index to Written Comments and Responses			
Date	Name Agency/Affiliation	Comment Code	Topic
08/01/97	Randall B. Klotz, Branton, Wilson & Muns, APC	30-1	Zoning and land use.
		30-2	Impacts.
		30-3	California Department of Real Estate.
		30-4	Land use.
		30-5	Alternatives.
		30-6	Water quality and supply.
		30-7	Air quality.
		30-8	Biological resources evaluation.
		30-9	Cultural resources.
		30-10	Noise impacts.
		30-11	Vegetative resources impacts.
		30-12	Wildlife resources impacts.
		30-13	Cultural resources.
		30-14	Blasting.
		30-15	Noise impacts.
		30-16	Notification.
		30-17	Notification.
		30-18	Property values.
		30-19	Socioeconomic impacts.
08/03/97	Daniel T. Cooper, Professional Planner	31-1	Circulation of Draft EIR/EIS.
		31-2	Recreational resources.
		31-3	Regional planning.
		31-4	Land exchange.
		31-5	Specific plan.
		31-6	Need of project.
		31-7a	Groundwater quality.
		31-7b	Groundwater use.
		31-7c	Water quality.
		31-7d	Hydrology reports.

TABLE 6.2-1 (Continued)

Index to Written Comments and Responses			
Date	**Name Agency/Affiliation**	**Comment Code**	**Topic**
08/03/97	Daniel T. Cooper, Professional Planner (continued)	31-8a	Reclamation.
		31-8b	Backfilling alternative.
		31-9	Ore content.
		31-10	Mitigation.
		31-11	Biological resources.
		31-12	Monitoring program.
		31-13	General comments.
08/04/97	Kenn Carter, Senior Engineer, Lahontan Regional Water Quality Control Board	32-1	Former mine waste.
		32-2	Liner system design.
		32-3	Laboratory waste.
08/06/97	Otis Oliver, resident of Mojave	33-1	Air quality.
		33-2	Water quality and quantity.
		33-3	Chemical transportation.
		33-4	Road use.
08/07/97	Sue Mathis, resident of Mojave	34-1	Number of residences.
		34-2	Historic mercury release.
		34-3	Groundwater quantity.
		34-4	Air quality.
		34-5	General comment.
08/11/97	David J. Farrel, Chief, Federal Activities Office, United States Environmental Protection Agency	35-1a	Alternatives
		35-1b	Mining Rate
		35-1c	Alternatives
		35-1d	Alternatives
		35-1e	Alternatives
		35-2a	Cumulative Impacts
		35-2b	Cumulative Impacts
		35-3a	Socioeconomics
		35-3b	Socioeconomics
		35-4a	Heap Leach Pad Design

TABLE 6.2-1 (Continued)

Index to Written Comments and Responses			
Date	**Name Agency/Affiliation**	**Comment Code**	**Topic**
08/11/97	David J. Farrel, Chief, Federal Activities Office, United States Environmental Protection Agency (continued)	35-4b	Heap Leach Pad Design
		35-4c	Backup Power
		35-5a	Site Drainage Profile
		35-5b	Cross Section A-A'
		35-6	Waste Handling
		35-7	Reclamation
		35-8a	Project Design
		35-8b	SPCC Plan
		35-8c	Acid Generation Potential
		35-8d	Groundwater Levels
		35-8e	Water Monitoring
		35-8f	Containment Plans
		35-9a	Air Quality
		35-9b	Air Modeling
		35-9c	Air Modeling
		35-9d	Air Quality Monitoring
		35-9e	Aggregate Sales Air Impacts
		35-9f	Growth Media Stockpiles
		35-9g	Historic Mine Waste
		35-9h	Cumulative Impacts
		35-10a	Species of Special Concern
		35-10b	Migratory Birds
		35-11	Cultural Resources

TABLE 6.2-2

Rosamond Public Meeting Comments

Speaker	Comment Code	Topic
Monna Wagner	R-1-1	Support of Senator Knight.
John Rombout	R-2-1	Support of Mayor of Tehachapi.
Patrick Chiodo	R-3-1 R-3-2 R-3-3 R-3-4 R-3-5 R-3-6 R-3-7 R-3-8 R-3-9	Historic mercury release. Air quality from blasting. Air quality from processing. Draft EIR/EIS distribution. Enforcement. Air quality. Number of residences. Health and safety. Mine Safety and Health Administration.
Karen Benson	R-4-1	Support of Mayor of California City.
James Hooper	R-5-1 R-5-2 R-5-3	Enforcement of environmental laws. Mine location. Number of residences in area.
Barbara Rigg	R-6-1 R-6-2 R-6-3 R-6-4	Zoning. Air quality. Socioeconomics. Enforcement.
Pat Boetsch	R-7-1	Number of employees.
Manuel Zamora	R-8-1	In support of the project.
Terry Murray	R-9-1 R-9-2 R-9-3 R-9-4 R-9-5 R-9-6 R-9-7 R-9-8	Health and safety. Alternate processing location. Enforcement and notification. Notification. Monitoring. Containment. Health and safety. Health and safety.
Curt Skelton	R-10-1	In support of the project.
Sue Mathis	R-11-1 R-11-2 R-11-3 R-11-4 R-11-5 R-11-6 R-11-7	Location of monitoring wells. Number of residences in the area. Groundwater quantity. PM_{10} modeling. Blasting. Responsibility for enforcement. Plant species (*monolopia*).
Jerry Boetsch	R-12-1	Groundwater quantity.
Glenn A. Settle	R-13-1	In support of the project.
Jerry Boetsch, Jr.	R-14-1	Economic benefit to Kern County.

TABLE 6.2-2 (Continued)

Speaker	Comment Code	Topic
Dean Webb	R-15-1 R-15-2 R-15-3 R-15-4 R-15-5 R-15-6 R-15-7 R-15-8	Groundwater quantity. Air quality. Revegetation. Bonding for reclamation. Valley committee to review issues. Water source. Museum. Backfilling.
Olaf Landsgaard	R-16-1	Support of Rosamond Chamber of Commerce.
Keith Gainey	R-17-1	In support of the project.
Dan Spoor	R-18-1	In support of the project.
Jeff Gutierrez	R-19-1	Support of the DeWalt Corporation.
Mary Shineflew	R-20-1	General impact.
Jess Farmer	R-21-1	Socioeconomics.
Ken Dale	R-22-1	Test criteria responsibility.
Leonard Grimes	R-23-1	Mine safety.
Jeff Alfonso	R-24-1	In support of the project.
Dick Graeme	R-25-1	Comment noted.

TABLE 6.2-3

Mojave Public Meeting Comments

Speaker	Comment Code	Topic
Kathy Hansen	M-1-1 M-1-2	Support of Assemblyman Keith Olberg. Air quality related to airport use.
Melvin Baker	M-2-1	Support of the East Kern and Historical Museum Society.
Chris Babcock	M-3-1 M-3-2	Support of Mojave Town Council. Support of Mojave Chamber of Commerce.
Karen Benson	M-4-1	Support of the City of Ridgecrest.
Jim Hooper	M-5-1 M-5-2 M-5-3	Historic mercury release and air quality. Air quality. General impacts.
Sue Mathis	M-6-1 M-6-2 M-6-3 M-6-4 M-6-5 M-6-6 M-6-7	Mine management. Socioeconomics. Number of residences in the area. Agency contact. Property values. Air quality. Groundwater quantity.
Roger Phillips	M-7-1 M-7-2 M-7-3 M-7-4	Water quality and quantity. Noise background. Road maintenance. Cultural resources appendix.
Don Stowell	M-8-1	In support of the project.
Cynthia Hodgkinson	M-9-1	In support of the project.
Jack Stewart	M-10-1 M-10-2	Support of Assemblyman George Runner. In support of the project.
Buford Land	M-11-1	Support of the California City Board of Directors.
Bill Tucker	M-12-1	In support of the project.
Sandy Gaeta	M-13-1 M-13-2 M-13-3	Water rights. Socioeconomics. Reclamation.
Manuel Zamora	M-14-1	In support of the mine.
David Markiewitz	M-15-1	In support of the mine.
Marlene Hooper	M-16-1	Historical mercury release.

6.3 Responses to Comment

6.3.1 General Responses

Several general issues were raised, reflected by multiple comments. The issues included effects of the project on air quality, groundwater quantity, public health and safety with regard to a historic mercury release at a mine in the area, and the number of residences in the area of the project. These general responses have been prepared to address all questions on these issues.

The public health and safety and number of residences issues are treated in the following general responses.

6.3.1.1 Public Health and Safety

6.3.1.1.1 Historic Release of Mercury

Background

During cyanide leaching, gold and silver, as well as mercury, are leached from gold-bearing ore as cyanide chemical complexes and concentrated thousands of times in the recovery process. The raw gold and other metals are melted to form an impure metallic bar which is sent off to a refinery for separation and purification. Because mercury is already a liquid at ordinary temperatures, the high heat needed to melt the gold and silver causes the mercury to vaporize. This mercury vapor must be contained since inhalation of the vapor is a serious health hazard.

The Cactus Gold Mine, located five miles east of Soledad Mountain, was actively mined from the mid-1980's to 1992. Mercury was a constituent of the gold ore at the mine, and was present in concentrations of 8 ppm to 30 ppm. There were reports of isolated pockets of ore which contained higher concentrations. Mercury was present in the ore as mercury sulfide. In March 1989, there was a substantial release of metallic mercury at the Cactus Gold Mine west of Mojave. High levels of mercury vapor prompted the smelting facility at the mine to be shut down until a new mercury containment system could be installed and worker safety could be ensured. Beads of liquid mercury (mercury is liquid at ordinary temperatures) were found coating the floor of the smelting building, the roof of the building and even the ground surface near the structure. The area was cleaned up and a new mercury containment system was attached to the stack of the smelter. The mine was cited by the Mine Safety and Health Administration and the California Occupational Safety and Health Administration for safety violations.

Mercury contamination, due to the mining operation, was a continuing concern to local residents near the mine. In July 1991, the Hazardous Waste Toxicology Section of the California Environmental Protection Agency[1] did a screening survey around the mine and adjacent areas. Twenty-five soil samples were analyzed for mercury. Trapped mercury vapor was also measured at the sampling sites. An inverted container was used to trap mercury vapor which apparently was degassing at a very low rate from a source below the surface. Facts and conclusions of the survey include the following:

- The ore contained mercury, reported by the company to be in the range of 8 ppm to 30 ppm, with pockets of higher concentrations.

- Several soil samples had mercury in elevated concentrations from 0.1 ppm to 0.6 ppm. These sample locations were adjacent to Cactus Hill and Soledad Mountain.

- All trapped air samples (except one) disclosed the presence of mercury vapor. The highest value for mercury vapor in a trapped-air sample was 0.113 mg/m^3. There was no sample correlation between mercury in the soil sample and mercury vapor at the same location.

- Mercury is apparently degassing from depth in the area of the ore body and in adjacent unmineralized areas. (The mercury is related to the volcanic origin of the gold and mercury mineralization.)

- The EPA lower limit reference dose for mercury vapor is 0.0003 mg/m^3. Chronic exposure at this concentration will be deleterious to health. The California guideline for chronic exposure is 0.0002 mg/m^3. The Federal limit for workplace exposure (8 hrs/day and 40 hrs/week) is 0.01 mg/m^3. The analytical instrument used to detect mercury vapor in the trapped-air samples could not detect mercury vapor below 0.001 mg/m^3. The sampling was only intended as a screening.

- Mercury vapor in national ambient or outdoor air averages 0.00002 mg/m^3. This is 10 percent of the California chronic exposure limit. Thus, low concentrations of mercury vapor are present in the air inhaled by all Americans.

---

1 Kelly, Lillian, Robert L. Holtzer, David W. Murry, David M. Siegel, *Health Risk Assessment of Mercury Detected in the Cactus Gold Mines Company - Soledad Mountain Vicinity, Mojave, California*: Hazardous Waste Toxicology Section, California Environmental Protection Agency, Sacramento, California, February 1992.

- There was no evidence, based on the 25 samples, that mercury was leaving the Cactus property in airborne dust. There was no plume from high concentration at the mine to successively lower concentrations downwind.

A number of years ago, trapped-air mercury vapor samples were taken immediately north of Soledad Mountain during a mineral exploration project. The samples also contained high levels of mercury vapor. Background levels of mercury are an indicator for certain types of gold deposits, and the sampling was used to test for the possible presence at depth of gold mineralization. The results indicate that in the Cactus-Soledad Mountain area there are most likely other deposits of gold and associated mercury buried beneath valley sediments. Mercury vapor is emanating from the Cactus and Soledad Mountain ore bodies and other deep mercury sources.

Prevailing winds are adequate to dilute and to dissipate mercury degassing from the ground. However, dwellings in the Soledad Mountain area may exacerbate the impact of the background vapor concentration related to the geologic degassing. The dwelling may act in the same capacity as the inverted cup used in the trapped-air samples. Mercury degassing from depth could accumulate in houses. Indoor ventilation may not be adequate under all circumstances to clear indoor air of mercury vapor. It may be advisable to test for mercury vapor within area homes under closed conditions - that is with windows closed and no heating or cooling unit in operation.

Mercury in the Soledad Mountain Project

Mercury averages 4.25 ppm in the gold ore of the Soledad Mountain Project. Approximately 80 percent of the mercury in the ore will be leached out by the cyanide process solutions. The mercury leached from the ore will go into solution and be contained within the heap leach pad. The gold, silver and mercury solution will be piped to the process plant and precipitated out using the Merrill-Crowe gold recovery process. A similar process was used at Cactus Gold Mine. The mercury will then be removed from the gold, silver and mercury precipitate prior to smelting. The precipitate will be heated to the boiling point of mercury in a partial vacuum. The mercury will boil off and be condensed out by cooling and the remaining vapor scrubbed by activated carbon. Mercury degassing does not increase as a result of the mining process. Instead, the mercury is removed from the ore body before complete degassing takes place.

By design, the mercury will be contained. To monitor containment, various types and locations of sampling are required. The Mine Safety and Health Administration (MSHA) will review plans for the mercury containment system at the mine smelter. Mercury vapor sampling will be done by the mine

in and around the smelter in the area of the processing facilities on a routine basis using hand-held monitors. Workers at the smelter will have baseline blood analysis for mercury and also will wear mercury-passive monitor badges. Results must be reported to MSHA. MSHA does inspections of surface mining operations at least twice a year and more often if problems exist. It will be recommended that baseline soil analysis for mercury be done near the proposed smelter facility. Mercury vapor monitoring would be the main line of environmental protection during operations.

Golden Queen Mining Company has offered to do baseline and ongoing analysis for mercury and mercury vapor for interested individuals with homes within 1.5 miles of the mining area of disturbance. The analysis would test soils adjacent to the dwelling. Interested parties should contact the company at:

Golden Queen Mining Company
Post Office Box 820
Mojave, California 93502-0820
(805) 824-1054

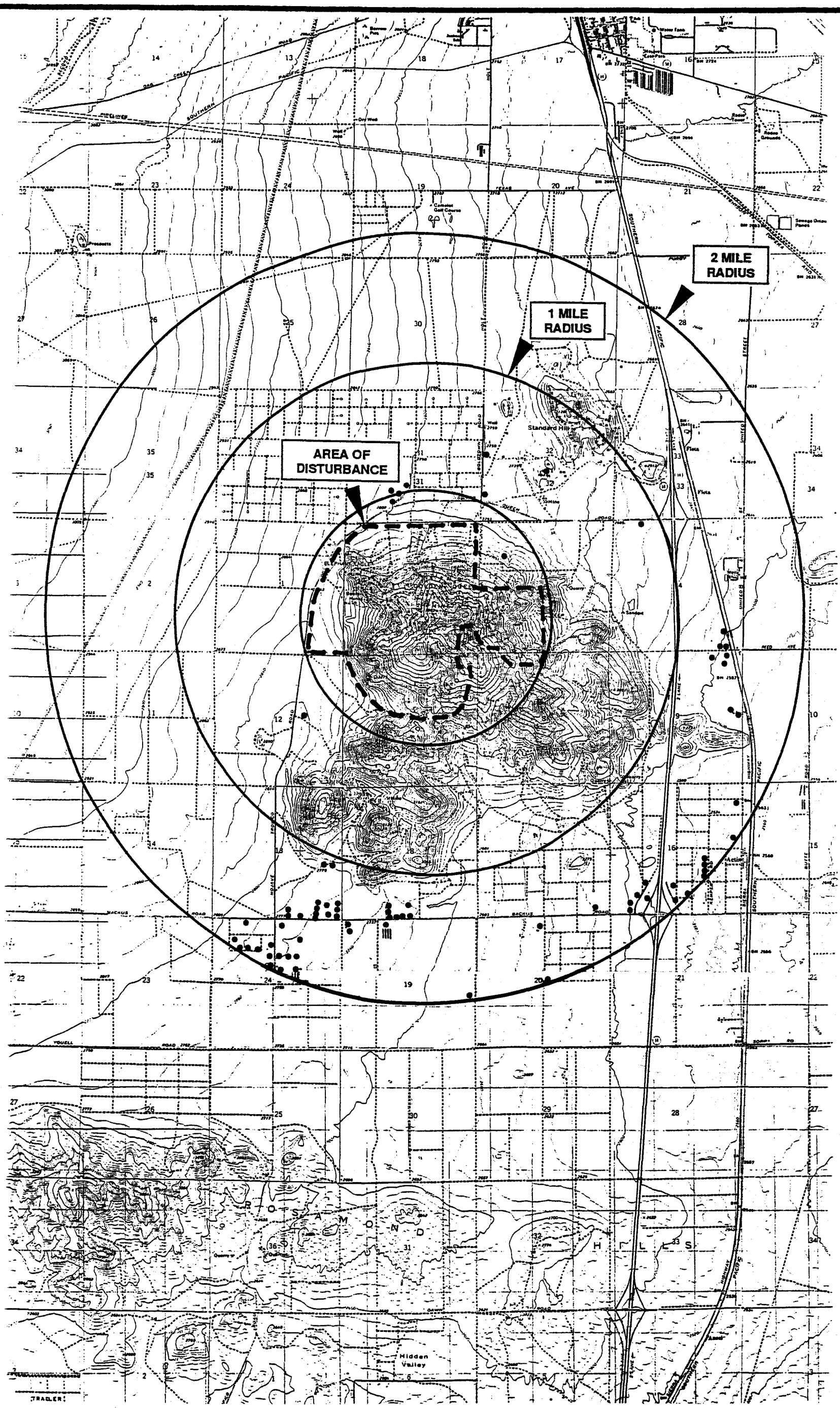
The company will also have available for public review mine sampling and analytical data for mercury and cyanide during regular business hours.

6.3.1.2 Number of Residences

Several written comments and oral comments made at the public meetings indicated that the number of residences in the area of the mine is greater than stated in the Draft EIR/EIS.

In the Executive Summary on page S-9 and in Section 2.1.2 on page 34 of the Draft EIR/EIS, it is stated that there are approximately 15 residences along Backus Road. In Section 2.1.2 on page 34 of the Draft EIR/EIS, it is stated that there are five residences on the north side of Silver Queen Road. The Estimated PM_{10} and Air Toxics Emissions and Impacts Assessment included as Appendix VII and referenced on page 213 of the Draft EIR/EIS used 20 specific receptors which were identified as existing residences or groups of residences in areas around the project site. The noise modeling recognized nine residences west, north and east of the project site on page 255 of the Draft EIR/EIS.

As part of the response to comments, a ground survey of the domiciles in the area was made. All buildings which could possibly be residences were marked on a map (Exhibit 6.3-1). Some of the buildings identified on the map are currently uninhabited. The map shows that within one mile of the



LEGEND

- LOCATION OF RESIDENCES

N

0 4000' 8000'

SCALE IN FEET

GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project
POSSIBLE RESIDENCES WITHIN 2 MILES OF SOLEDAD MOUNTAIN PROJECT DISTURBANCE

DATE		EXHIBIT
8/97	0733.0010	6.3-1

proposed disturbance area there are 10 possible residences. Between one and two miles of the proposed disturbance area there are 69 more possible residences for a total of 79 possible residences within two miles of the proposed disturbance area.

Page S-9 of the Executive Summary and page 34 in Section 2.1.2 have been modified for the Final EIR/EIS to reflect the map in Exhibit 6.2-1 as follows:

> ~~There are approximately 15 residences located along Backus Road south of Soledad Mountain.~~ There are approximately 48 residences, inhabited and uninhabited, south of the project area on or near Backus Road west of State Route 14 and approximately 21 residences east of State Route 14 within two miles of the proposed disturbance.

The number of residences referred to as receptors in the air quality impacts study is not the actual number of residences in the area. The receptors in the model were placed at residences or groups of residences.

The nine residences referred to in the noise study were within less than one mile of the project site. One residence, (shown on Exhibit 3.9-1 on page 256 of the Draft EIR/EIS) was unnumbered. This residence is in the northeast quadrant of the noise study area and lies outside the 65 dB contour line.

6.3.2 Responses to Written Comments

Each comment letter on the Draft EIR/EIS received by Kern County and BLM is presented in this section followed by a response. If a comment is answered by a general response, the reader is directed to the location of the general response. The letters and itemized comments are summarized in Table 6.2-1. The written comments are presented in order by date written. Each issue raised within each comment letter was numbered. For example, Comment 6-5 is the fifth comment of the sixth letter received by either Kern County or BLM.

FROM THE DESK OF THE
HONORARY MAYOR OF ROSAMOND
MARY K. SHINEFLEW
P.O. BOX 1384
ROSAMOND, CA. 93560-1384
256-2330
256-2358 fax

Kern County Planning Department
Attn: Glenn Barnhill
2700 "M" St., Suite 100
Bakersfield, Ca. 93301

Dear Mr. Barnhill,

1-1

This letter is in support of the Golden Queen Mining Company's Soledad Mountain Project. It is my understanding that this project's environmental studies show no plant or animal life will be threatened and that air and water quality will remain healthy for all residents.

This project will bring funds into our economy and employ our local residents. I see a great improvement to quality of life for our community residents from the employment opportunities that will come from this project.

Therefore, I would urge all the officials to support the Soledad Mountain Project.

Respectfully,

Mary K. Shineflew

Mary K. Shineflew
Honorary Mayor of Rosamond

Comment Letter 1 from:

Mary K. Shineflew
Honorary Mayor of Rosamond

Response to Comment 1-1

The comment in support of the project is noted for the record.

The Gas Company®

Southern California
Gas Company
9400 Oakdale Avenue
Chatsworth, CA
91313-2300

Mailing Address:
Box 2300
Chatsworth, CA
91313-2300

June 3, 1997

Glen Barnhill, Special Projects
COUNTY OF KERN
Planning Department
2700 "M" Street, Suite 100
Bakersfield, CA 93301

Subject: **Draft Environmental Impact Report/EIS, Soledad Mountain Project, CUP 41, Map 213; CUP 22, Map 214, Mojave area of Kern County, California.**
(Gas Co. Atlas # EG07B02, etc. and Easement No P-14,794))

Dear Glen:

2-1

This letter is not to be interpreted as a contractual commitment to serve this proposed project, but only as an information service. Its intent is to notify you that Southern California Gas Company has facilities in the area where this project is proposed. Gas service can be provided without significant impact on the environment. **(Note: 2" high pressure main in Silver Queen Road.)**

Service would be in accordance with our policies and extension rules on file with the California Public Utilities Commission at the time contractual arrangements are made. The availability of natural gas service, as set forth in this letter, is based on present conditions of gas supply and regulatory policies. As a public utility, Southern California Gas Company is under the jurisdiction of the California Public Utilities Commission. We can also be affected by actions of federal regulatory agencies. Should these agencies take any action which affects gas supply or the condition under which service is available, gas service will be provided in accordance with the revised conditions.

2-1

Referencing the Draft EIR/EIS: Mine Plan # 2.2.2.1; Crushing and Agglomeration # 2.2.2.2.1; Electric Power # 2.2.3.1; Onsite power generation # 2.3.3.5.2 and Indirect Impact # 3.12.2, please call **Mary Cornell**, Account Executive at 209-739-2240 for:

* Alternative to Propane fired heat
* Alternative to diesel back-up power
* natural gas fired co-gen unit for heat and power
* Natural gas fueled fuel-cell for heat and power
* The Gas Company financial incentives
* Industrial and/or non-core natural gas rates
* Appliance services
* AQMD permit assistance
* Natural gas powered vehicles and refueling

2-2

Additionally, the Gas Company has **high pressure** facilities in the area of this proposed project running in a north to south easement at the east foot of Soledad mountain.

Due to the nature of the mining and the proving-up processes, notification a week before **blasting** in the vicinity of our pipeline for safe engineering of the blasting weight and distance is necessary. Please call Mr. Ed Weigman, P. E., in this office at **818-701-3338** for the related engineering.

If you require further information or have any questions call me at **818-701-3324**.

Sincerely,

Jim Hammel

Jim Hammel
Technical Services, Northern Region
818-701-3324

c: M. Cornell, Mktg.
P. Fitzgerald, Lancaster District Base
D. Shea, Mojave District Base
E. Weigman, Engineering
H. Corralejo, Environmental Compliance
City Correspondence File

Comment Letter 2 from:

Jim Hammel
Southern California Gas Company
June 3, 1997

Response to Comment 2-1

The comment that gas service could be provided is noted and included in the record.

Response to Comment 2-2

The comment about high pressure facilities east of the proposed project and notification a week before blasting in the vicinity of the pipeline is noted. There will be no blasting in the vicinity of the pipeline as part of the proposed project.

From the Desk of Shirley J. Conrad, Secretary, Rosamond Chamber of Commerce
1449 Ridgecrest Court; Rosamond, CA 93560; Phone and Fax (805) 256-6338

June 6, 1997

Re: Resolution 97-01 of the Rosamond Chamber of Commerce supporting and recommending the Golden Queen Mining Company's Soledad Mountain Project

3-1 This project will bring funds, both temporary and permanent, into our economy while preserving the quality of the environment for the residents of this area. It does represent great opportunity for improvement in the quality of living available to our residents. It will be a much needed boost to this community in many ways. This positive impact will generate far into the future of our area.

Therefore, I urge all of the officials reviewing these records to support the Soledad Mountain Project.

With Respect,

Shirley J. Conrad

Shirley J. Conrad
Secretary
Rosamond Chamber of Commerce

Comment Letter 3 from:

Shirley J. Conrad
Secretary
Rosamond Chamber of Commerce
June 6, 1997

Response to Comment 3-1

The comment in support of the project is noted for the record.

Rosamond Chamber of Commerce
Post Office Box 365
Rosamond, CA 93560-0365
(805)256-3248
Fax: (805)256-3249

June 5, 1997

RESOLUTION 97-01

4-1

Whereas, the Golden Queen Mining Company's Soledad Mountain Project environmental studies have shown no plant or animal life will be threatened and that air and water quality will remain healthy for all residents; and

Whereas, the Soledad Mountain Project is committed to reclamation after mining; and

Whereas, the Golden Queen Mining Company is committed to hiring East Kern Residents, and buying Kern County Products; and

Whereas the Golden Queen Mining Company will spend $40 million in plant construction and create 250 new construction jobs; and

Whereas, the Golden Queen Mining Company will employ 230 permanent employees in East Kern to mine the wealth of Soledad Mountain, and improve the quality of life of all residents;

NOW THEREFORE, BE RESOLVED that the Rosamond Chamber of Commerce hereby endorses, supports, and welcomes the Golden Queen Mining Company and the Soledad Mountain Project;

AND FURTHER RESOLVES and directs all county, state, and federal and other governmental officials to record this resolution at any and all further public meetings.

President, Dan Spoor

Shirley J. Conrad,
Secretary

cc:Directors

Comment Letter 4 from:

Dan Spoor
President
Rosamond Chamber of Commerce
June 5, 1997

Response to Comment 4-1

The comment in support of the project is noted for the record.

MAYOR'S PROCLAMATION

WHEREAS, the Golden Queen Mining Company has achieved acceptance in a combined Draft EIS/EIR for the Soledad Mountain Project from the Bureau of Land Management and Kern County; and

WHEREAS, Soledad Mountain has a land use designation for mining and a rich history of such land use and purpose, and the Golden Queen Mining Soledad Mountain Project would appropriately continue such land use; and

WHEREAS, the Soledad Mountain Project will require the investment by Golden Queen Mining of over $40 million in construction costs, will use Kern County suppliers for building and construction materials, and will employ over 250 initial employees for eight months; and

5-1

WHEREAS, the project will provide permanent jobs for a projected 230 employees over a lifetime of the project estimated between twelve and sixteen years, and Golden Queen Mining is committed to hiring east Kern residents and supporting Kern County businesses; and

WHEREAS, the Golden Queen Mining Company will be constructing and operating a state-of-the-art mine and reclaiming operation, while being simultaneously committed to the preservation of historical mining works and structures in the area covered by the project; and

WHEREAS, the Soledad Mining Project will provide an important addition to the Kern County tax base and help to meet the infrastructure needs of Southeast Kern County;

THEREFORE, I, Larry Adams, Mayor of California City, do hereby support the Golden Queen Mining Company in their endeavors in East Kern, and recommend that approvals required by local agencies be granted to allow this project to go forth. In witness thereof, I have hereunto set my hand and caused the Great Seal of California City to be affixed this 6th Day of June, 1997.

Larry Adams, Mayor

Comment Letter 5 from:

Larry Adams
Mayor
California City
June 11, 1997

Response to Comment 5-1

The comment in support of the project is noted for the record.

Kern Council
of Governments

June 12, 1997

Kern County Planning Dept.
Attn.: Glenn A. Barnhill
2700 M Street, Suite 100
Bakersfield, CA 93301

Reference: Construction/Operation of Soledad Mountain Gold Mine

Dear Mr. Barnhill:

Thank you for the opportunity to comment on the above-referenced project.

As the Regional Transportation Planning Agency and Congestion Management Agency for Kern County, Kern Council of Governments focuses its attention on transportation, air quality, and land use compatibility issues. Upon review of the Environmental Impact Report prepared for the referenced project, we offer the following comments.

6-1 1. Regarding Table 2.2-1, it would be helpful to indicate which equipment uses diesel and which is gasoline-powered.

6-2 2. Sections 2.2.2.3.4 and 2.2.3.8 should indicate the number of parking spaces provided for employees and visitors, and include what provisions will be made to meet ADA requirements. Section 3.13.2 should also quantify "adequate parking."

6-3 3. Sections 2.2.3.6 and 3.13.2 indicate that increased road maintenance costs "(are) expected to mitigate by increased taxes such as fuel tax and property tax." This supposition is not quantified in Section 3.11, nor Appendix IX. Nor does the DEIR quantify what is considered a "slight increase in road maintenance (costs) on Silver Queen Road." Kern COG considers this inadequate as a mitigation measure. With 80 percent of the workers recruited from the immediate area's labor force and with minimal increase in the housing stock, property tax increases are negligible. The same is true with fuel taxes.

6-4 4. Footnotes 75 and 80 on pages 130 and 131 reference "1993 Kern Data Book." Only the 1991 Kern Data Book is included in the bibliography.

6-5 5. Referencing Sections 3.13.1 (pg. 279) and 3.13.2 (pg. 284), it should be noted that the LOS E on Rt. 14 by 2014 is predicated on construction of 15,000 dwelling units approved by Kern County Planning Dept.and no upswing in housing construction has been noted.

Kern Council of Governments
1401 19th Street, Suite 300, Bakersfield, California 93301 (805) 861-2191 Facsimile (805) 324-8215 TTY (805) 832-743

6-5 Again, with 80 percent of the workers recruited from the immediate area, demand for additional housing by these workers would be negligible.

6-6 6. Referencing page 288, Caltrans is not only "proposing" to reroute Rt. 58 to the north of Mojave. This project, the "Mojave Bypass," has been approved by the Kern County Board of Supervisors and is included in the STIP; construction will begin in 1999/2000. In addition, the current southern Rt. 14/Rt. 58 intersection will not be eliminated. It will be redesignated as Business Rt. 58.

The intent of the Mojave Bypass is to lessen congestion along Sierra Highway in Mojave and to encourage those travelers not stopping for rest and refreshment in Mojave to use the bypass. The bypass will only mitigate traffic heading east on Rt. 58 from Tehachapi through Mojave toward Edwards Air Force Base and traffic headed west from Edwards AFB through Mojave toward Tehachapi. Congestion on north/south Rt. 14 will not be mitigated with the bypass.

Very truly yours,

Marilyn J. Beardslee

Marilyn J. Beardslee, AICP
Senior Planner/Long Range Planning

/mjb

Comment Letter 6 from:

Marilyn J. Beardslee, AICP
Senior Planner/Long Range Planning
Kern Council of Governments
June 12, 1997

Response to Comment 6-1

The mining equipment listed in Table 2.2-1 of the Draft EIR/EIS is expected to be powered by the following fuels:

Equipment	Fuel
Exploration drills	Diesel
Blast hole drills	Diesel
ANFO truck	Diesel
Wheel loaders	Diesel
Off-road haul trucks	Diesel
Track dozers	Diesel
Water trucks	Diesel
Motor grader	Diesel
Fuel trucks	Diesel
Maintenance/lubrication trucks	Gasoline & diesel
Passenger van	Gasoline
Portable lights	Diesel generator
Crane	Diesel

Response to Comment 6-2

The "new office" building referenced in Section 2.2.2.3.4 on page 73 of the Draft EIR/EIS is proposed near the entrance of the site. The need for this building is not anticipated until the mine is in operation. The size and staffing for this building will be determined at a future date. The building will have an adjacent parking lot that will have parking spaces in accordance with Kern County Zoning Ordinance requirements.

The project-related buildings referenced in Section 2.2.3.8 on page 78 of the Draft EIR/EIS will have employee parking lots near or adjacent to the building. The parking lots will provide parking spaces according to Kern County Zoning Ordinance requirements .

Section 3.13.2 on page 285 states that adequate parking would be provided onsite for employees, deliveries and visitors. Section 3.13.2 also states that failure of a project to provide sufficient parking capacity for the projected numbers of automobiles and bicycles would be considered a significant impact. The facility is expected to employ 250 workers during construction and 230 workers during operation. Operation of the mine will be in several work shifts, therefore, not all 230 workers will be onsite at any one time. The applicant will provide sufficient parking spaces for the maximum number of workers onsite at any one time, with additional spaces for visitors.

All buildings and parking areas will be constructed according to Kern County Code of Building Regulations and Zoning Ordinance requirements as stated in Section 2.2.3.8 on page 78 of the Draft EIR/EIS and, therefore, will meet American Disability Act (ADA) requirements.

Response to Comment 6-3

Sections 2.2.3.6 on page 76 and 3.13.2 on page 284 of the Draft EIR/EIS state that a slight increase in road maintenance cost is expected on Silver Queen Road and that this cost is expected to be mitigated by increased taxes, such as fuel tax and property tax related to the project. Vehicles accessing the facility are expected to travel approximately two miles on Silver Queen Road (from State Route 14). The additional traffic on Silver Queen Road is expected to result in some increased maintenance cost. Discussions with the Kern County Roads Department indicate that the increased cost cannot be readily quantified.

Increased fuel taxes will be generated from truck traffic associated with operation of the mine and aggregate sales. An Analysis of Socioeconomic Impacts of the proposed project is contained in Appendix XI of the Draft EIR/EIS. The analysis states, in Section 2.2.1 on page 6, that Golden Queen is currently paying $3,696 in property taxes on property within the project boundary. The analysis also states, in Section 2.2.1 on page 5, that the Kern County Assessor's Office estimated Golden Queen's property tax to be approximately $267,000 during the first year of operation; estimates were not given for the remaining 15 years of the project. As stated in Section 2.2.1 on page 6, wages paid by Golden Queen will result in expenditures by employees, which will also generate additional tax dollars.

The socioeconomic analysis concluded that county tax receipts will exceed county expenditures. However, it is not possible for Golden Queen to determine what portion of its taxes will end up in the Roads Department budget.

Discussions with the Roads Department, prior to preparation of the EIR/EIS, indicated that a major concern was the lack of a left turn lane on Silver Queen Road at the entrance to the mine. Golden Queen has committed to the installation of a left-turn lane as an applicant-proposed mitigation measure as stated in Section 3.13.6 on page 289 of the Draft EIR/EIS.

Response to Comment 6-4

The 1993 Kern Data book was footnoted but erroneously omitted from the bibliography. A correction has been made to the Final EIR/EIS.

Response to Comment 6-5

Sections 3.13.1 on page 279 of the Draft EIR/EIS projected average daily traffic (ADT) of 39,423 on State Route 14, south of Mojave for the year 2014 with a corresponding level of service of E. The projected ADT may be a worst case assumption. The EIR for the State Route 58-Mojave Freeway, cited on page 288 of the Draft EIR/EIS, predicted an ADT of 36,800 on State Route 14 in the year 2020. The Soledad Mountain Project Draft EIR/EIS is in agreement with Kern Council of Governments assumption that the project will create a negligible demand for additional housing as stated in Section 3.11.2 on page 270.

Response to Comment 6-6

The comment that the "Mojave Bypass" project is scheduled to begin construction in 1999/2000 is noted. It is also noted that the current State Route 14/State Route 58 intersection will become the State Route 14/Business Route 58 intersection. The statement in Section 3.13.4 on page 288 of the Draft EIR/EIS that the construction and implementation of a new State Route 14/State Route 58 interchange or alternate route is expected to occur is incorrect. The correct wording is as follows:

> CalTrans ~~is proposing to~~ will re-route State Route 58 to the north of Mojave ~~to eliminate the State Route 14 and State Route 58 intersection~~. The ~~construction and implementation of a new~~ present State Route 14/State Route 58 interchange ~~or alternate route is expected to occur~~ will become the State Route 14/Business Route 58 interchange during the life of the Soledad Mountain Project. The new ~~interchange and alternate route~~ State Route 58 route is being implemented to maintain an acceptable Level of Service in Mojave. The construction of the new interchange and alternate route is anticipated to start in the year 2000 and would alleviate any increase in traffic associated with the Soledad Mountain Project and possible cumulative projects at the State Route 14/Business Route 58 interchange.

According to the Draft Tier I EIS/EIR for the State Route 58 - Mojave Freeway, cited on page 288 of the Soledad Mountain Project Draft EIR/EIS, reduction of traffic on the future Business Route 58 (now Sierra Highway) will lower volume/capacity ratios at all intersections. The cumulative effects on traffic at the intersection of State Route 14 and State Route 58 due to increased traffic on State Route 14 as a result of this proposed project will be mitigated by the "Mojave Bypass" and lower traffic levels on Business Route 58.

Mojave Chamber of Commerce

15836 Sierra Highway • Mojave, CA 93501 • (805) 824-2481

97 JUN 13 AM 9:31
FILED BY CO. CLERK OF THE BD. OF SUPERVISORS
BY _____ DEPUTY

June 12, 1997

Honorable Steve Perez
Chairman
Kern County Board of Supervisors
1115 Truxtun Avenue
Bakersfield CA 93301

Dear Steve:

7-1 At a board meeting today, the directors of the Mojave Chamber of Commerce voted to support Golden Queen Mining Company's proposal to mine gold on Soledad Mountain. We believe this project will enhance the economy of our community, provide much-needed employment, and will have no measurable negative effect on the environment.

We urge you to review this project carefully and consider our views in your deliberations.

Sincerely yours,

Pete Sturn
President

Code No. _____
BY ORDER OF THE BD/SUPV.
Referred To Planning
Copies Furnished
Each Supervisor And CAO, Co. Counsel
FILED BY BD SUPV. 6/13/97
SUE DAVIS
Clerk of the Board of Supervisors
By: Sue

Comment Letter 7 from:

Pete Sturn
President
Mojave Chamber of Commerce
June 12, 1997

Response to Comment 7-1

The comment in support of the project is noted for the record.

June 16, 1997

Kern County Planning Dept.
2700 "M" Street, Suite 100
Bakersfield, CA 93301

Dear Mr. Barnhill,

8-1

As a fourth generation Kern county resident and grandson of a 1930s Golden Queen miner, I feel obligated in sending this letter to express my support of the Golden Queen mining operation on Soledad mountain.

It is apparent that this mining operation will benefit the citizens of Kern county, particularly east Kern county. With the involvement of people like Dick Graeme and Phil Wyman I do not see how the people of east Kern could oppose such a windfall. Their integrity and concern for the well being of others is beyond reproach. High on their priority list is the wish to maintain a safe community while providing the citizens an opportunity to obtain middle class wages.

In our current time of extreme environmental consciousness, the existing governmental checks do not allow mining companies to endanger nearby citizenry. Besides this monitoring by governmental agencies, the "environmentally friendly" philosophy of the Golden Queen mining company provides further assurance that mining will be done in a safe manner.

In closing, the goals of the Golden Queen mining operation and the public are really one and the same--financial opportunity and community safety.

Respectfully,

Deric English

Deric English
24261 Sage Ave
Boron, CA 93516
(760)762-6208

Comment Letter 8 from:

Deric English
Resident of Boron
June 16, 1997

Response to Comment 8-1

The comment in support of the project is noted for the record.

G. & P. Moseley

Telephone (760) 373 4158
E-Mail gpm@ccis.com

8424 Viburnum Ave.
California City, CA 93505-4126
June 16, 1997

Kern County Planning Dept.
Attn: Glenn Barnhill
27000 "M" Street, Suite 100
Bakersfield, CA 93301

Dear Mr. Perez:

9-1

We are writing in support of the Golden Queen Mine.

As residents of California City, we feel that this project will benefit all of East Kern County, not just Mojave.

Under our present regulatory system, the impact on the environment will be minimal.

This number of good paying jobs will have a positive effect on all of Kern County, not just the eastern part.

As for the visual impact, as you pass by it on Highway 14, think of the jobs, think of the support of our schools and of our communities and it will be a very pleasing sight.

Sincerely,

Gerald L. Moseley

Patricia Moseley

Comment Letter 9 from:

Gerald L. Moseley
Patricia Moseley
Residents of California City
June 16, 1997

Response to Comment 9-1

The comment in support of the project is noted for the record.

CITY OF RIDGECREST

PHONE 619-371-3700
100 WEST CALIFORNIA AVENUE • RIDGECREST, CALIFORNIA 93555-4054

June 17, 1997

Kern County
Planning Department
Ted James, AICP, Director
2700 'M' Street, Suite 100
Bakersfield, Ca. 93301-2323

Re: CUP #22, Map #214
CUP #41, Map 213
2/3-6 3 098 Streets and Highways

Dear Mr James:

10-1

I support the efforts of the Golden Queen Mining Company to develop the Soledad Mountain Project near Mojave. The project permitting process will address the required environmental issues. I'm confident that Kern County and the Bureau of Land Management are sensitive to the environment.

I particularly endorse the prospect of 230 new jobs for the Eastern Kern County area. New jobs for any of the communities in the area help the economy in general and we all receive some spin off benefits. I wish the project every success.

Sincerely,

William R. Lalor
Mayor

97-164/mc

Comment Letter 10 from:

William R. Lalor
Mayor
City of Ridgecrest
June 17, 1997

Response to Comment 10-1

The comment in support of the project is noted for the record.

DeNARDI EQUIPMENT

JUNE 18, 1997

MR. GLEN BARNHILL
KERN COUNTY PLANNING OFFICE
2700 M STREET, SUITE 100
BAKERSFIELD, CA 93301

MR. BARNHILL,

11-1

DENARDI EQUIPMENT AND ITS' EMPLOYEES RESPECTFULLY REQUEST THAT YOU SUPPORT THE GOLDEN QUEEN MINING VENTURE NEAR MOJAVE.

YOU ARE VERY MUCH AWARE OF THE JOBS THAT WILL BE CREATED, AS WELL AS MANY KERN COUNTY BUSINESS THAT WILL BENEFIT FROM THE GOLDEN QUEEN MINE.

KERN COUNTY'S HISTORY WITH THE MINING INDUSTRY HAS BEEN LONG AND SUCCESSFUL. LET'S ADD ANOTHER POSITIVE PAGE TO THAT LEGACY.

DENARDI EQUIPMENT AND OUR EQUIPMENT SUPPLIERS HAVE HAD LONG WORKING RELATIONSHIPS WITH MANY OF THE PRINCIPLES AND MANAGERS AT THE GOLDEN QUEEN MINING COMPANY. THEIR COMMITMENT TO SAFETY, ENVIRONMENT AND COMMUNITY IS SECOND TO NO OTHER COMPANY.

RESPECTFULLY,

DAN STONE

9150 Golden State Hwy, Bakersfield, California 93308 (805) 393-1220

Comment Letter 11 from:

Dan Stone
DeNardi Equipment
June 18, 1997

Response to Comment 11-1

The comment in support of the project is noted for the record.

STATE CAPITOL
SACRAMENTO, CA 95814
(916) 445-6637

California State Senate

SENATOR
WM. J. "PETE" KNIGHT
SEVENTEENTH SENATORIAL DISTRICT

ANTELOPE VALLEY OFFICE
1008 W. AVE. M-14
SUITE G
PALMDALE, CA 93551
(805) 274-0188

SANTA CLARITA VALLEY OFFICE
25709 RYE CANYON ROAD
SUITE 105
SANTA CLARITA, CA 91355
(805) 294-8184

VICTOR VALLEY OFFICE
15278 MAIN STREET
SUITE D
HESPERIA, CA 92345
(619) 244-2402

June 19, 1997

Kern County Planning Department
Attn. Glen Barnhill
2700 "M" Street, Suite 100
Bakersfield, CA 93301

Dear Mr. Barnhill:

12 - 1

Please find this letter as an endorsement of the proposed Golden Queen Mining Company Soledad Mountain Mining Project.

This project is vital to the economic future of Kern County. It is anticipated that this project will provide nearly 500 jobs over the duration of operation. Jobs will vary from labor and semi-skilled to clerical and supervisory. With the mine conservatively projected to produce 12-16 years, Golden Queen Mining employees will contribute to the economic base of Kern County well into the next century.

The company has also taken many necessary steps to ensure they meet all the environmental standards mandated by the State of California and the Federal Government. Issues of not impacting any threatened or endanger species, and meeting strict water and air quality standards have been addressed.

Considering the economic benefit and the minimal environmental impact Golden Queen Mine would bring to Kern County, I urge the Board of Supervisors to enthusiastically approve this project.

Warmest Regards,

Wm. J. "Pete" Knight
California State Senator

WJK:cs

Comment Letter 12 from:

William J. Knight
California State Senator
Seventeenth Senatorial District
June 19, 1997

Response to Comment 12-1

The comment in support of the project is noted for the record.

STATE CAPITOL
P.O. BOX 942849
SACRAMENTO, CA 94249-0001
(916) 445-3102
FAX: (916) 323-7467

DISTRICT OFFICE
14011 PARK AVENUE, #470
VICTORVILLE, CA 92392
(760) 951-8555
FAX: (760) 951-7475

Assembly
California Legislature

KEITH OLBERG
ASSEMBLYMEMBER, THIRTY-FOURTH DISTRICT

COMMITTEE ASSIGNMENTS
RULES
APPROPRIATIONS
HEALTH
NATURAL RESOURCES

June 20, 1997

Mr. Glenn Barnhill
Kern County Planning Department
2700 "M" Street, Suite 100
Bakersfield, CA 93301

Re: Golden Queen Mining Company Soledad Mountain Project

Dear Mr. Barnhill:

I am writing to express my support for the economic benefit to this region that would be created by the proposed Golden Queen Mining Company Soledad Mountain Project. The 34th District, including Kern County, has lost thousands of primary jobs as a result of the defense draw down. In a time of military installation downsizing, and resulting business flight, the Soledad Mountain Project will provide much needed jobs.

13-1

Specifically, the Golden Queen Mining Company estimates that the Soledad Mountain Project will cost over $40 million to construct and will create over 250 temporary jobs. When completed, the company projects that 230 permanent employees will be needed to fill labor, semi-skilled, clerical and supervisory positions.

Local businesses and the economy can only benefit from the influx of dollars that will augment the local tax base, new employment opportunities, and the regional economy. I urge your favorable consideration of this very important project.

With high personal regards, I am

Sincerely,

R. KEITH OLBERG
Assemblyman, 34th District

RKO:dk

Comment Letter 13 from:

R. Keith Olberg
Assemblyman, 34th District
Assembly California Legislature
June 20, 1997

Response to Comment 13-1

The comment in support of the project is noted for the record.

DEWALT *Corporation*

• ENGINEERING • PLANNING • SURVEYING • LAND DEVELOPMENT • CONSTRUCTION MANAGEMENT

June 23, 1997

Supervisor Steve A. Perez
Kern County Board of Supervisors
1115 Truxtun Avenue, #502
Bakersfield, CA 93301

RE: Golden Queen Mining/Soledad Mountain Project

Dear Mr. Perez:

We hereby submit this letter of support for the Golden Queen Mining/Soledad Mountain Project. DeWalt Corporation has been actively involved with providing professional surveying services to Golden Queen Mining during the past three (3) years.

This Project taps the unique opportunities which are part of Eastern Kern County and represents a responsible investment in our local economy, which in turn, enhances all aspects of our community. We support the orderly development of mineral resources within our community and the adherance to all applicable permitting regulations. We feel confident that the umbrella of local, state and federal guidelines for the permitting and operation of such facilities will ensure the safety and protection of our community and enviroment.

The patient and responsible attitude Golden Queen Mining has shown throughout their research and planning of the Soledad Mountain Project is to be commended. Your support of this investment in our community will be of benefit to us all.

Sincerely,

Dennis W. DeWalt
President

cc: Kern County Planning Department
Attn: Glenn Barnhill

/kern062397.sid

1930 22ND STREET BAKERSFIELD, CA 93301 (805) 323-4600 • FAX (805) 323-4674
email: dwd@dewaltcorp.com

Comment Letter 14 from:

Dennis W. DeWalt
President
DeWalt Corporation
June 23, 1997

Response to Comment 14-1

The comment in support of the project is noted for the record.

DEPARTMENT OF CONSERVATION
OFFICE OF MINE RECLAMATION
Reclamation Unit
801 K Street, MS 09-06
SACRAMENTO, CA 95814-3529
PHONE (916) 323-8567
FAX: (916) 322-4862

Telecommunications
Device for the Deaf
(916) 324-2555

June 27, 1997

Mr. Scott Denney
Associate Planner
Kern County Planning
and Development Services
2700 M Street, Suite 100
Bakersfield, CA 93301

Dear Mr. Denney:

Draft Environmental Impact Report for the Golden Queen Mining Company, Inc Soledad Mountain Project Reclamation Plan.
CUP 41, MAP 213; CUP 22, MAP 214 - SCH #96061052

The Office of Mine Reclamation (OMR) has reviewed the Draft Environmental Impact Report (DEIR) for the Soledad Mountain Project reclamation plan. The proposed project is located on Soledad Mountain south of Mojave and will encompass approximately 930 acres of a 1600 acre site. The project involves excavation of a pit to a depth of 1,300 feet below existing ground surface (mountain). Primary extraction is for gold and silver, with aggregate as a by-product of mining. Approximately 200 million tons of waste material will be retained on site over the life of the project. OMR staff previously reviewed a draft reclamation plan for this project in October 1996. At that time, not all reclamation plan components were presented for review. The revised reclamation plan presented in the DEIR addresses previous staff comments, and presents new information.

The revised reclamation plan and pertinent portions of the DEIR were reviewed for compliance with the Surface Mining and Reclamation Act of 1975 (SMARA) (Public Resources Code Section 2710 et seq.) and the State Mining and Geology Board regulations for surface mining and reclamation practice (California Code of Regulations (CCR) Title 14, Chapter 8, Article 1, Section 3500 et seq.; Article 9, Section 3700 et seq.). The following comments prepared by Mary Ann Showers and Catherine Gaggini are offered to assist you in review of this project.

15 - 1

As stated in our previous letter, SMARA and the CCR require that specific items be addressed or included in reclamation plans. Information and data to support proposed reclamation are contained in the DEIR, but are summarized in the reclamation plan. For ease in compliance monitoring, we recommend that the reclamation plan, with pertinent DEIR attachments and appendices, be presented as a single document. The following DEIR sections contain reclamation plan information:

- Section 2.1 Project Setting
- Section 2.2 Project Characteristics
- Section 3.1 Mining Resources (Natural Resources)
- Section 3.2 Physiography and Geology
- Section 3.3 Soils (Earth Resources)
- Section 3.4 Hydrology (Water Resources)
- Section 3.6 Biology
- Appendix III Reclamation Plan
  - Attachment B Biological and Soil Resource Evaluation for the Soledad Mountain Project
  - Attachment C Soledad Mountain Project, Slope Stability Project
  - Attachment D Reclamation and Revegetation Procedures for Soledad Mountain Project
  - Attachment E Site Drainage Plan
- Appendix V Hydrology Study Summaries for the Soledad Mountain Project

Geotechnical Requirements

(Refer to CCR Sections 3502(b)(3), (b)(4), 3704 (a), (b), (d), (e), (f))

15 - 2

1. We recommend the reclamation plan be supplemented to specifically incorporate the recommendation put forth by Don A. Poulter of Glasgow Engineering Group, Inc. Glasgow Engineering Group reviewed the slope stability analysis conducted by Dr. Able. In addition, the potential for topographic amplification was evaluated. In both the reviews, dated August 29, 1996 and December 5, 1996, Don A. Poulter recommended that *the slope stability input parameters be checked as the pit is developed and joint and fracture are exposed in the pit walls.* The reclamation plan should specify frequency of slope inspections and that the inspections be conducted by a California Registered Engineering Geologist or Professional Engineer.

Resoiling and Revegetation

(Refer to SMARA Section 2773(a), CCR Sections 3503(a)(1),(f),(g), 3704(c), 3705(a),(b),(c),(d),(e),(f),(g),(h),(i),(j),(k),(l),(m), 3707(b),(d), 3711(a),(b),(c),(d),(e))

Reclamation (Revegetation) techniques are presented in Attachment D. This Attachment addresses many of the revegetation requirements of SMARA and the CCR. Additional information is, however, needed for the following:

15-3 2. The plan proposes to reapply growth media to catchment basins and some slopes. We recommend that plan maps show where resoiling and seeding will occur and where basins will be installed.

15-4 3. Reference is made to transplanting "locally adapted plant species" to catchment basins. We recommend that the plan include a list of the species to be transplanted, including criteria used to determine if a plant can be transplanted (size class, etc.).

15-5 4. The plan refers to collection of seed and harvesting of seed in the duff layer for revegetation. The seed application rate is expressed as one ½ cup seed per catchment basin. We recommend that the plan provide an approximate seed installation rate expressed as pounds per acre.

15-6 5. One section of the plan states that horizontal surfaces of overburden stockpiles "*may be* [emphasis added] recontoured for erosion and drainage control, as well as revegetation." Elsewhere, the plan states that the horizontal surfaces of the overburden *will be* recontoured. This point should be clarified in the reclamation plan.

15-7 6. Revegetation performance standards are presented in the reclamation plan. As stated in our previous comments, we recommend that the performance standards be based on perennial species. As currently written, density is based on perennial species while cover and species richness could apparently be based on perennial or annual species (Attachment D, page 14).

CCR Section 3705(m) describes the development of revegetation performance standards based either on baseline plant cover, plant density, and species richness or that of a reference site. The revegetation plan proposes to compare revegetated areas to same-year data sampling for bond release. Due to previous disturbance at this site from vandalism and frequent wildfires, we recommend that baseline data be used to determine compliance with the

reclamation plan. Same-year data will be difficult to ascertain if the undisturbed reference site is damaged.

15-7 We recommend that the reclamation plan employ baseline data gathered during the drought (1990 sampling) as the basis for performance standards and focus on plant density and perennial species richness rather than perennial plant cover. Plant density should be specified as 100% of the drought density. This parameter would be readily achieved during years with favorable precipitation.

If you have any questions on these comments or require any assistance with other mine reclamation issues, please contact me at (916) 323-8565.

Sincerely,

James S. Pompy, Manager
Reclamation Unit

Comment Letter 15 from:

James W. Pompy
Manager, Reclamation Unit
Department of Conservation
Office of Mine Reclamation
June 27, 1997

Response to Comment 15-1

The reclamation plan appears as a single document in the Draft EIR/EIS for the Soledad Mountain Project. Appendix III, including attachments, of the EIR/EIS is the Application for the Surface Mining and Reclamation Plan for the Soledad Mountain Project. Reclamation plan information as requested in the comment is included in the application as follows:

Draft EIR/EIS Information	Location in SMARA Application
Section 2.1 Project Setting	Item #8 on page 2. Item #13 on pages 13 through 22.
Section 2.2 Project Characteristics	Item #33 on pages 35 through 38.
Section 3.1 Mining Resources	Item #11 on page 2.
Section 3.2 Physiography and Geology	Item #12 on page 3. Item #13, Topography, on page 20.
Section 3.3 Soils	Item #13, Soils, on pages 14 and 15.
Section 3.4 Hydrology	Item #13, Groundwater/Water Supply, on pages 18 and 19.
Section 3.6 Biology	Item #13, Wildlife Resources, on pages 16 and 17.

Appendix III, Reclamation Plan, is the Surface Mining Reclamation Plan which was filed with Kern County Planning Department and reviewed by the Office of Mining Reclamation.

The Hydrology Study Summaries are summarized in the Reclamation Plan in Item #13 on pages 18 and 19.

Response to Comment 15-2

Fractures, joints and other structures of the pit walls will be mapped on a one inch to twenty feet scale almost daily as needed during operations. The mapping will be reviewed annually by a California Registered Engineering Geologist or Professional Civil Engineer. The annual report will be submitted to Kern County according to a monitoring program.

Response to Comment 15-3

Please refer to Exhibit 5 in the Surface Mining Reclamation Plan (Appendix III of the Draft EIR/EIS). The areas to be resoiled and seeded are shown with a stipple pattern. It is not possible to determine the locations of basins at this time. The locations will depend on the final micro topography of the reclaimed areas.

Response to Comment 15-4

Please refer to page 12 of Section 4.1 of the Reclamation and Revegetation Procedures for Soledad Mountain in Attachment D of Appendix III of the Draft EIR/EIS. The use of transplants of site-indigenous species will be included in test plots to determine the chance of their successful use. The test plots will use plants grown from the Preliminary Plant Seed Mixture for Revegetation as shown on Page 25 of Attachment D. It is not known at this time which plants, if any, will be successful for use as transplants and, therefore, the criterion for transplantation is not established.

Response to Comment 15-5

The seed application rate is estimated at approximately seven to eight pounds per acre.

Response to Comment 15-6

Page 11 of Attachment D, Reclamation and Revegetation Procedures for the Soledad Mountain Project, of Appendix III, Surface Mining Reclamation Plan, in the Draft EIR/EIS has been changed to read:

"The horizontal surfaces of the overburden piles ~~may~~ will be recontoured for erosion and drainage control . . ."

Response to Comment 15-7

For purposes of clarification, page 14 of Attachment D, Appendix III, has been changed as follows:

> It is proposed that the standard for the reclaimed surfaces will be set at 35 percent of the vegetative cover (amount of surface covered by perennial plant canopies), 20 percent of the density (number of perennial plants per unit area) and 30 percent of diversity (number of different species of perennials in a sample area).

Sites used for concurrent and comparable monitoring for revegetation will be undisturbed. Sites that have been damaged will not be chosen. Text on page 33 of the Surface Mining Reclamation Plan, Appendix III of the Draft EIR/EIS, reiterates this and has been modified to state:

> Should a natural disaster occur which disturbs all possible comparable monitoring sites, an amendment to the Surface Mining Reclamation Plan could be made which would allow the use of comparable analysis to the 1990 or 1995 baseline surveys.

ENVIRONMENTAL HEALTH SERVICES DEPARTMENT

STEVE McCALLEY, R.E.H.S., Director
2700 'M' STREET, SUITE 300
Bakersfield, CA 93301-2370
Voice: (805) 862-8700
Fax: (805) 862-8701
TTY Relay: (800) 735-2929

RESOURCE MANAGEMENT AGENC

DAVID PRICE III, RMA DIRECTC
Engineering & Survey Services Departme
Environmental Health Services Departme
Planning Departme
Roads Departme

June 30, 1997

TO: Scott Denney
Planning Department

FROM: Mike
Michael T. Gnekow, Chief EHS
Environmental Health Services Department

SUBJECT: Map 213, CUP 41; Map 214, CUP 22
Soledad Mtn. Project

16-1 In reviewing the acoustical analysis submitted with the draft Environmental Impact Report, it was noted that the 65 dB LDN contour extended beyond the project boundary to the north and west impacting private property. The zoning for this property would allow the construction of single family residences which are considered sensitive uses in the Kern County General Plan noise element. For sensitive uses the maximum noise allowed is 65 dB LDN which could be exceeded by this project.

The applicant's acoustical consultant should provide mitigation measures for review and approval by this Department which will address this issue.

MTG:jg

cc: WZI, Inc. – Mary Jane Wilson

Comment Letter 16 from:

Michael T. Gnekow
Chief EHS
Environmental Health Services Department
County of Kern
June 30, 1997

Response to Comment 16-1

There is no impact because there are no residences in the area of concern. Therefore, a mitigation measure is not necessary. If a single family residence is constructed on private land which lies within the projected 65 dB contour line northeast of the project area, as shown in Exhibit 3.9-1 on page 256, in order to comply with the Noise Element of the Kern County General Plan, as stated in Section 3.9.5, Summary of Regulatory Requirements, on page 257 of the Draft EIR/EIS, the following methods will be used.

- Noise levels will be monitored to determine if the noise levels are above the recommended limits.

- If noise levels are above the recommended limits, measures will be taken to reduce the noise level to acceptable levels. The measures will include the construction of berms, using overburden material to shield the noise, and reduction of work in the area of the residence during nighttime hours (10:00 p.m. to 7:00 a.m.).

If the proposed project is approved, a condition of approval will be incorporated in the Conditional Use Permit to ensure compliance.

Native American Heritage Preservation
Council of Kern County
P.O.Box 1507
Bakersfield , CA 93302

Lee Delaney
Area Manager
Bureau of Land Management
300 South Richmond Rd.
Ridgecrest, CA 93555

July 8,1997

Re: Expansion of Golden Queen Mine, Mojave CA.

17-1

Andy Greene and I would like to let you know that we appreciated the opportunity to meet with your representatives from the BLM and those of the Golden Queen Mine on June 19th. As you know, our priority is preserving our cultural resources; at the same time, it is not our intent to impede the progress of any project .

We have found the people at the Golden Queen to be concerned about any prehistoric sites that could possibly be found within the projected expansion area. Through an Archaeological firm they retained, only one Native American site was located. Andy Greene had expressed his concern that perhaps during the actual mining operation some other artifacts or remains--however remote the chance--might be uncovered. Richard Graeme, Vice-President of Operations, has assured us that we will be notified should anything unusual be found.

In addition, the environmental issues (another of our priorities) were addressed at the meeting and we are pleased to say that not only were we appreciative of their interest and concern about our Native American cultural sites but also the efforts they have undertaken to best protect the environment. We found the people at the Golden Queen to be honest, forthright, and above-board in dealing with our cultural resources and the impact the expansion might have on the environment.

Sincerely,

Fay VanHorn

Fay VanHorn
Native American Heritage
Preservation Council
P.O. Box 1507
Bakersfield, CA 93302

Comment Letter 17 from:

Fay VanHorn
Native American Heritage
Preservation Council of Kern County
July 8, 1997

Response to Comment 17-1

The comment about the cultural resources of the project area is noted. Please see regulatory requirements listed in Section 3.7.5 and project design features listed in Section 3.7.6 on pages 241 and 242 of the Draft EIR/EIS.

SIERRA CLUB

California/Nevada RCC Mining Committee
P.O. Drawer W, Independence, CA 93526
Stan Haye, Chair. (619)

July 9, 1997

Ted James, AICP, Director
Planning Department, County of Kern
2700 "M" St., Ste 100
Bakersfield, CA 93301-2323

Re: CUP #22, Map, #214; CUP #41, Map #213
DEIS for Soledad Mountain Project

Ladies and Gentlemen:

Although the above referenced mining project is in an area already heavily impacted by mining, we would ask that you consider the following comments:

18-1 1. Instead of the Preferred Alternative, we strongly recommend that the Reduced Project Alternative be approved. Although, as stated in the EIS/R, some benefits of reducing existing hazards and reclamation of previously disturbed mining activities would not be achieved, this is far outweighed by the benefits to visual resources. The impact on the mountain from the Proposed Alternative would *never* be mitigated or reclaimed, nor could it be -- restoring significant ridge lines of Soledad Mountain to their previous profile would be impossible. However, whatever existing hazards and unreclaimed land that remain after this project could be mitigated and restored in the future. Adopting the Reduced Project Alternative would avoid the permanent commitment of scenic resources to mining, which we consider very important.

18-2 2. We believe that, although there are presently no residences near the project except those on Silver Queen Road, residential subdivisions may have been approved very near to the project boundaries. If so, this fact should be noted, and appropriate actions to minimize impacts to these potential residential areas should be included in the EIS/R.

18-3 3. The EIR/S should specify that after reclamation, all areas shall be contoured to resemble natural land forms in the immediate area. No terraces or straight lines should be left on any land forms. Where appropriate, rock stain should be applied to mimic natural colors.

18-4 4. As Sierra Club volunteers, we are always very concerned about the extent of public participation in any governmental activity. Therefore, we ask that, as part of the EIR/S, public tours of the project be advertised and scheduled, so that the public can see of the conditions of the EIS/R regarding reclamation are being carried out. We also ask that, before the bond is released, a final public tour and a public hearing be scheduled so that we can see that the terms of the EIS/R have, in fact, been met.

Thank you for the opportunity to comment. Please let us know as this project progresses.

Sincerely,

Stan Haye
Chair

To explore, enjoy, and protect the wild places of the earth. . .

Comment Letter 18 from:

Stan Haye
Chair
Sierra Club
July 9, 1997

Response to Comment 18-1

The Reduced Project Size is discussed in Section 4.6.4 on page 391 of the Draft EIR/EIS. It is important to construct a post-mining topography which approximates natural contours. Please see the response to Comment 18-3.

Response to Comment 18-2

The residential subdivisions which have been approved near the project boundaries are discussed in Section 3.10.1 on page 261 of the Draft EIR/EIS. Sections 3.10.5 and 3.10.6 on pages 265 and 266 of the Draft EIR/EIS, summarize the actions which will minimize impacts to the potential residential areas.

Response to Comment 18-3

As stated in Section 3.2.1.5 on page 159 of the Draft EIR/EIS, the State Mining and Geology Board Reclamation Regulations require that slopes of the pit and overburden piles be stable and conform with the surrounding topography. Please see Section 2.2.5.4 on page 90 of the Draft EIR/EIS for a discussion of the reclamation of the overburden piles and the last paragraph of Section 2.2.5.5 on page 92 of the Draft EIR/EIS for a discussion of the reclamation of the heap leach piles. In summary, straight edges of overburden piles and heap leach piles will be recontoured during reclamation.

The pit walls are designed to have benches which will ensure stability of the walls. The pit high walls will be left in a safe and stable configuration with benches, subject to natural processes. As stated in Section 3.2.1.3 on page 158 of the Draft EIR/EIS, the view of the open pit mine benches would be primarily limited to an area northeast of the site on Silver Queen Road. The comment about rock staining is noted and included in the record.

Response to Comment 18-4

The request for public tours and inspections is noted. It is likely that the project applicant would accommodate public interest in demonstration of reclamation activities at the mine site. However, enforcement of the reclamation plan is done by the lead agencies in accordance with Section 2774(b) of SMARA and 43 CFR 3809. All Kern County, BLM and other regulatory case files are available for public review during normal business hours.

9081 Soledad Rd.
Mojave, CA 93501
July 12, 1997

Dear Supervisor Perez:

This letter is in reference to the Soledad Mtn. mining project. We would like to see the project stopped, but reality dictates that this will probably not happen. If the project is to continue, then we would like to request that certain conditions be explicitly spelled out in the conditional use permit. These conditions are:

19 - 1

1. Testing of our ground water be conducted by independent labs at the expense of the mining company. Our well and those of other residents in the area should be the sources of the data used to monitor any drop in the water table and levels of contamination. Written into the use permit the stipulation that if our well water levels drop more than thirty feet in depth the mining company must obtain their water from another source.

19 - 2

2. We live directly downwind from Soledad Mtn. The prevailing winds come from the northeast - from the wind farms, over and around the mountain to where we live. The cyanide and mercury monitoring needs to be conducted DOWNWIND of the project, specifically in our area. Also, the cyanide needs to be enclosed in a vat system that contains the solution and keeps the vapors out of the air.

19 - 3

3. Restrict blasting to between the hours of 8:00 A.M. and 5:00 P.M. Further, restrict the blasting so that no blasting will take place if the wind is greater than 25 MPH with stiff fines imposed if blasting does take place during restricted hours.

19 - 4

4. The Golden Queen Mining Company must also be held accountable for the proper clean-up of the project. That burden should not be passed on to the the taxpayers of Kern County.

19 - 5

We are reasonable people and would like to peacefully coexist with this project. There are about 50 -60 residences out here directly downwind of this project, not the 10 the report indicated. Drive around for yourself and see. We will all have to live with the blasting, noise, dirt, chemicals, etc. All we ask is that you make

19 - 5 it possible for us to do so by placing reasonable restrictions upon the project.

As our representative, we are depending upon you to protect our interests. Please do not fail us.

Yours truly,

Rodney and Cathy Sedam

cc:

Kern County Planning Commission
Glenn Barnhill / Scott Denny

BLM Ridgecrest Resource Area Manager
Ahmed Moshen

Comment Letter 19 from:

Rodney & Cathy Sedam
Residents of Mojave
July 12, 1997

Response to Comment 19-1

The location of monitoring wells is described in Section 2.2.2.2.3 on page 61 of the Draft EIR/EIS. The location of the monitoring wells is immediately down-gradient from the heap leach pad and any change in water quality due to the proposed project would be measured and recognized close to the potential source of contamination. The parameters to be measured in the monitoring wells will be established by the Lahontan Regional Water Quality Control Board in the Waste Discharge Requirements as stated in Section 2.2.4.1 on page 80 and in Section 3.4.2.5 on page 198 of the Draft EIR/EIS and will include the depth to groundwater as well as any potential constituents of concern.

As stated in Section 3.4.2.2 on page 196 of the Draft EIR/EIS, groundwater drawdown should not exceed 30 feet at a distance of two miles from the water supply wells and the actual drawdown could be approximately 10 feet or less. As stated in Section 3.4.2.3 on page 197 of the Draft EIR/EIS, projected annual water use is less than 7 percent of the estimated annual recharge to the basin.

The drawdown of groundwater is not expected to affect wells west, south or east of the mountain. Drawdown would extend to the north and northwest of the project water supply wells. As stated in Section 3.4.2.1 on page 188 of the Draft EIR/EIS, limited amounts of groundwater may occur in the fractured crystalline and volcanic bedrock that forms Soledad Mountain although groundwater has not been noted in the exploration boreholes or the mine shafts. Water would not be expected to move through the mountain from the south or southeast into the cone of depression (modeled in Water Supply Evaluation, Appendix V) which would form as the result of pumping from the water supply wells.

In response to comments regarding a mitigation measure of supplementing groundwater with an alternate source of water, the following is the revised applicant-proposed mitigation measure.

Golden Queen will monitor the groundwater level on a monthly basis and compare the water level data collected by the monitoring program to water levels predicted by the groundwater drawdown model. In the event that the monitoring program shows that the actual water drawdown in the well when corrected for well conditions exceeds the predicted model for six consecutive months, Golden Queen will supplement the water supplied by the production wells with up to 300 gpm of water from Antelope Valley - East Kern Water Agency.

This revision is included in the Final EIR/EIS. The revision allows for closer monitoring of the groundwater level in the area of the project water supply wells.

Response to Comment 19-2

As stated in Section 3.5.6 on page 218 of the Draft EIR/EIS, monitoring stations for PM_{10} will be established upwind and downwind from the processing facilities.

As stated in Section 3.5.5 on page 218 of the Draft EIR/EIS, cyanide concentrations will be monitored by the operator and reported to BLM, Kern County and Mine Safety and Health Administration (MSHA) according to regulations. Intermittent monitoring for HCN using hand-held monitors will occur in the area of the heap leach pads and the processing plan as required by MSHA. Site operations will be conducted in compliance with MSHA regulations as stated in Section 3.12.5 on page 276 of the Draft EIR/EIS.

Please see Section 6.3.1.1.1 for a discussion of the monitoring of mercury which will take place in the area of the mercury smelter.

Monitoring of HCN and mercury vapor near the potential sources allows immediate detection. Due to atmospheric dispersion, concentrations at distant monitors offsite would be insignificant.

The cyanide solution will be contained within tanks and pipes except for distribution on the heap leach pads (Section 2.2.2.2.4 on page 67 of the Draft EIR/EIS). The cyanide solution will be applied to the heap leach pad using buried emitters (Section 2.2.2.2.3 on page 61 of the Draft EIR/EIS). The solution will be stored in the bottom of the heap leach pad and will not be exposed at the surface of the leach pad.

Response to Comment 19-3

As stated on page 45 of the Draft EIR/EIS, blasting will take place one time per day, during the afternoon shift change or the lunch break, approximately five days per week. As stated in Section 3.5.5 on page 218 of the Draft EIR/EIS, sources of emissions will be controlled to ensure compliance with California Health & Safety Code 41700 (i.e., nuisance) and 41701 (i.e., visible emissions). The emissions from blasting are quantified in Appendix VII, Estimated PM_{10} and Air Toxics Emissions and Impacts Assessment, of the Draft EIR/EIS. The impacts to air quality were determined to be less than significant, as discussed in Section 3.5.2 on page 215 of the Draft EIR/EIS.

Response to Comment 19-4

Please see Section 2.2.5.8 on page 98 of the Draft EIR/EIS for a discussion of the bonding requirements that ensure all proposed reclamation activities can be completed at no public expense in the event that the project sponsor does not meet this obligation.

Response to Comment 19-5

Please see Section 6.3.1.2 for a discussion of the number of residences in the area.

Kern River Paiute Council
1700 Bodfish St.,
Bodfish, Ca., 93205

July 12, 1997

Re:CUP#22, Map#214
CUP#41, Map#213

Mr. Glenn A. Barnhill
Special Projects Division Chief
Planning Department
County of Kern
2700 "M" St., Suite 100
Bakersfield, Ca., 93301-2323

Dear Glenn,

20 - 1

Thank you for this opportunity to comment on the Soledad Mountain Project. Your project document Executive Summary Tables, page S-33 and other portions of the document clearly indicate adherence to CEQA and NEPA processes.

As you may already be aware, my interest and the interest of Native Americans are the burial sites and remains. Avoidance is always the preferred method. I'm not clear on the method you want to use in monitoring the impacts on the sites listed in page 242 of your report. I would suggest that as part of that research design a Native American Consultant should also be included in the monitoring process.

You seemed to have alluded to other additional CEQA and NEPA requirements as necessary in the EIS/EIR, and I would recommend that close monitoring is in order to ensure compliance.

Respectfully,

Robert Gomez, Jr.
2619 Driller Ave.,
Bakersfield, Ca., 93306-2505
[805]871-1658 FAX [805]871-0609

Comment Letter 20 from:

Robert Gomez, Jr.
Kern River Paiute Council
July 12, 1997

Response to Comment 20-1

As stated in Section 3.7.7 on page 242 of the Draft EIR/EIS, several sites will be reviewed by an archaeological monitor during grading activity to record and collect any additional archaeological information that may be uncovered. The monitor will be a qualified archaeologist and the methods used will be in accordance with CEQA requirements if on private land or NEPA requirements if on Federal land.

David & Terri Stickel
5826 Backus Road
Mojave, CA 93501

County of Kern
Planning Department
Glenn A. Barnhill
2700 "m" Street, Suite 100
Bakersfield, California 93301

Re: Soledad Mountain Project EIR/EIS

July 13, 1997

Dear Mr. Barnhill,

Thank-you, for the opportunity to comment on the Soledad Mountain Project. The EIR/EIS is an impressive piece of work. With just 45 days to study, review and comment, I am overwhelmed. I know that many of my fellow homeowners in the area would be reluctant to do more than a quick flip through the report.

Some of the sections of the report utilize a composite of data for evaluation. While it may be an accepted standard to statistically modify data, the composite standard is hardly a true refection of reality. Modifying data in this way distorts the reality. A famous example of this is the "American Family has 2.5 children" it doesn't take a PHD to know that a point five child does not exist. However when reviewing fabricated composites regarding water wells, or ambient noise, one can be easily mislead by the esoteric nature of the data.

21 - 1

On page 196, in the Hydrology ground water section, at the end of the first paragraph a sentence states "The increased pumping costs would be approximately $0.025 per 1,000 gallons." Clearly the sentence quoted is utilizing a fabricated composite, and calls for examination of source data. In appendix V found in Volume 4, page 6 paragraph VI, "While this may require lowering the pump, the withdrawal rate should not be impacted". This is the source of the composite figure noted in the EIR/EIS. How will this work in the real world that I and my neighbors live in?

Private domestic wells have a sanitary cap installed and monitoring the depth of the wells is not feasible for the private homeowner. Well status is simple for the private homeowner, turn on the tap if water comes out, there is no problem. If no water comes out you now have an emergency, that must be dealt with quickly. If you can afford it a well rig will be dispatched and your failed well pump will be pulled and replaced. Last time I had my well repaired the worker would not take $0.025 per $1,000 gallons, the mechanics lien was not released until I paid the bill, half of which I paid in advance of work being done. The fabricated composite may indicate the worst case scenario and may appear to be insignificant. The reality is unexpected private well failure, no potable water, days to fix, and dollars. It imposes on private homeowners, and

21-1 can result in the damage or death of the homeowner's livestock and plantings. This is a significant adverse impact.

21-2a On page 254 of the EIR/EIS the first paragraph regarding noise caught my attention "... several days in June 1990 and March 1991 when the 65 dB criterion was exceeded. The causes of the excess noise levels are not known." As a "local" I had an idea of what would cause the high noise levels, a examination of the source data was the only way to find answers. Appendix X found in volume 6 contains some of the answers. Table A-1 shows on June 6 th 1990 a DNL noise level of 71 was calculated, if you will open Appendix VI contained in Volume 4, then flip to the June 1990 hourly wind speed table you can see that the wind was really kicking up. This discredits the entire noise study simply because no explanation was offered for the higher than the 65 dB criterion. As a "local" I wondered if the fence posts were capped, if trash had blown against the enclosure, if the weather proof enclosure had a tight sheet-metal roof, if a door wasn't open and banging in the wind. The report did not contain sufficient information to rule out these scenarios.

21-2b Creating a composite noise profile, is completely misleading. Like the "2.5 children" example noted above, a composite noise level simply does not exist in reality. If you will flip through the report in appendix X (Volume 6) you will find that there is some 78 pages of data the has been calculated. the data has been averaged for each hour the L90 data is supposed to be a representation of the typical noise level 90% of the time. Please review the data collection protocol and note that figures lower than 28 are rounded up to 28 and nighttime noise has 10 dB added. (If you used this method to calculate the GPA of students you can see how an F student could be averaged up to a D.) As you flip through these 78 pages note the nighttime noise levels 10:00 PM is 2200 7:00 AM is 700. An objective perusal will show that most evenings are typically quiet with histograms calculated in the low 30s. With the mine project operating 24 hours at 65 dB local homeowners will experience a 300 fold increase in nighttime noise levels. This is significant adverse impact on residents.

I am not opposed to the mine in principal I am a strong supporter of individual property rights. It is an enormous burden to require local homeowners to respond to this report, not just because of it's size and the esoteric nature of the contents, but the simple fact that local residents are unable to put their lives on hold to lobby local decision makers. If local homeowners could afford to purchase the services of someone comparable to Phil Wyman and Richard Graeme to lobby on our behalf, the project would most certainly not be approved as proposed.

21-3 Mitigation measures are needed, nighttime noise levels must be controlled, private homeowners must be protected from the unexpected failure of their wells caused by a controllable hazard. The individual property rights of local home and property owners must be considered. We don't have the time or the resources to look after our interests. We depend on our local leaders, Kern County, and the BLM to protect our interests. As they have, by imposing a general plan, zoning, and building codes upon us.

If it had been disclosed to me in 1989 when I purchased my home, that the Soledad mining project was planned, I would have never considered the property. If the General Plan had been disclosed to me, at least I would have been forewarned. However subsequent approval of a

21-3 high-density development abutting the project boundary, might have caused me to wonder if in fact mining had been precluded. I depended on the zoning which was consistent with my planned use, to protect my life savings / work that I have invested in my home. Now I discover that my property, my home, are not and will never be, what I was lead to believe they are: Quiet rural property, in the midst of scenic rugged desert solitude.

Sincerely

David Stickel
Terri Stickel

Comment Letter 21 from:

David & Terri Stickel
Residents of Mojave
July 13, 1997

Response to Comment 21-1

The extra cost of $0.025 per 1,000 gallons relates to the power required to raise water an additional 39 feet up the well bore at the nearest active well to the water supply wells. No attempt was made to address costs of lowering pumps outside of the immediate area of the water supply wells because the water level is not expected to drop significantly.

Please see the response to Comment 19-1.

Response to Comment 21-2a

Please refer to Section 3.0 on page 4 of the Ambient Baseline Noise Monitoring Plan in Appendix X of the Draft EIR/EIS for information on the installation of noise monitoring equipment and Attachment A of the same report for the methods used to collect and calculate the data.

Response to Comment 21-2b

As stated in Section 3.9.6 on page 257 of the Draft EIR/EIS, nighttime noise levels have been mitigated by limiting blasting to once per day during daylight hours. Seventy-five to eighty percent of construction activities will take place during daylight. These are mitigation measures proposed by Golden Queen Mining Company which will be enforced by the Kern County Planning Department through the applicable mitigation measure monitoring programs.

Response to Comment 21-3

The Soledad Mountain Project is compatible with the existing zoning ordinance established in 1966 and Specific Plan adopted in 1973 for the area. The zoning ordinance with maps, General Plan, specific plans, and other information are a matter of record and are and were available to the public today and in 1989.

Gretchen Winfrey
PO Box 477
Rosamond, CA 93560

July 13, 1997

Kern County Planning Department
2700 M Street, Suite 100
Bakersfield, CA 93301

Attn. Glenn Barnhill/Scott Denny

Re: Draft Environmental Impact Report
Golden Queen Mining Company, Inc.
Soledad Mountain Project

Dear Sirs:

Since I live southeast of the Soledad Mountain project, I wrote a year ago expressing some of my concerns regarding the project prior to the issuance of the Draft Environmental Impact Report. My initial concerns regarding the Soledad Mountain Project have not been allayed by the report regarding the effects of the proposed action. In fact, the report has increased my level of concern in some areas.

Hydrology

22-1

I found the discussion of the hydrological effects alarming with some flaws. The number of wells in the area as shown on the maps in the report was grossly understated. The number of active domestic wells just along less than one-half mile of Kemper Road, where I live, is over a dozen. Nothing near this number is shown on the map in the report nor are other wells in the area accurately reported.

Many of these wells were drilled thirty to forty years ago with some drilled prior to that. I do not know the depth of most, but of those I know, they range from 110 feet to 200 feet. This is shallow compared to areas further to the west. Due to our location and the underground geological structures between us and the primary wells on the project, I am assuming that the projected drawdown of the water table in our portion of the Chaffee subunit would be less than that stated in the report as possible at 2 miles. Even allowing for a lesser effect, I feel the drawdown caused by the removal of the quantity of water stated in the report could affect the most shallow wells (especially since the existence of these wells apparently is not acknowledged and was not used when forming projections.)

22-2

I am extremely concerned over the section allowing for a 200% error in drawdown figures before requiring the use of AVEK water. This appears to allow almost certain negative affect on the wells in the area. After the 200% error limit, the conditions now stated would allow further depletion of the water in the Chaffee subunit since the amount of AVEK water required to be used at that time would be less than fifty percent of the mines consumption. How can the effect be considered less than significant if we are faced with

22-2 water tables dropping below our pump depth or below the depths of our wells? When you do the mathematical calculations using the projections, how can a 200% error allowance still be considered less than significant?

22-3 I believe the following changes need to be made and incorporated into the Conditional Use Permit to protect surrounding landowners.

a. At least 30% of the water used initially should be AVEK water.

b. The section allowing for a 200% error needs to be eliminated.

c. Monitoring to determine drawdown of at least one well within each section of land in which wells exist needs to be done biannually throughout the Chaffee subunit during the time water is being drawn for the project.

d. The immediate and total use of AVEK water needs to required if the water table drops to a depth that would jeopardize any active well in the Chaffee subunit.

e. Monitoring of at least one existing well for compromises in water quality need to be done annually on wells located in each of the following compass directions around Soledad Mountain: northeast, east, southeast, south, southwest, and west in an area bounded by Backus Rd. on the south, Lone Butte/United Rd. on the east, and 61st Street on the west.

22-4 Air Quality

I am concerned about two items in this section. Anyone who lives in this area knows that there is a very noticeable wind gradient between Rosamond and Mojave from less to more. Weather information from Edwards Air Force Base was used to describe average wind speed in the area. This hardly seems appropriate considering the location of Edwards with respect to the site and the gradients that are obviously apparent even to the average person without wind measuring equipment.

22-5 Also, I am concerned about the lack of acknowledgment of the existence of the group of residences within the area in which I live. Per the report, typical winds at the proposed site are out of the northwest--yet we, who live to the southeast, in the direct path of the typical winds, were not acknowledged in the statements concerning existing residences in the area. Why not?

22-6 Since the winds in the area can be fierce, provisions need to be specified in the Conditional Use Permit limiting operations if winds are above a certain velocity at the site.

22-7 Vegetative Resources

The plant list compiled in the baseline studies (Appendix III, Attachment B) omits Monolopia lanceolata. This is the most spectacular of Soledad's annual flowering plants and one I have not found in other parts of the Antelope Valley. This is the flower that in the early spring cascades down from the peaks of Soledad Mountain in rivers of gold which then spread out into golden carpets as the slope lessens. In good wildflower years, the sight is so spectacular that I have seen a line of cars stopped along the freeway (Highway 14) to the east of the mountain just to view the flowers. I do not know why the omission of very a obvious, showy species occurred when much of the baseline report

22-7 appears to be appropriate. Eschscholtzia californica is also found on Soledad, however, my study of the topographic maps leads me to believe that the main area of occurrence is near the of the boundary of the project. Nevertheless, I am concerned that no mention of these flora was made in the baseline as I had specificically mentioned them in my letter of a year ago. Ample photographic evidence exits to substantiate the existence of these species on Soledad Mountain.

22-8 I am concerned with regard to the revegetation plan. Much of the data appears to be from another desert environment. The studies cited are relatively new with some, but not abundant, data from which to draw conclusions. I am concerned with proposed imported seeds which, from the list given as an example, appears to contain species that are not appropriate. I am concerned with the introduction of new genetic material into naturally occurring populations.

22-9 The standards that are proposed for release of the bond appear to be related to the results of other studies and reclamation done by Bamberg and Associates. These standards do not provide much of a margin in the event that weather conditions are adverse for several years. Raising the numbers from 35% of vegetative cover, 20% of density, and 30% of diversity before release of the bond as well as lengthening of the five (5) year stipulation seems appropriate in order to ensure adequate revegetation. I could find no information as to the amount of the bond. It certainly should be sufficient to allow for additional attempts at revegetation if initial attempts fail.

22-10 Final Comments

My final comments are a plea. Many people have spoken in favor of the project because they see the potential for economic gain to themselves and their communities. With the implementation of the proposed action, those of us who live or own property within sight of the project will inevitably see economic loss as property values drop as a result of the degradation of the aethestics of the area and, in some cases, concerns of potential buyers over possible safety issues. If the proposed action is approved, the Conditional Use Permit must contain sufficient safeguards so that no property owner suffers economic penalties due to degradation of a well or due to airborne contamination in addition to the inevitable loss of property value that they will suffer.

We, as a society, have been very short sighted in the past when it comes to protecting individuals and to returning an area to a natural state. Stating a plan and implementing it successfully are two entirely separate things. Without the committed support of the governmental agencies monitoring the project, profit taking at the expense of others and of the environment will happen again.

Sincerely,

Gretchen Wingfield

Comment Letter 22 from:

Gretchen Winfrey
Resident of Rosamond
July 13, 1997

Response to Comment 22-1

As stated in Section 3.4.2.1 on page 188 of the Draft EIR/EIS, known and documented water wells are shown on the well location map (Exhibit 3.4-4). The locations were derived from the Hydrology Study Summary in Appendix V and from databases acquired from the Department of Water Resources and Kern County Environmental Health Services Department. Information about private water wells in California is considered confidential and the information in the databases includes location only. Detailed information for each well is necessary to determine the effects of the proposed project on each well. Detailed information about wells within one mile of the waste management units was gathered with the permission of the well owners for the Report of Waste Discharge which has been submitted to the Lahontan Regional Water Quality Control Board. The Report of Waste Discharge is considered public information.

The wells in the Gloster subunit on the south side of Soledad Mountain (Exhibit 3.4-1 of the Draft EIR/EIS) are not expected to experience substantial drawdown. Please see response to Comment 19-1.

Response to Comment 22-2

The proposed water supply wells are located between the Gloster (to the south) and the Chaffee (to the north) subunits. The water will be drawn primarily from the Chaffee subunit. The wells south and southeast of Soledad Mountain lie in the Gloster subunit of the Antelope Valley Hydrologic Basin. There are approximately five wells in use within one mile of the water supply wells. The five wells are owned by Golden Queen and are used for domestic purposes.

Response to Comment 22-3

Please see response to Comment 19-1.

Response to Comment 22-4

Impacts resulting from the project's air emissions were evaluated in Appendix VII of the EIR/EIS. Modeling protocols were reviewed and approved by the Kern County Air Pollution Control District. The analysis used meteorological data collected onsite, as described on page 10 of Appendix VII.

Response to Comment 22-5

Please see Section 6.3.1.2 for a revised discussion of the number of residences in the area of the proposed project.

Response to Comment 22-6

The comment about limiting operations if winds are above a certain velocity is noted and included for the record. As stated in Section 3.5.5 on page 218 of the Draft EIR/EIS, sources of emissions will be controlled to ensure compliance with California Health & Safety Code 41700 (i.e., nuisance) and 41701 (i.e., visible emissions) and according to the Permit to Operate issued by the Kern County Air Pollution Control District.

Response to Comment 22-7

Vegetative Resources are discussed in Section 3.6.1 of the Draft EIR/EIS and the Biological and Soil Resource Evaluation contained in Appendix III, Attachment B of the Draft EIR/EIS. Plant species found on the project site are typical for the western Mojave Desert area (page 221 of the Draft EIR/EIS). Based on biological surveys, there were no threatened, endangered or rare species of plants identified on the project site (page 222 of the Draft EIR/EIS). The methods for completing the surveys for plant species are included in Biological and Soil Resource Evaluation in Appendix III, Attachment B, of the Draft EIR/EIS. A survey location map is included in the evaluation as Figure 4-1 on page 20.

Monolopia lanceolata is a common species located in a wide area in the mountain slopes and foothills north, west, and south of the Mojave Desert. The species is not listed in the plant survey list because it was not observed in the project area covered by the plant survey. This species may occur around the base and lower slopes of Soledad Mountain.

Response to Comment 22-8

There will be development of a seed mix which utilizes only plant species native to the site area as stated in Section 3.6.1.5 on page 224 of the Draft EIR/EIS. The plants contained in the preliminary plant seed mixture for revegetation (Table 3 of Appendix III of the Draft EIR/EIS) are also contained in the list of plant species found on the project site (Table A-1 of Attachment B of Appendix III of the Draft EIR/EIS).

Response to Comment 22-9

The amount of the bond for reclamation is shown on Page 2 of Table 4 in the Surface Mining Reclamation Plan included as Appendix III in Volume 3 of the Draft EIR/EIS. The amount will be adjusted annually to account for new lands disturbed by the project. The comment about raising the standards for revegetation is noted and included in the record.

Response to Comment 22-10

The comment is noted and included in the record.

CALIFORNIA
HISTORICAL
RESOURCES
INFORMATION
SYSTEM

FRESNO
KERN
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MADERA
TULARE

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Glenn Barnhill, Special Projects Division Chief
Kern County Planning Department
2700 M Street, Suite 100
Bakersfield, CA 93301-2323

July 14, 1997

RE: DEIR for Soledad Mountain Project (Golden Queen Mine)
AIC# L-97-94

Dear Glenn,

23-1 Thank you for the opportunity to comment on the above referenced project. W & S Consultants have conducted a Phase I archaeological field survey of the entire project area. Phase II and III archaeological investigations and testing were conducted on all sites considered potentially significant.

We concur with the mitigation recommendations for archaeological sites CA-KER-4446H, 4447H, 4448H, 4449H, 4450H, 4695H, 4693H, and 4694 as outlined in the DEIR, page 242. The recommended mitigation is as follows: All the above referenced sites shall have a professional archaeologist on site to monitor all grading activity in the event that additional cultural resources are uncovered.

23-2 We recommend that the archaeologist contracted to monitor the site grading activities, contact our office so we may provide any necessary additional information regarding this project. When monitoring has been completed, a technical report should be submitted to our office within 30 days, discussing the results of the monitoring and any additional mitigation recommendations that may be needed.

If you have any questions or comments, please don't hesitate to contact me at (805) 664-2289.

Yours truly,

Adele Baldwin
Assistant Coordinator

FAXED
7/14/97 AB

Comment Letter 23 from:

Adele Baldwin
Assistant Coordinator
Southern San Joaquin Valley Information Center
July 14, 1997

Response to Comment 23-1

The comment about recommended mitigation for cultural resources is noted and included in the record.

Response to Comment 23-2

The comment about provision of the cultural resource information to an archaeologist is noted.

All sites to be monitored are located on private land. The archaeological monitor will report any information uncovered or mitigation measures developed to the Lead Agency, in this case, Kern County, in accordance with a monitoring program. As the representative for the State Historical Preservation Office, the reports will be forwarded to your office.

July 4, 1997.

Glenn A. Burchill
Special Projects
Division Chief
Planning Department
2700 "M" Street
Bakersfield, California
93304-2323

Dear Mr. Burchill:

I am writing to you in response to your letter of May 29, to thank you for sending me a copy of your outstanding report.

I am extremely impressed with your "Draft Environmental Impact Report" that you and your associates have prepared regarding the "Soledad Mountain" project at Mojave, California.

I am touched by the perfection that all of you were participated in this important endeavor have demonstrated!

This historic legacy of my late husband, Lawrence Lawrence of California Goodwin J. Knight, was left to me: — "The Elephant-Eagle Mine" comprising fifteen claims, three of which were named "Faith", "Hope" & "Charity."

He named his claims as a "hard rock miner". Much of his life & spirit went into these claims at "Soledad Mountain:" — the mystical ... magical ... mountain that still holds many of its treasured secrets.

Sixty years ago there was a law suit in the County of Bakersfield, — clear to the California Supreme Court proving Goodwin Knight's rightful ownership of these claims that he had legally

purchased for $52,500 in installments in 1935.

Chain gangers have happened when they heard Ed read of Soledad's "great-rich guide" in the thirties -- front page headline in the Los Angeles Times the Chain gangers reminiscent of the "wild west" days of long ago!

During the eighties I walked again in Lincoln Park footsteps along the streets to Parkersfield to the Courthouse to protect my heritage and protest a Chain-gangers who filed an "adverse possession" lawsuit against me, giving up far as admitted "area" by his son-in-law to my girl friend travelling on the premises at the site of "Pioneer Well". By force he tried to take possession

of my fruitful water well. He did not succeed! . . .

Lorenzo Knight dreamed of bringing these prices back into production. I quote his thoughts written to a friend on September 28, 1956:

"One in a while I see an opportunity to talk with Leroy Nelson, & we hope someday to be able to open up the Silver Dollar again. Someday the Country will know we should have higher prices on gold." (Since Nelson discovered the tremendous & famous "Silver Queen").

This goes to you with my fervent hopes & prayers that you will continue to diligently pursue trends

a successful result & conclusion toward the production of the valuable mines at Toledo Mountain.

Your satisfaction & achievement in your efforts of perfection will be demonstrated by bringing to the good that worthwhile endeavor will accomplish.

With the mines now being leased by the responsible "Golden Queen Mining Company", together with your continued thoughtful efforts... effortless & careful consideration, Goodwin Knight's dream of bringing the miners into Death Valley again will hopefully come true for the good of all... So our beloved California!

Ever sincerely,
Virginia Knight

Comment Letter 24 from:

Virginia Knight
Resident of Los Angeles
July 14, 1997

Response to Comment 24-1

The comment in support of the project is noted for the record.

ALL AMERICAN PIPELINE COMPANY

Via facsimile @ (805) 862-8601

July 14, 1997

Mr. Glenn A. Barnhill, Chief
Special Project Division-Planning Department
COUNTY OF KERN
2700 "M" Street, Suite 100
Bakersfield, California 92201-2323

RE: **RW 97012-1KE**; Draft Environmental Impact Report/Environmental Impact Statement (DEIR/S) for the Proposed Soledad Mountain Project South of Mojave, Kern County, California

Dear Mr. Barnhill:

25-1 All American Pipeline Company (AAPL) appreciates the opportunity to review and comment on the above referenced project, as it may relate to direct or indirect impacts to our nearby pipeline facilities. As you may be aware, AAPL owns and operates a high pressure, buried, crude oil pipeline which extends in an east-southeast direction about 2.75 miles north of the Soledad Mountain project area. Our pipeline and three high pressure gas pipelines share a "common corridor" in this area, the general location of which has been highlighted on the attached copy of DEIR/S Figure 3.0-1.

25-2 Based on our review of the pertinent portions of the environmental document, we have identified no potential conflicts and therefore, we have no comments at this time. We do, however, wish to remain on your mailing list for the purposes of monitoring project status, reviewing additional environmental documents and attending scheduled meetings and hearings, to the extent necessary.

We note that DEIR/S section 3.0.2 "Potential Future Projects" lists, and briefly describes, nearby proposed future projects that could have some affect on our facilities in this area. For this reason we would like to obtain copies of the following documents, if they are generally available:

- April 1991, Draft Tier 1 Environmental Impact Report, West Mojave Project, Prepared by EIP Associates ;
- May 1994, Final Environmental Impact Report, Camelot Specific Plan, Including the Phase VI Billig Amendment, Prepared by Cornerstone Engineering, Inc.; and
- Documents that may describe the Pardee Construction Project.

10000 Ming Avenue (93311) • P.O. Box 40160 • Bakersfield, CA 93384-0160 • (805) 664-5300

In the event copies of these documents are not available to AAPL, we would appreciate the opportunity to review any file copies that the County may have. In this regard, please let us know where these documents might be reviewed should they not be available.

Again, thank you for the opportunity to review the DEIR/S and we look forward to hearing from you at your earliest convenience. As always, should you have any questions or require additional information, please do not hesitate to call me at (805) 664-5343.

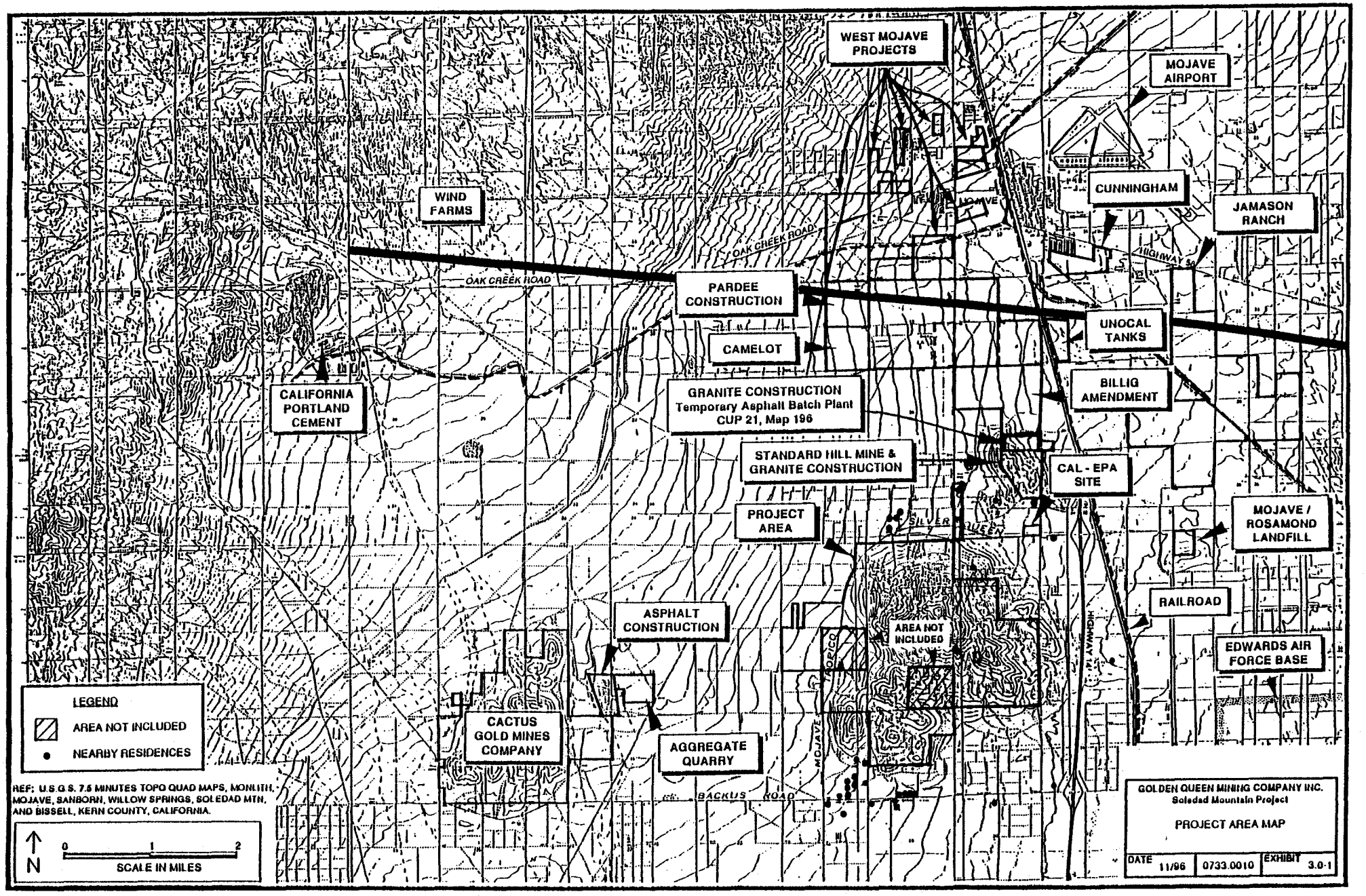
Sincerely,

Michael R. Madden, Manager
Permitting and Rights-of-Way

soledadmountianprojectdeir/sletter

Attachment - Highlighted DEIR/S Figure 3.0-1 (Depicts Common Corridor)

cc: John Beckstrom
Richard Gilbert
Greg Hamilton
Bill Koupeny


WEST MOJAVE PROJECTS
MOJAVE AIRPORT
CUNNINGHAM
JAMASON RANCH
WIND FARMS
OAK CREEK ROAD
OAK CREEK ROAD
PARDEE CONSTRUCTION
UNOCAL TANKS
CAMELOT
BILLIG AMENDMENT
CALIFORNIA PORTLAND CEMENT
GRANITE CONSTRUCTION
Temporary Asphalt Batch Plant
CUP 21, Map 196
STANDARD HILL MINE & GRANITE CONSTRUCTION
CAL - EPA SITE
PROJECT AREA
MOJAVE / ROSAMOND LANDFILL
RAILROAD
ASPHALT CONSTRUCTION
AREA NOT INCLUDED
EDWARDS AIR FORCE BASE
CACTUS GOLD MINES COMPANY
AGGREGATE QUARRY
BACKUS ROAD
LEGEND
AREA NOT INCLUDED
NEARBY RESIDENCES
REF: U.S.G.S. 7.5 MINUTES TOPO QUAD MAPS, MONLITH, MOJAVE, SANBORN, WILLOW SPRINGS, SOLEDAD MTN, AND BISSELL, KERN COUNTY, CALIFORNIA.
N
0 1 2
SCALE IN MILES
GOLDEN QUEEN MINING COMPANY INC.
Soledad Mountain Project
PROJECT AREA MAP
DATE 11/96
0733.0010
EXHIBIT 3.0-1

Comment Letter 25 from:

Michael R. Madden
Manager, Permitting and Rights-of-Way
All American Pipeline Company
July 14, 1997

Response to Comment 25-1

The comment about the location of the pipeline is noted and included in the record. Figure 3.0-1, which follows comment letter 25, was modified for inclusion in the Final EIR/EIS. The pipeline is indicated by the heavy line.

Response to Comment 25-2

The comment regarding no potential conflicts between the proposed project and the oil pipeline is noted.

Governor's Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814

July 17, 1997

GLENN BARNHILL
KERN COUNTY PLANNING DEPT
2700 M STREET, SUITE 100
BAKERSFIELD, CA 93301

Subject: SOLEDAD MOUNTAIN PROJECT SCH #: 96061052

Dear GLENN BARNHILL:

26-1 The State Clearinghouse submitted the above named environmental document to selected state agencies for review. The review period is closed and none of the state agencies have comments. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.

Please call at (916) 445-0613 if you have any questions regarding the environmental review process. When contacting the Clearinghouse in this matter, please use the eight-digit State Clearinghouse number so that we may respond promptly.

Sincerely,

Antero A. Rivasplata

AÑTERO A. RIVASPLATA
Chief, State Clearinghouse

Notice of Completion

Appendix F

See NOIS screen

SCH # 96061052

Mail to: State Clearinghouse, 1400 Tenth Street, Sacramento, CA 95814 916/445-0613

Project Title: Soledad Mountain Project

Lead Agency: Kern County Planning Department — **Contact Person:** Glenn Barnhill

Street Address: 2700 M Street, Suite 100 — **Phone:** (805) 862-8615

City: Bakersfield, CA — **Zip:** 93301 — **County:** Kern

Project Location

County: Kern — City/Nearest Community: Mojave

Cross Streets: Silver Queen Road, Gold Town Road — Total Acres: 1,690

Assessor's Parcel No. multiple — Section: mainly 5,6,7, 9 — Twp. 10N — Range: 12W — Base: San Bernardino

Within 2 Miles: State Hwy #: 14 — Waterways: N/A

Airports: N/A — Railways: Southern Pacific — Schools: N/A

Document Type

CEQA: ☐ NOP ☐ Early Cons ☐ Neg Dec ☒ Draft EIR ☐ Supplement/Subsequent ☐ EIR (Prior SCH No.) ☐ Other

NEPA: ☐ NOI ☐ EA ☒ Draft EIS ☐ FONSI

Other: ☐ Joint Document ☐ Final Document ☐ Other

FILED JUN 2 1997 STATE CLEARINGHOUSE

Local Action Type

☐ General Plan Update ☐ General Plan Amendment ☐ General Plan Element ☐ Community Plan

☐ Specific Plan ☐ Master Plan ☐ Planned Unit Development ☐ Site Plan

☐ Rezone ☐ Prezone ☒ Use Permit ☐ Land Division (Subdivision, Parcel Map, Tract Map, etc.)

☐ Annexation ☐ Redevelopment ☐ Coastal Permit ☒ Other Street Vacation

Development Type

☐ Residential: Units ____ Acres ____
☐ Office: Sq.ft. ____ Acres ____ Employees ____
☐ Commercial: Sq.ft. ____ Acres ____ Employees ____
☐ Industrial: Sq.ft. ____ Acres ____ Employees ____
☐ Educational
☐ Recreational

☐ Water Facilities: Type ____ MGD ____
☐ Transportation: Type
☒ Mining: Mineral Gold
☐ Power: Type ____ Watts ____
☐ Waste Treatment: Type
☐ Hazardous Waste: Type
☐ Other:

Project Issues Discussed in Document

☒ Aesthetic/Visual ☒ Agricultural Land ☒ Air Quality ☒ Archeological/Historical ☐ Coastal Zone ☒ Drainage/Absorption ☒ Economic/Jobs ☒ Fiscal

☒ Flood Plain/Flooding ☐ Forest Land/Fire Hazard ☒ Geologic/Seismic ☒ Minerals ☒ Noise ☒ Population/Housing Balance ☒ Public Services/Facilities ☒ Recreation/Parks

☒ Schools/Universities ☒ Septic Systems ☐ Sewer Capacity ☒ Soil Erosion/Compaction/Grading ☒ Solid Waste ☒ Toxic/Hazardous ☒ Traffic/Circulation ☒ Vegetation

☒ Water Quality ☒ Water Supply/Groundwater ☐ Wetland/Riparian ☒ Wildlife ☒ Growth Inducing ☒ Landuse ☒ Cumulative Effects ☐ Other

Present Land Use/Zoning/General Plan Use

Open Space / A-1 / Mineral Extraction and Processing, Public Lands, Low Density Residential

Project Description

The proposed project is an open-pit precious metals (gold and silver) mining and heap leach processing operation situated on Soledad Mountain, located approximately five miles southwest of the town of Mojave in Kern County, California. This document addresses project-specific issues regarding the proposed project design, alternatives, environmental setting, impacts and mitigation.

State Clearinghouse Contact: Mr. Chris Beisky (916) 445-0613

State Review Began: 6.2.97

Dept. Review to Agency 7.10

Agency Rev to SCH 7.15

SCH COMPLIANCE 7.17

Please note SCH Number on all Comments

9606 1052

Please forward late comments directly to the Lead Agency

AQMD/APCD 11 (Resources: 6, 7)

Project Sent to the following State Agencies

X Resources
___ Boating
___ Coastal Comm
___ Coastal Consv
___ Colorado Rvr Bd
X Conservation
X Fish & Game # 4
___ Delta Protection
___ Forestry
___ Parks & Rec/OHP
___ Reclamation
___ BCDC
X DWR
___ OES
___ Bus Transp Hous
___ Aeronautics
X CHP
X Caltrans # 6
___ Trans Planning
___ Housing & Devel
___ Health & Welfare
___ Drinking H20
___ Medical Waste

State/Consumer Svcs
___ General Services
Cal/EPA
X ARB
___ CA Waste Mgmt Bd
___ SWRCB: Grants
___ SWRCB: Delta

X SWRCB: Wtr Quality
___ SWRCB: Wtr Rights
X Reg. WQCB # 5F
___ DTSC/CTC

Yth/Adlt Corrections
___ Corrections
Independent Comm
___ Energy Comm
___ NAHC
___ PUC
___ Santa Mn Mtns
X State Lands Comm
___ Tahoe Rgl Plan
___ Other:

Comment Letter 26 from:

Antero A. Rivasplata, Chief, State Clearinghouse
Governor's Office of Planning and Research
July 17, 1997

Response to Comment 26-1

The comment is noted for the record.

KERN COUNTY MUSEUM
OFFICE MEMORANDUM

July 23, 1997

TO: Glenn A. Barnhill, Special Projects Division Chief

FROM: Carola Rupert Enriquez, Museum Director

SUBJECT: Draft EIR for Soledad Mountain Project

27-1 The subject Draft EIR is totally unacceptable as mailed to me as it did not contain the Volumn 5 or Appendix VIII, the section on historical resources. I find it absurd that I should be asked to review these environmental impact reports on behalf of historical and cultural impacts, and then not be authorized to receive a copy of this "confidential" section of the report. As a result, I have no idea whether my concerns as incorporated in the report have been addressed.

I am sorry that my response did not meet your July 14 request date, however, we are extremely understaffed at this time.

Comment Letter 27 from:

Carola Rupert Enriquez
Museum Director
Kern County Museum
July 23, 1997

Response to Comment 27-1

Volume 5, Appendix VIII, contains the Archaeological Studies. As stated in Section 1.2.4.4.1 on page 23 of the Draft EIR/EIS, the National Historic Preservation Act, Section 304, directs Federal agencies to withhold from disclosure to the public information relating to the location or character of eligible properties whenever disclosure may create risk or harm to such resources. Agencies authorized to receive Volume 5 are the lead agencies, Kern County Planning and BLM, the State Historic Preservation Office and interested agencies which have a signed confidentiality agreement with the State Historic Office, in this case, the Southern San Joaquin Valley Archaeological Information Center at California State University, Bakersfield. The information contained in the studies is summarized in Section 3.7, beginning on page 234 of the Draft EIR/EIS.

Kern Co. Planning Department
2700 M Street, Suite 100
Bakersfield, CA 93301-2323
Attn: Glenn A. Barnhill

29 July 1997

Dear Mr. Barnhill:

I wish to thank you for the opportunity to comment on the Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Soledad Mountain Project.

After reviewing the draft EIR/EIS three significant issues/concerns are evident.

(1) Modeling of airborne toxin/particulate dispersion.

The dispersion of airborne toxins and particulates was modeled using the ISC3 modeling software. Although the ISC3 dispersion model is approved by the EPA it is not the only approved modeling software package available. Judicious choice of which modeling package is to be employed and specific modeling technique must be evaluated prior to its implementation to ensure that results are representative of real world conditions. ISC3 is a *steady-state* Gaussian plume dispersion model and, as with all analytical models, is subject to specific constraints and limitations. If the phenomena modeled does not align with the constraints and limitations and/or nonrepresentative assumptions are made, model output will be erroneous and misleading. The Environmental Protection Agency (EPA) realized the need for guidance in air quality and meteorological modeling and has published the "GUIDELINE FOR AIR QUALITY MODELS (REVISED)" (EPA-450/2-78-027R).

Section 9.3.1.1 states:
"The model user should acquire enough meteorological data to ensure that worst-case meteorological conditions are adequately represented in the model results. The trend toward statistically based standards suggests a need for all meteorological conditions to be adequately represented in the data set selected for model input."

28-1a

Section 9.3.1.2 states:
"Five years of representative meteorological data should be used when estimating concentrations with an air quality model. Consecutive years from the most recent, readily available 5-year period are preferred."

The meteorological data, which were input into the ISC3 model, were acquired over a one-year period back in 1991. The overall mean wind speed reported in the Draft EIR/EIS was a moderate 13.1 kts (15.1 mph). The highest average wind speeds measured were 17.6 kts (20.2 mph). The maximum wind gust was 54.5 kts (62.7 mph).

Overall, the winds in the vicinity of Soledad Mountain are higher than those measured at both the Mojave airport and at William J. Fox Airfield in Lancaster. In the last three months alone (April 97 through June 97) Mojave airport recorded 12 days with gusts exceeding the maximum gust reported in the Draft EIR/EIS (54.5 kts (62.7 mph)). The maximum gust recorded for the last three months at Mojave airport was 75 kts (86.3 mph). The average highs were also much higher

28-1a (26 kts (30 mph)) as opposed to the 17.6 kts (20.2 mph) found in the report. Wind speed data acquired at the William J. Fox Airfield in Lancaster between 1 May 1996 and 30 April 1997 indicate that wind speeds exceeded 21.7 kts (25 mph) for 234 days. The maximum gust reported was 78.2 kts (90 mph). It is obvious that worst-case meteorological conditions were not representative as model input.

28-1b As the southeast traveling air mass approaches Soledad Mountain it is accelerated up, around, and through the mountain's complex topography transitioning from quasi-laminar flow to highly complex, turbulent, separated flow extending well downwind from the mountain. The ISC3 is a steady state model. It assumes that there are *constant, uniform (steady-state) horizontal winds*. The vertical wind speed component is assumed to be *zero*. For the Soledad Mountain project, rural dispersion coefficients were used with no adjustments for surface roughness or averaging time. Modeled input sources for emissions are located *within* this complex turbulent region where steady-state theory breaks down and doesn't apply. Conversations with ISC3 modeling experts from the EPA and California Air Resource Board support this argument. If a line is drawn from the top of the mountain in accordance with the wind rose direction found in the Draft EIR/EIS (Volume 4, Appendix VII, exhibit 8) it would pass directly through my living room. Our home is located less than one mile from the mountain (well within turbulent boundary effects for our high wind environment) and as such, we are looking point blank, directly down the barrel of any airborne particulate or toxin, which will be generated by the proposed project. Unsteady aerodynamic effects are assumed to be second or third order. These effects are not negligible and become significant on or downstream of the mountain especially in the high wind environment of the local area.

The ISC3 dispersion model is viable given its constraints and limitations. Predicting particulate and toxin dispersion in the complex aerodynamic environment on and near downstream of the mountain is beyond its scope. It is not surprising then, that the nonrepresentative wind speeds used as input in the model coupled with its inherent limitations resulted in the output of artificially low dispersions.

28-1c There is no certainty that the proposed mitigation for particulate dispersion will be effective in the high, turbulent wind environment associated with the mountain and "occasional upset conditions, such as storms, power outages, reagent spills and equipment breakdown may occur" (Draft EIR/EIS, Volume 1, Pg. 42). Mishaps are an assumed risk by the project, but due to the location of my home they would be catastrophic. Over the planned fifteen-year life of the project it is unreasonable to believe that mining mishaps will not occur, historically they can and (some very recently) have. Although mishap response plans are to be in place, it would not be wise to entrust the health of my family to them.

(2) Water supply and quality.

28-2 The required water production rate for the project is expected to be on the order of 1000 gpm (as per Volume 4, Appendix V, Sub-Appendix A, "Hydrology Study Summary" Section 4.2). This results in a significant load and associated drawdown to the existing supply aquifer(s). Analytical results from the "Groundwater Supply Evaluation" provided by WZI Inc. indicate that there will be a drawdown as much as 30 feet two miles from the source wells. The project will allow a 200% error in the analysis before corrective action is implemented. This reflects a lack of confidence in their analysis. This lack of confidence is shared by many of the residents in the area and for good reason. The geohydrodynamics of the area is defined only on a gross macro level. This drawdown will affect many domestic wells. The "Summary of Existing Water Well Data"

28-2 found in Volume 4, Appendix V, Sub-Appendix A, is far from complete. There have been several wells drilled in the area in the last few years. My well, as well as those of my neighbors, is not listed. The report prepared by WWL Inc. (published in January 1990) suggests that no published information regarding the number of wells, well location, depth, and yield exists. There was, however, no indication that an effort had been made to contact the Kern Co. Environmental Health Services Dept. that has such information. The lack of data provided in the report as well as the fact that it is over seven years old indicates that the information is not representative of the current number of dwellings affected by the project.

The proposed project has the potential to discharge hazardous waste to the groundwater through the use of a sodium cyanide solution. Project design features and regulatory requirements are supposed to mitigate the hazard however, for the same reasons mentioned above, it wouldn't be wise to entrust the health of my family to them.

(3) Loss of property value.

28-3 The Draft EIR/EIS states that "the residential property values in the Mojave/Rosamond area have experienced a downturn in prices due to a general economic depression in the area since 1990" (Vol. 1, Section 3.11.2, Pg. 271). The project life is expected to be on the order of fifteen years. It is highly speculative that this economic depression will continue throughout the life of the project. Indeed, the Draft EIR/EIS states "The population in the Mojave area is expected to increase to 6,225 by the end of the proposed project in 2015, assuming an annual growth rate of 2.2 percent based on historical growth." (Vol. 1, Section 3.11.4, Pg. 271). The proposed project will certainly not enhance my property value and conversations with local real-estate agents have indicated that it will be seriously degraded. Whatever spin the Project wishes to put on it, the property values, at least in the immediate area, will take a nosedive.

Sincerely,

Stephen A. Mathis
9201 Shirley St.
Mojave, CA 93501

Comment Letter 28 from:

Stephen A. Mathis
Resident of Mojave
July 29, 1997

Response to Comment 28-1a

US EPA air quality modeling guidelines state that: "(i)f the source is large...the use of 5 years of NWS meterological data or at least 1 year of site-specific data is required" (emphasis added). The guidelines also state: "(i)if one year or more, up to five years, of site-specific data is available, these data are preferred for use in air quality analyses" (US EPA, *Guideline on Air Quality Models* [Revised], EPA-450/2-78-027R, Section 9.3.1.2). "Use of site-specific meteorological data is preferred for air quality modeling analyses if one or more years of quality-assured data are available." (US EPA, *New Source Review Workshop Manual*, Draft, October 1990, page C.39).

The use of site-specific meteorological data was required and approved by the Kern County Air Pollution Control District, in accordance with US EPA guidance.

Golden Queen contracted for the operation of a meteorological data gathering station on its property starting in 1989, with operations continuing for approximately two years. This data was collected in accordance with US EPA guidelines and verified for completeness. Based on analysis using the peak receptor locations and the proposed sources, the 1991 meteorological data provided the highest estimated excess risk at the peak receptor location and was utilized in the evaluation (Draft EIR/EIS, Appendix VII, page 10).

Please refer to Comment 35-9c by the US EPA, Region IX office.

Response to Comment 28-1b

The modeling protocol, including the selection of the ISC3 model and the defaults used therein, was approved by the Kern County Air Pollution Control District (Draft EIR/EIS, Appendix A to Appendix VII) and followed US EPA protocol (please refer to Comment 35-9b by the US EPA, Region IX).

Response to Comment 28-1c

As required by the Kern County Air Pollution Control District, permitted sources of air pollution will be equipped with Best Available Control Technology (BACT). Sources will be controlled to ensure compliance with California Health and Safety Code Section 41700 (i.e., nuisance) and Section 41701 (i.e., visible emissions). Monitoring stations for PM_{10} will be established upwind and downwind from the processing facilities (Draft EIR/EIS, page 218). The results of the monitoring will be compared to the modeling. If excess PM_{10} emissions occur, action to lower the emissions will take place through modification of the operation.

Site operations will be conducted in compliance with Federal Mine Safety and Health Administration regulations. Transportation of materials and equipment to the site will be regulated under Federal, state and local laws, regulations and ordinances. Storage, use and disposal of hazardous materials will be in accordance with all Federal, state and local regulations, codes and rules. Storage and use of explosives will comply with Federal regulations. A Hazardous Materials Business Plan and inventory will be submitted to the Kern County Environmental Health Services Department. Onsite personnel will be trained in emergency response procedures. A Process Safety Management (PSM) and Risk Management Plan (RMP) will be prepared, if required (Draft EIR/EIS, page 276).

In the event of any release of chemicals, the spill would be cleaned up immediately according to the Spill Prevention, Control and Countermeasure Plan and reported to the appropriate agencies as stated in Section 2.2.2 on page 42 of the Draft EIR/EIS.

These provisions are designed to address: (1) PM_{10} mitigation and (2) protection of human health and the environment in the event of an upset condition.

Response to Comment 28-2

The withdrawal rate anticipated for the 10- to 15-year project is approximately 750 gallons per minute as stated in Section 3.4.2.2 on page 196 of the Draft EIR/EIS.

As stated in Section 3.4.2.1 on page 188 of the Draft EIR/EIS, known and documented water wells are shown on the well location map (Exhibit 3.4-4). The locations were derived from the Hydrology Study Summary in Appendix V and from databases acquired from the Department of Water Resources and Kern County Environmental Health Services Department. Information about private water wells in California is considered confidential and the information in the databases includes

location only. The referenced "Summary of Existing Water Well Data" lists wells for which more detailed information was available to the public. Detailed information about wells within one mile of the waste management units was gathered with the permission of the well owners for the Report of Waste Discharge, which has been submitted to the Lahontan Regional Water Quality Control Board. The Report of Waste Discharge is considered public information. Please see the response to Comment 19-1.

The comment about hazardous waste is noted and included in the record.

Response to Comment 28-3

The potential loss of property values is addressed in the Addendum to the Socioeconomic Study contained in Appendix XI of the EIR/EIS. Page 3 of the addendum reflects the results of an analysis by Sedway Kotin Mouchly Group which indicates that residences within one-half mile of the project could be impacted but residences along the Backus Road corridor will not experience any measurable value loss relative to the proposed Soledad Mountain Project, given the distance from the mining operations and the topography separating the two.

July 29, 1997

To: Ahmed Mohsen, EIS Coordinator
Subject: Soledad Mountain Project

I feel more information and discussion is needed before starting up this very large project.

29-1 (1) Removing the Overburden Soil is a very expensive and poor mining method. I believe using "digging machines" like are being used to dig subways would work much better. There would be far less dirt to move and the mountain would not be distrayed.

29-2 (2) The Cyanide Ponds Could be covered by a "dome" like the ones in use at the Monolith Cement Plant in Tehachapi. This would stop much of the wind and odor problems and help with keeping animals and birds away.

29-3 (3) A Committee needs to be set-up to follow and make reports, when need be, to the surrounding Cities and the General Public. Subjects such as the water level in the acquifer during dry years needs to be tracked. This is very critical to the Antelope Valley. A U.S. Geological Report pointed out how much damage due to Subsidence can happen around the Lancaster area from over-pumping. An operation with 750 Gal./min/24 hours x 10-20 years can deplete the under-ground water if we don't get continous recharge (wet years).

29-4 (4) The large number of workers depending on Edwards Air Force Base for a living require that Air quality be monitored and reported. The Kern County and the New Antelope Valley Air Quality boards will need access to the data on blowing dust. Flight testing needs clean air for best results.

(Cont. Next Page)

29-5 (5) The BLM land on Soledad Mountain needs to be set-up and maintained during and after the mining is compelled. As the area grows the part of the Mountain left will become an import place for hiking, and other activities. The people of the area should not be left with only a broken up mountains when this is over!

29-6 I have a few "Closing remarks" on this project. Soledad Mountain stands out as a very majestic view from any direction. It is visable from 30 to 40 miles away on a clear day. The cutting off of the top of the Mountain will be viewed as an ugly site for all generations to come. Not just our generation. The early Pioneers and present day travelers all view the Mountain with favor. I have noted the other two mines in the area, Cactus mine (Tehachapi-willow Springs Rd) and the Standard hill mine (near Mojave), did not make the area rich. They left only broken mountains which can't every be used. The money from the gold and silver goes out of the country most of the time. The U.S. Treasurey will not receive any royalties to pay off the National debt from this operation (I could be wrong on this?). Every effort should be made to make this mining operation a show-case on how mining should be done in the new century of 2000+. Try some new techniques that will not distroy the Mountain. This could be the "bell-weather" example for all mining to come.

Yours Truly

Dean Webb
1000 E. Capperton
Lancaster, Calif. 93535

Comment Letter 29 from:

Dean Webb
Resident of Lancaster
July 29, 1997

Response to Comment 29-1

The low grade disseminated ore bodies on Soledad Mountain are not suitable for underground mining as discussed in Section 2.3.3.1.3 on page 104 of the Draft EIR/EIS.

Response to Comment 29-2

There will be no open cyanide ponds. As stated in Section 2.2.2.2.3 on page 61 in the Draft EIR/EIS, the sodium cyanide solution will be contained within the heap leach pads and tanks.

Response to Comment 29-3

The lead agencies would be responsive to information related to the Golden Queen project gathered by a local committee.

Response to Comment 29-4

Please refer to Section 1.2.4.1.2 on page 15 and Section 3.5.5 on page 218 of the Draft EIR/EIS for discussions of the role of the Kern County Air Pollution Control District which is the agency with jurisdiction over air quality data related to this project.

Response to Comment 29-5

The goals of the proposed reclamation plan are consistent with the land use goals of future mining, wildlife habitat and open space as discussed in Section 2.2.5.1 on page 86 of the Draft EIR/EIS. Reclamation will take place as described in the Surface Mining Reclamation Plan in Appendix III of the Draft EIR/EIS.

Response to Comment 29-6

The comment is noted and included in the record.

BRANTON, WILSON & MUNS
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
701 B STREET, SUITE 1255
SAN DIEGO, CALIFORNIA 92101-8187

LAWRENCE S. BRANTON *
J. CLANCY WILSON *
EDWARD C. MUNS
RICHARD H. WAGNER *
MICHAEL N. TAYLOR
M. RICHARDSON LYNN, JR.
RANDALL B. KLOTZ
LAURELANN K. BUNDENS **
TIMOTHY G. RILEY **
JAMES H. SIEGEL **
SHIRLEY L. KOVAR **
L. MAXWELL ANASTOPULOS *
MICHAEL FOLZ WEXLER *
STEPHEN L. WALDMAN
MICHELE L. MUNS

CERTIFIED SPECIALIST
* TAXATION LAW
** ESTATE PLANNING, TRUST & PROBATE LAW
THE STATE BAR OF CALIFORNIA
BOARD OF LEGAL SPECIALIZATION

TELEPHONE
(619) 236-1891

FACSIMILES
(619) 236-8175
(619) 234-9870

VIA CERTIFIED MAIL
AND RETURN RECEIPT REQUESTED
NOS. Z305 823295 and Z305823292

FILE NO.

6025
6025.01

August 1, 1997

COUNTY OF KERN
Planning Department
2700 "M" Street, Suite 100
Bakersfield, CA 93301
Attention: Glenn A. Barnhill

BUREAU OF LAND MANAGEMENT
Ridgecrest Resource Area
300 South Richmond Road
Ridgecrest, CA 93555
Attention: Ahmed Mohsen

Re : *RESPONSE LETTER TO DRAFT ENVIRONMENTAL IMPACT REPORT/ ENVIRONMENT IMPACT STATEMENT DATED MAY 19, 1997 FOR THE SOLEDAD MOUNTAIN GOLD MINING PROJECT*

Dear Mr. Barnhill and Mr. Mohsen:

Our firm represents PACIFIC STATES LAND COMPANY, a California corporation (the "Company"). The Company is an interested landowner, which will be directly and adversely affected by the Soledad Mountain Gold Mining Project (the "Project"). The Project is a surface open pit, leach pad gold mine proposed by Golden Queen Mining Company, Inc., located on public and private lands. The Company has serious concerns over the Project, most notably:

6025.01b/rrp1

- SOCIOECONOMIC IMPACTS CAUSING REDUCTION IN LAND VALUES
- WATER QUALITY AND AVAILABILITY
- TOXIC EMISSIONS IN THE WATER AND AIR (INCLUDING DEADLY CYANIDE AS A BY-PRODUCT OF THE LEACHING PROCESS)
- DUST STORMS
- INCREASED TRUCK TRAFFIC
- TRANSPORTATION OF TOXIC MATERIALS (SODIUM CYANIDE FOR LEACHING PROCESS), WITH POTENTIAL FOR ACCIDENTS AND SPILLS
- ADVERSE AFFECTS ON AESTHETICS AND VISUAL RESOURCES (SCENIC 1,500 FOOT SOLEDAD MOUNTAIN WILL BE LEVELED)
- NOISE, BLASTING AND VIBRATION

The Company owns a portion of an approximate 1,800-parcel residential subdivision, known as the Gold Town Subdivision in the County of Kern, California (the "Subdivision"). The Subdivision is located adjacent to the Project, Southeasterly of the intersection of Gold Town Road and Silver Queen Road. Under the current zoning, approximately 715 homes can be built in the Subdivision. The Company acquired the Subdivision in the late 1970's. Most of the parcels have been sold by the Company under land sale contracts to the true owners/vendees. Approximately 50 of these owners/vendees are still paying on their contracts. Sometimes an owner/vendee defaults on the contract. In that event, the Company repossesses the property and holds it for eventual resale.

The draft Environmental Impact Report/Environmental Impact Statement, dated May 1997 (the "Draft EIR/EIS") was distributed for a 45-day public review and comment period which ended on

July 14, 1997. The comment period has been extended to August 4, 1997. This is our response letter to the joint lead agencies, that is, the Kern County Planning Department, Bakersfield, California, and the U.S. Department of Interior Bureau of Land Management, Ridgecrest, California.

The Company has the following specific concerns regarding the Project and the Draft EIR/EIS:

30-1 1. The Company has serious concerns over omissions from the Draft EIR/EIS. The Draft EIR/EIS characterizes the property surrounding the Project as sparsely populated, rural, desert land. Thus it is no surprise that the Draft EIR/EIS concludes the socioeconomic impacts will be "Less Than Significant." While this may be true at this time, it only gives one-half of the true picture. The Draft EIR/EIS neglects to report that much of the land surrounding the Project is zoned for residential purposes. In fact, within a ½ mile radius of the Project, there is the potential (based on current zoning) to build in excess of 1,000 homes. The Draft EIR/EIS also fails to discuss reasonable mitigating factors that would help to offset the socioeconomic impacts on those residential properties. One obvious example of a reasonable mitgation is to provide pipelines, water tanks and related infrastructure to supply potable water to the residential subdivisions surrounding the Project site, including the Company's Subdvision..

30-2 2. The proposed Project will significantly impact the value of the Company's Subdivision. Most notably, the Project will affect water quality and availability, air quality, visual resources, transportation, noise, vibration damage (from blasting) to structures and water wells, storm water run off and erosion control, and public health and safety. As part of the leaching process, tanker trucks will carry sodium cyanide to the site. A major concern is accidents and spills. Also, cyanide and other by-products could migrate into the local water sources and affect human health and safety.

30-3 3. The California Department of Real Estate (the "DRE") might need to be added to the "State Agencies" in the Distribution List. The sale of Subdivision parcels is governed by the Subdivision Map Act and is administered by the DRE. The DRE must be contacted by the Company regarding any possible amendments to the Public Report for the Subdivision that might be required if the Project is allowed to proceed. The next annual update to the Public Report must be filed with the DRE by February, 1998.

30-4 4. Pages S-8 and S-9 of the Draft EIR/EIS describe the Project location and setting. It is painfully obvious that the Draft EIR/EIS skews the description towards a remote, sparsely populated site that is not likely to affect residential areas. For example, the Draft EIR/EIS states

30-4 that Bakersfield is approximately 49 miles away, Lancaster approximately 22 miles away, Los Angeles approximately 62 miles away, and the Camelot Housing and Golf Course Development is located 3 miles away and consists of 109 houses on approximately 15 acres. The Draft EIR/EIS also references a few other scattered residences near the site. The Company's Subdivision is not even mentioned in this part of the Draft EIR/EIS. It is significant that the Company's Subdivision has approximately 715 buildable residential parcels on 160 acres of land immediately adjacent to the Project. We believe this should be included in the ("Final EIR/EIS").

30-5 5. Pages S-12 and S-13 of the Draft EIR/EIS state that a total of 16 alternatives have been considered for the proposed Project. However, these have been reduced to only 6 remaining alternatives. These are: 1) Proposed Action, 2) No Action, 3) Increased Mining and Processing Rate, 4) Decreased Mining and Processing Rate, 5) Reduced Project Size, and 6) Partial Backfilling. We are not sure which is the preferred alternative for the County. We would be interested in meeting with the County Staff to discuss this. The BLM's preferred alternative is the Proposed Action. We are not sure how the other alternatives were rejected. It is not clear whether the public was given an opportunity to comment on all 16 alternatives. We would like to obtain copies of any documents pertaining to this issue that were not included in the Draft EIR/EIS. Please describe for us all documents that bear upon the proposal and rejection of the 10 alternatives that were not considered in the Draft EIR/EIS.

30-6 6. On Page S-14, the Draft EIR/EIS discusses two hydrology issues: 1) water quality, and 2) water supply. Both environmental impacts were concluded to be "Less Than Significant". We believe otherwise. Because these are crucial issues (homes cannot be built without a reliable water source), the Company is considering consider hiring its own hydrology expert to review the Draft EIR/EIS and advise the Company regarding water quality and water supply issues. The results of these studies can then be discussed with the lead agencies. We would like to know whether these studies will be considered by the lead agencies.

30-7 7. The air quality impacts are also said to be "Less Than Significant". The Company might want to hire its own air quality expert to advise the Company regarding this issue as well.

30-8 8. The biology reports state that there are no endangered, threatened, rare or sensitive plant or animal species at the site. And yet, we question whether the Draft EIR/EIS sufficiently addresses this topic.

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30-9

9. Four historical sites have been identified as having scientific and historical value. Salvage excavation, architectural recording, and data recovery will be preformed at each of these sites prior to construction. Page 23 of the Draft EIR/EIS states that the agencies are withholding from disclosure to the public certain information relating to the location or character of eligible properties, because disclosure of such information may create risk or harm to such resources. The specific resources are not identified. However, the lead agencies are seeking comments from local Native Americans, archeologists, historians and other groups or individuals concerned with cultural resources. We believe this is a key area of the Draft EIR/EIS which warrants significant review and comments by the public. The Draft EIR/EIS concludes that disturbance of these sites "would constitute a significant environmental impact" (see Page S-15). We requested from Mr. Glenn Barnhill a copy of Volume 5 of the Draft EIR/EIS which contains details regarding the cultural resources (see attached copy of letter dated June 25, 1997). In response to our letter, we were referred to Ms. Adele Baldwin at the Archeological Information Center (phone no. 805-664-2289) by Mr. Scott Denny. Ms. Baldwin told us that Volume 5 could not be made available to us without special authorization from the County. We believe we cannot make complete, well-informed comments regarding the Draft EIR/EIS without reviewing Volume 5. We again make a request to be sent a copy of Volume 5.

30-10

10. The noise generated by the Project will adversely affect the Subdivision. Current sources of noise include occasional sonic booms, vehicle traffic from a nearby major road, and trains on nearby railroad tracks. The Project will generate considerable additional noise from blasting, use of heavy equipment and additional truck traffic. This will raise the ambient decibel level in the area. The Subdivision abuts the Project site for a substantial distance on its western boundary (approximately 1,500 feet). The southern boundary of the Subdivision (which is approximately 3/4 mile) is also very near to the Project site (within a few hundred feet). The Company requests that a series of noise monitoring stations be installed along the western and southern boundaries of the Subdivision to test the current ambient noise levels for comparison purposes.

30-11

11. On Page S-31, in the Executive Summary Table, the Draft EIR/EIS discusses the Vegetative Resources. The Draft EIR/EIS concludes that the Project activities will result in the disturbance of vegetation. However, the plan requires a re-vegetation of disturbed areas with plants species native to the site area. We are not certain the Draft EIR/EIS adequately deals with the potential for threatened or endangered plant species. The desert habitat at the Project site could contain cactus, wild flower and lichen species which are threatened or endangered. Also, we understand that mature Jousha trees will be disturbed at the site.

6025.01b/rrpl

30-12

12. Pages S-31 and S-32 discuss the Wildlife Resources. The Draft EIR/EIS concludes the Project will disturb wildlife habitats. A routine distribution of cyanide solution on the top of the heap leach pads will occur via a drip irrigation system. This could affect birds and small animals. Some of the existing mine shafts are used by local bat populations. The area is also a likely habitat for the desert tortoise. The Draft EIR/EIS concludes that the wildlife resources impact will be "Less Than Significant". However, we are not convinced this will be the case.

30-13

13. Page S-33 states that the Project could disturb or destroy potentially significant cultural and historical sites. The Draft EIR/EIS concludes the impact is "Significant". Likely finds at the sites include archeological artifacts, human remains, paleontological resources, Native American artifacts, artifacts of historical mining activities, and others. There are 4 significant sites which require salvage excavation and archeological recording. There are 7 additional sites which will have an archaeological monitor review the area during grading activity. We believe that, because there are so many historically significant sites, perhaps the whole area should be preserved as a historical site. However, the conclusion of the Draft EIR/EIS is that this Project will actually preserve and protect significant historical artifacts that would otherwise be lost or disturbed (presumably due to human intervention or deterioration due to natural causes). Any items found on the site will eventually be donated to a museum. As previously stated, we cannot independently and adequately assess the cultural and historical significance of the Project site without reviewing a copy of Volume 5.

30-14

14. On Page S-34 it states that blasting will occur during daylight hours, one time per day, and will be engineered to minimize the amount of explosives used. The Draft EIR/EIS also states that noise levels at nearby residences will remain within the recommendations of the noise element of the Kern County General Plan. However, the Draft EIR/EIS does not discuss how close the blasting will occur to the Subdivision. We would like more information regarding the blasting.

30-15

15. Pages 252 through 258 of the Draft EIR/EIS discuss the noise issues. Our main concern is that the Draft EIR/EIS continually describes the Project area as being "located in a sparsely populated rural area". The Draft EIR/EIS also states that the nearest occupied residences are located approximately 2,900 feet to the northwest and 4,250 feet to the southwest of the proposed blasting, loading and crushing areas, and 1,100 feet to the north and 2,500 feet to the southwest of the heap leach pads and overburden piles. The only reference to the Company's Subdivision states that there is "an unoccupied residence in the Gold Town Subdivision... located approximately 1000 feet east of the eastern overburden pile." Here the Draft EIR/EIS falls short

30-15

of the mark, because there are approximately 715 buildable residential lots immediately adjacent to the Project in the Company's Subdivision. The Draft EIR/EIS fails to report that the Subdivision boundaries are less than a few hundred feet from the eastern overburden pile and the Heap Leach Pad No. 1. We are greatly concerned because, by our review of the map in Exhibit 3.9-1 (Page 256), it appears that ½ of the Subdivision is in the 60 to 65 decibel contour and the other ½ is in the 55 decibel contour. We do not deem these to be within acceptable levels. Our guess is that the current ambient noise levels are less than 20 to 25 decibels. Of course, this will need to be measured. We believe the noise and blasting are significant impacts which will need to be mitigated. In fact, the Draft EIR/EIS itself, on Page 255, draws a conflicting and confused conclusion regarding the noise impacts. The first sentence on Page 255 states that: "The noise from the mining operations has the potential to cause significant impact to the level of noise in the area of the project" (emphasis added). Then, in the last sentence on Page 255, without sufficient explanation or factual support, the Draft EIR/EIS makes a "quantum leap" by concluding that "the impact of the project on noise would be Less Than Significant." We believe the noise issue needs to be seriously revisited in the Final EIR/EIS.

30-16

16. There are striking irregularities concerning the failure to notify all interested landowners of the important events and decisions in the alternative plan selection process. The Company holds title to many of the Subdivision parcels as the "Vendor" under land sale contracts. There are still approximately 50 owners/vendees who do not yet hold title because they are still paying on their contracts. Also, there are about 420 owners in the Subdivision who now hold title to their lots. It is not certain whether these interested landowners have been given proper notice or an opportunity to be heard. These owners should be added to the Distribution List.

30-17

17. We understand that the Company (attention: B. A. Karlovich) is already on the Distribution List. We would also like our law firm to be added to the Distribution List and advised of all future actions or decisions which bear directly or indirectly on the proposed Project. The address is:

RANDALL B. KLOTZ, ESQ.
BRANTON, WILSON & MUNS, APC
701 "B" Street, Suite 1255
San Diego, California 92101

We expect the Company and our firm to be notified of all actions affecting the Company's Subdivision and/or the alternative Project plans, including any and all studies, reports, meetings

6025.01b/rpl

30-17 and correspondence. We would also like the Company and our law firm to be placed on the Project development team's (or equivalent body's) distribution list. Please keep us apprised of all meetings.

30-18 18. If the Project is approved, the level of damages will be extraordinarily high. The view of scenic Soledad Mountain and the quiet and serene desert setting will be lost. The noise levels will be greatly increased. The price of the remaining unsold parcels in the Subdivision would have to be greatly reduced, thereby reducing income to the Company. The current proposed Project will cause a tremendous diminution in value to the parcels that have already been sold. The Company and other Subdivision owners/vendees will be substantially damaged by the contemplated inverse condemnation. Obviously, the Company and other owners/vendees might decide to pursue all remedies afforded by law to protect against such diminution in value.

30-19 19. The Draft EIR/EIS has misled the public, because it has failed to adequately state the severity of the negative impacts on the Company's Subdivision and the other nearby residential subdivisions. The closely-packed residential subdivisions in the Mount Soledad area have the potential to become a thriving desert community. The proposed Project will destroy that possibility...at least for the next 15 to 20 years.

My client wants the opportunity to meet with the BLM and Kern County Staff and the Project development team members to discuss the foregoing issues and the possible mitigating factors to offset the socioeconomic impacts on the Subdivision. We believe one mitigating factor that must be considered is the need to provide potable water to the Company's Subdivision. We understand that Golden Queen Mining Company wants to tap into the water tanks known as the AVAC water supply, which is a series of water tanks located 1/4 mile east of the Subdivision. The reason for this would be to supply potable water to the Project. The Company would also like to have access to that water as a mitigating factor. We understand that the Mojave Public Utility District

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30-19 has rights to the AVAC water supply. The Company's Subdivision is in the Mojave PUD. The Mojave PUD should be a participant in these discussions.

Very truly yours,

RANDALL B. KLOTZ

RBK:rp

cc: Mr. Brett Karlovich
Lawrence S. Branton, Esq.

6025.01b/rpl

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FILE NO.

June 25, 1997

Via Facsimile
(805) 862-8601 and
First Class Mail

Mr. Glenn A. Barnhill
Mr. Scott Denney
Kern County Planning Department
2700 "M" Street, Suite 100
Bakersfield, California 93301

RE: Pacific States Land Company/
Soledad Mountain Project/
Draft Environmental Impact Report/Environmental Impact Statement

Dear Messrs. Barnhill and Denney:

We are sending you this letter on behalf of Pacific Estates Land Company with respect to the above referenced matter. Please send us Volume 5 of the draft EIR/EIS regarding the archeological review. We are preparing a response letter to be filed with your office during the public comment period which will be filed on or before July 14, 1997. We are missing Volume 5 out of the 6 volume draft EIR/EIS. We need Volume 5 in order to complete our review and response letter.

Thank you for your assistance.

Very truly yours,
Randall B. Klotz
by maj
Randall B. Klotz

CC: Mr. Brett Karlovich (via fax)
(619) 542-1841
RBK:maj

6025.001

Comment Letter 30 from:

Randall B. Klotz
Branton, Wilson & Muns, APC
August 1, 1997

Response to Comment 30-1

The zoning of the surrounding area together with adjacent residential tracts (including Goldtown) is shown on Exhibit 3.10-1 and discussed in Section 3.10.1 on pages 259 to 263 of the Draft EIR/EIS. Both the historical population growth and projected population growth in the area are shown on Tables 3.0-2 on page 130 and 3.0-3 on page 131 of the Draft EIR/EIS. The request for a potable water supply to the surrounding subdivisions is noted for the record.

Response to Comment 30-2

In order to determine a significant effect or impact, substantial evidence must exist in the record. According to CEQA Guidelines Section 1534, "'Substantial evidence,' as used in these Guidelines, means enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached. Whether a fair argument can be made is to be determined by examining the entire record. Mere uncorroborated opinion or rumor does not constitute substantial evidence."

It is the Lead Agency's opinion that sufficient evidence has not been provided to substantiate the claim that implementation of the project would devalue Goldtown properties. Section 3.10.1 of the EIR/EIS states that the Goldtown map was recorded in 1923 and that Goldtown does not have paved streets, a potable water supply or sewer system and that the subdivision is basically undeveloped. Evidence has not been presented to indicate that the subdivision would be developed during the life of the Soledad Mountain Project or to support the claim that the property would be devalued.

Water quality/availability and storm water runoff is discussed in Section 3.4, air quality in Section 3.5, visual resources in Section 3.8, transportation in Section 3.13, noise in Section 3.9 and health hazards and risk of upset in Section 3.12.

Response to Comment 30-3

The comment is noted.

Response to Comment 30-4

Goldtown and other subdivisions are discussed in Section 3.10.1 on page 261 of the Draft EIR/EIS and shown on Exhibit 3.10.1.

Response to Comment 30-5

The alternatives, including the alternatives considered and eliminated, are discussed in Section 2.3 of the Draft EIR/EIS. The public was given the opportunity to comment on the 16 alternatives during the public comment period. The county-preferred alternative is chosen by the Board of Supervisors at a general meeting after the end of the comment period for the Draft EIR/EIS.

Response to Comment 30-6

Comments regarding water quality and water supply issues or other aspects of the proposed project are considered if submitted during the comment period or as evidence during the hearing process.

Response to Comment 30-7

Comments regarding air quality issues or other aspects of the proposed project are considered if submitted during the comment period or as evidence during the hearing process.

Response to Comment 30-8

The comment about the sufficiency of the biological resources discussion is noted. The document was circulated to the California Department of Fish and Game and the United States Fish and Wildlife Service. Informal consultations have taken place with both agencies.

Response to Comment 30-9

As stated in Section 1.2.4.4.1 on page 23 of the Draft EIR/EIS, the National Historic Preservation Act, Section 304, directs Federal agencies to withhold from disclosure to the public information relating to the location or character of eligible properties whenever disclosure may create risk or harm to such resources. The information contained in the studies is in Section 3.7 beginning on page 234 of the Draft EIR/EIS.

Response to Comment 30-10

Please refer to the response to Comment 16-1.

The comment requesting noise monitoring stations is noted and included in the record.

Response to Comment 30-11

Based on biological surveys presented in Attachment B of Appendix III of the Draft EIR/EIS, there were no threatened, endangered or rare species of plants identified on the project site as stated in Section 3.6.1.2 on page 223 of the Draft EIR/EIS. The replanting of disturbed, mature Joshua trees is an applicant-proposed mitigation measure listed in Section 3.6.1.6 on page 225 of the Draft EIR/EIS.

Response to Comment 30-12

A design feature of the project is that routine distribution of cyanide solution on the top of the heap leach pad will occur via a drip irrigation system and the heap leach pads will be contoured to prevent surface ponding which could attract birds and small animals as stated in Section 3.6.2.6 on page 232 of the Draft EIR/EIS.

Only a small number of bats were discovered or observed in the surveyed mine workings during surveys. The survey reports are included in Attachment B of Appendix III.

No recent active signs of live desert tortoises were observed on the project site. Desert tortoise surveys are included in Attachment B of Appendix III.

Response to Comment 30-13

Please see the response to Comment 30-9.

Response to Comment 30-14

The majority of the blasting will be in the area shown on Exhibit 2.2-2 as "Open Pit Mine." The easternmost boundary of the open pit will be about 1,000 feet from the Goldtown area.

Response to Comment 30-15

As stated in Section 3.9.1 on page 252 of the Draft EIR/EIS, the Noise Element of the Kern County General Plan requires operations be designed or arranged so that they will not subject residential or other noise-sensitive land to exterior noise levels in excess of 65 dB_{dn}. Please refer to response to Comment 16-1.

Response to Comment 30-16

Kern County provided public notice as required in Section 21092 (b)(3) of CEQA and BLM provided notice to the Federal Register and local newspapers.

Response to Comment 30-17

The comment is noted.

Response to Comment 30-18

The comment is noted.

Response to Comment 30-19

The comment is noted. The public is welcome to meet with either Lead Agency regarding the project.

DANIEL T. COOPER
Professional Planner

P.O. Box 1355 * Yucca Valley, CA 92286 * (760) 365-9132

August 3, 1997

United States Department of the Interior
Bureau of Land Management, Ridgecrest Resource Area
300 South Richmond Road
Ridgecrest, CA 93555

FAX NO: (760) 384-5499

Attn: Ahmed Mohsen, EIS Project Manager; Henri Bisson, District Manager, and Managers

Re: **PUBLIC COMMENT**
Draft Environmental Impact Statement/Environmental Impact Report for the Soledad Mountain Mine Project
State Clearinghouse No. 96061052
Dept. of the Interior No. DES 97-15

Certified Mail No. P 134 449 706

Dear Mr. Ahmed, Mr. Bisson, and Managers:

These are mine and my clients's objections opposing the project, as captioned above, (the "Project").

31-1 Of course my first objection is that the Project documents were not delivered until July 22, 1997, 8 days after the public comment period closed, although I had requested them from the onset of this Project. Clearly this is an ill fated attempt to avoid meaningful public comment, and to avoid circulating those comments to decision makers and to other members of the public.

31-2 This Project would entail converting a good amount of BLM managed public lands, allegedly (491 acres), to dedicated private purposes, and from their existing public purposes and public uses. This Project would also entail converting a much larger amount of BLM managed and State managed private lands, allegedly (1,219 acres), to dedicated private purposes, also from existing dedicated public purposes and public uses.

All of it, the Project area of 1,690 acres now being proposed for dedicated private use, would exclude all existing and previously dedicated public uses. Contrary to Golden Queen's erroneous assessment of the current land uses, (EIS/EIR Vol. 1, p. 259), the "primary land use" of the Project area, public and private lands, is recreation. This area has various recreation facilities over them; i.e. outdoor recreational motor vehicle trials, access trails, and camping areas. Camping areas include the 300 feet on each of both sides of each trail. There are

31-2 approximately 1.2 square miles, (768 acres), of recreational facilities being proposed for conversion. None of these existing recreation facilities were inventoried or revealed, in the current documentation, even though they exist on all the applicable maps of the area, including those in the Project documents.

31-3 Though Golden Queen Co. Inc. recognizes the requirement to relate their project to current regional planning efforts, i.e. the West Mojave Coordinated Management Plan, (WMCMP), they failed, miserably, to comply. (EIS/EIR Vol. 1, p. 28) They refer to an outdated and illegal document; the Western Mojave Land Tenure Adjustment Project. (EIS/EIR Vol. 1, p. 28) The most current document, the May 1995 Adm. Draft EIS for the WMCMP, has also been abandoned for its failure to abide by lawful procedures. Specifically, these documents failed to provide the required inventory and discussion of impacts to the existing recreation system and all its previously dedicated facilities. The new planning efforts of the planning teams for the WMCMP include detailed inventories of the recreation system. Golden Queen Co. Inc. has failed to refer or relate their planning efforts to these inventories.

31-4 The mere fact that BLM may have ear marked BLM managed lands for potential exchange does not an exchange make. (EIS/EIR Vol. 1, p. 28) Golden Queen Co. Inc. has not proposed an exchange with the language; "cooperate and work with the BLM toward the accomplishment of the Land Tenure Adjustment Project's objectives..." (EIS/EIR Vol. 1, p. 38)

Clearly, BLM has not entered into an agreement to initiate an exchange, as specified under (43 U.S.C. §1716(d)(1).). Thus, BLM, and Golden Queen Co. Inc., have not, nor could have, prepared the appraisal(s) as specified under (43 U.S.C. §1716(d)(1).). If such appraisals do, in fact, exist, please provide them for they were not provided with the Project documents. BLM also could not have prepared the required Environmental Impact Statement to support the exchange proposal. ("NEPA Law and Litigation", Mandelker, §8.03[3], p. 8-26) This EIS/EIR, therefore, does not, nor could, qualify for that purpose.

The above captioned Project could qualify as the Project proponent's "proposal for exchange" but it cannot be a "proposal to initiate an exchange agreement". If BLM has not processed or performed any of the requirements necessary to process an exchange proposal, then how can they process Golden Queen's proposal for exchange? BLM cannot!

31-5 Golden Queen hopes to avoid their obligation to mitigate their proposed impacts to the recreation system by mentioning the illegal "Specific Plan for Soledad Mountain - Elephant Butte and Vicinity - South of Mojave,", (adopted June 18, 1973 by

31-5 Resolution 73-278), as if it allows them to convert existing recreation facilities. (EIS/EIR Vol. 1, p. 259) This Specific Plan did not mention or discuss the conversion of recreational facilities, at that time. Hence, it is also faulty, as a misleading document, and open for legal challenge, at any time. Even so, it does not supersede this Project. It can only be incorporated by reference, which again opens it up for legal challenge.

31-6 It is obvious that Golden Queen Co. Inc. is not expanding for an immediate need to increase production. Gold has gone down and is expected to continue to experience a loss in value. They are expanding to lock in their mitigation obligations before regional planning efforts proceed.

Other inconsistencies, beyond the failure to recognize and plan for the proposed conversion of existing recreational facilities, of this Project with current regional planning efforts include a multitude of environmental problems.

All other private projects have been put on hold, until regional planning is complete. Why is this Project proceeding, and without even a mention as to its consistency with proposed regional planning efforts; environmentally speaking? Is BLM discriminating again? They most certainly are discriminating! Is it because Golden Queen Co. Inc. intends to avoid the new proposed fee structure and other new mitigation requirements of the WMCMP? It most certainly is their intent!

31-7a Significant impacts to the environment have not been identified, and the extend of those significant impacts identified, have not been revealed. For example; though, the Golden Queen Co. Inc. intends to continue to withdraw from the area water storage units, they have not revealed much of the necessary information pertaining to these water storage units. How can I tell if they are impermissibly mining, water that is, or impermissibly polluting these water storage units without knowing, for each water storage unit and subunit: (1) storage capacity; (2) prior withdrawal, water unit level; (3) existing water unit level; (4) prior water quality and contents; (5) existing water quality and contents; (5) dependable yield; (6) current usage in acre feet; and (7) proposed usage in acre feet. I cannot! I can only assume that, by the attempt to conceal this information, for it is available, that they intend to violate the law and harm the environment.

Some examples are:
It is highly dubious that the current usable dependable yield, "recharge", of the storage units to be used, are "approximately 18,000 acre feet per year" as we are lead to believe. (EIS/EIR Vol. 1, p. 184) Dependable yield, "perennial yield", is not storage capacity, and Golden Queen is not permitted to mine, water that is, from storage basins. Clearly, they propose to

illegally mine, water that is. (EIS/EIR Vol. 4, Appx. V, pp. 5-6)

31-7a

It is also highly dubious that, "the groundwater table has been relatively stable over the last 16 years" when it is, admittedly, "lowering at a rate of approximately one-quarter to one-half foot per year". (EIS/EIR p. Vol. 1, p. 184; Vol. 4, appx. V, Exh. 4) Golden Queen just cannot make up its alleged mind; whether the groundwater table is lowering or is stable. It is lowering by 1/2 foot per year or more. Even so, Golden Queen's proposed use, continual illegal mining of the storage basin, would constitute an increase, in continual illegal mining of that storage basin, of approximately 65 percent of existing draw; illegal lowering.

31-7b

Existing Wells (existing draw) (Vol. 4, Appx.V, Exh. 1)
2,240 gpm

Golden Queen Wells (new and proposed draw)
(Vol. 4, Appx. V, p. 4 and p. 5
700 gpm as of October 1996 (post data on Hydrographs)
250 gpm proposed Well #1
250 gpm proposed Well #2
250 gpm proposed Well #3
1,450 gpm total new draw

The groundwater table would be lowered, as a result of the proposed Project, by a rate of approximately 7/8 of a foot to 1 foot per year.

31-7c

It is highly dubious that the groundwater study failed to mention basin storage capacity; historical and current. With this information, I could have calculated the number of years it would take to drain the subject storage basins, at proposed draw levels. Without this information, I must conclude that the proposed project, over its proposed life, will completely drain the storage basins it will impact.

It is highly dubious to use 1970 groundwater levels from a well, "Jameson Ranch well #26J1", that could be tested today. (EIS/EIR Vol. 4, appx. V, p. 2)

The same is true of the diversion of surface water flows and the potential for surface water contamination. How do I know what to comment on if I do not have either the data or the reports? I cannot. They were not included in the appendices; only referenced. BLM, the County and Golden Queen Co. Inc. expect me to research them by looking up these referenced reports, if they exist. (EIS/EIR Vol. 1, p. 9 and Table 1.2-1; Vol. 4, Appx. V, p. 3 of appx. A) This is not the law. Documents incorporated by reference do not only become open for public review, under the current project, they must be made available in local public libraries, and the lead agency must certify them. BLM nor the County has certified any of the

documents to support the Applicable Permits, or any other referenced documents.

31-7c

Without water quality data from existing wells it is not possible to ascertain whether Golden Queen is currently contaminating the storage basins. I am concerned that drainoff, or even the potential breakage and spill, from the heap leach pads will contaminate nearby surface waters, and other nearby storage basins. (EIS/EIR Vol. 1, p. 176) Without the above missing data, Golden Queen cannot either discuss potential impacts or discuss the monitoring of proposed mitigation.

Even if I could afford to look up and pay for copies of the referenced documents, which I cannot, the time to retrieve them would exceed the time provided for public review of this Project. These comments, however, are the least of the Golden Queen's problems.

31-7d

In the State of California all engineering reports must be either supervised or prepared by licensed engineers. In addition, all drafts of such reports must be stamped by these licensed engineers. Not only is this Project conspicuous by the absence of hydrogeological reports prepared by licensed hydrogeologists, it is also conspicuously absent by the absence of hydrology reports prepared by licensed hydrologists. It is also highly likely that none of the hydrology or hydrogeological reports, prepared for the Permits, were prepared by licensed engineers either. No matter, they would be invalid for BLM and the County failed to certify them. Even if they did, such certification could only be done by licensed hydrogeologists and licensed hydrologists. Even if such reports could be produced, they were not signed, supervised, or prepared by licensed engineers, as the draft Project exhibits. All such reports prepared by unlicensed an inexperienced persons, are void. It is not necessary, therefore, to critique these reports, any further, for they are void, as a matter of law.

31-8a

The Project proponent may get lucky and have none of the hazardous materials, they intend to use in open heap leach pits, leave the site. Even so, little to nothing was mentioned about the eventual clean up of those sites. Sure they are going to plant over them, but what about neutralizing the remaining, and non-indigenous, chemicals. Nor was there any mention of the restoration, by restoring to original elevations, of the larger pits where the actual precious metals extraction is to occur. (EIS/EIR Vol. 1, p. 122) Again, the Specific Plan for Soledad Mountain - Elephant Butte and Vicinity - South of Mojave does not provide an adequate explanation, as was alleged. (EIS/EIR Vol. 1, p. 86) Does the Project proponent plan to pull an Eagle Mountain deal, and turn these pits into a mega garbage dump, at some future point? Not this time! I insist on a definitive statement as to the ultimate restoration, the complete filling in, of these pits; all of them.

31-8b

31-9 Speaking of precious metals; what does Golden Queen Co. Inc. plan to mine? Is it just gold, as was implied? Not likely! BLM and the County are required to reveal each and every precious metal, and/or each and every mineral that is to be mined, as well as the amounts of each. Golden Queen Co. Inc. plans to mine other precious metals, with significant values, but failed to reveal these facts.

31-10 This Project is also conspicuous by the absence of the proposal of hardly any mitigation measures, for any significant impacts identified. The Project proponents and BLM must know that any new plan, either amending or expanding an old specific plan, opens up all prior planning to public comment, and to potential litigation. Am I to believe, as the Project propounds, that the Golden Queen Co. Inc. is so poor that they cannot afford any form of mitigation, or that their proposed uses are so unique that they would have no impacts on the environment whatsoever? Not likely!

31-11 What little mitigation was proposed, under the prior specific plan or the current plan, would not mitigate significant impacts, identified, under todays' standards, to insignificance. They certainly would not mitigate significant impacts that were not identified to acceptable levels. For example: the Project provides almost nothing for the proposed take of approximately 1,690 acres of desert tortoise habitat and ground squirrel habitat, and the proposed take of desert tortoises and ground squirrels, within that area. The County's Conditions of Approval do not come close to appropriate mitigation either.

The mere mention of the fact that reclamation is required, (EIS/EIR Vol. 1, p. 231), does not reclamation or mitigation make. Golden Queen Co. Inc. does not propose to mitigate or to reclamate their potential to harm the environment. This they hope to accomplish by failing to disclose their potential impacts. They failed to disclose their potential impacts to, not only all the threatened and endangered species over that area, but all the species of concern over the same area. This avoidance of disclosure will not be tolerated.

I am sure that various environmental organizations provided more specific comments as to what species the Project would impact. All those comments are incorporated herein, by reference, and made a part of my comments.

31-12 BLM, the County, and the Project proponent, have clearly revealed that they have no intention of protecting the environment when they failed to identify impacts and failed to provide the required monitoring program. A monitoring program is not sufficient if it merely "incorporates the design criteria and mitigation measures", or merely tracks the "recording and documenting the acquisition of various construction and operation permits and various field inspections". (EIS/EIR Vol. 1, p. 403)

31-12

A monitoring program provides a scientific means of evaluating proposed mitigations, and proposes specific measures, to be taken, in the case proposed mitigations do not mitigate significant impacts to insignificance. Golden Queen Co. Inc., BLM, nor the County has provided such a monitoring program.

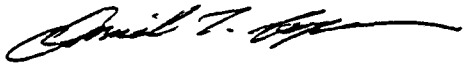
Some of the Permits, to be acquired, are required before BLM or the County can approve the project. BLM nor the County can approve a project which proposes mitigation measures to be specified in the future; post Project approval. Many of the required permits specify the mitigation measures which the Project proponent must provide in order to mitigate potential impacts, which those agencies identify, to insignificance.

31-13

This is just more of the same from this administration, both BLM and the County; outrageous and open abuse of the people and abuse of the environment. It is not necessary to point out all of the many additional illegalities, of which there are many, proposed abuses of this Project. Enough has been presented to block this Project. At this point, the people have much to lose and nothing to gain by this Project. There is nothing, therefore, to lose by opposing it vigorously. This is not to say that my clients are not willing to negotiate; they are more than willing.

As always, I suggest a settlement conference with the Golden Queen Co. Inc., before this Project proceeds to final draft. My clients have always been more than reasonable in their negotiations as to what they require for settlement. They do not ask for much, less than they are do legally, and certainly within Golden Queen's budget. Should Golden Queen Co. Inc. not negotiate, immediately, or accept a reasonable settlement, I intend to both vigorously litigate against the Project, and to publish extensively, throughout the media, exposing it.

Sincerely,



Daniel T. Cooper
Professional Planner

cc: Glenn A. Barnhill, County of Kern, Fax No. (805) 862-8601
Golden Queen Mining Co. Inc.
Ed Waldheim, President of CORVA
Jerry Hobbs, Chairman of PLAC

Comment Letter 31 from:

Daniel T. Cooper
Professional Planner
August 3, 1997

Response to Comment 31-1

The Draft EIR/EIS was mailed on May 31, 1997 to agencies and individuals who requested the document in writing from Kern County or BLM, attended the scoping meetings in Mojave and Rosamond in April 1996, or submitted comments to Kern County or BLM in response to the Notice of Preparation or Notice of Intent.

Response to Comment 31-2

Recreational resources are discussed in Section 3.0.4 on page 137 of the Draft EIR/EIS. Approximately 70 percent of the project area is privately owned land and is not managed for public recreational purposes.

Response to Comment 31-3

The West Mojave Coordinated Management Plan (WMCMP) and the Land Tenure Adjustment Project (LTAP) are identified on page 28 of the EIR/EIS.

The LTAP was approved in 1992 after completion of an EIS. Future land adjustments relating to this project will require a standalone NEPA compliance document and are not part of this Proposed Action. The May 1995 Administrative Draft EIS for the WMCMP is an internal working document which has not exhausted internal agency review process. At the publication date of this Draft EIR/EIS, data related to the WMCMP was not available for reference.

Response to Comment 31-4

The Executive Summary on page S-17 of the Draft EIR/EIS states that Golden Queen plans to work with the BLM toward meeting the objectives of the Land Tenure Adjustment Project. Future exchanges will be subject to the LTAP and will require standalone compliance. The Draft EIR/EIS does not state or imply that an exchange has occurred or that an agreement has been reached.

Response to Comment 31-5

The comment is noted and included in the record.

Response to Comment 31-6

The need for the project is stated in Section 1.1 on page 5 of the Draft EIR/EIS.

Golden Queen has submitted a Conditional Use Permit application and Plan of Operations in accordance with Federal and state laws and regulations and will obtain every applicable permit prior to commencement of operations.

Response to Comment 31-7a

Groundwater use, source, recharge rates, etc. are discussed in Section 3.4.2 of the Draft EIR/EIS beginning on page 184. Please refer to response to Comment 19-2.

Response to Comment 31-7b

Golden Queen will obtain up to 750 gallons per minute of water from up to three water supply wells. Other wells owned by Golden Queen are for domestic use or are currently unused. Please refer to Section 3.4.2.2 beginning on page 193 of the Draft EIR/EIS for more information about the groundwater supply.

Response to Comment 31-7c

The comment about availability of documents is noted and included in the record. Reference materials cited in the Draft EIR/EIS which includes research papers and technical papers are not included in the body of the EIR/EIS or the appendices. They are appropriately cited and available through libraries, bookstores, the Internet and other public avenues.

Response to Comment 31-7d

The Groundwater Supply Evaluation and Hydrology Study Summary contained in Appendix V of the Draft EIR/EIS were supervised by and have been certified by State of California registered professionals. These documents have a professional stamp in the Final EIR/EIS.

Response to Comment 31-8a

Site restoration is addressed in the Surface Mining Reclamation Plan contained in Appendix III of the Draft EIR/EIS. Neutralization of the heap leach will be accomplished as stated on page 23 of the Surface Mining Reclamation Plan.

Response to Comment 31-8b

Backfilling alternatives were evaluated in Section 2.3.3.2 beginning on page 104 of the Draft EIR/EIS.

Response to Comment 31-9

Page S-10 of the Draft EIR/EIS states that approximately 60 million tons of precious metal (gold and silver) ore is expected to be mined.

Response to Comment 31-10

Golden Queen is not proposing to modify the Kern County General Plan nor any Specific Plan. The proposed mitigation measures are summarized in Table S-2 in the EIR/EIS.

Response to Comment 31-11

Based on biological surveys, there were no threatened, endangered or rare species of plants identified on the project site (Section 3.6.1.1 on page 222 of the Draft EIR/EIS).

The United States Fish and Wildlife Service in concurrence with the BLM has determined that there would be no adverse impacts to the desert tortoise and, therefore, impacts to the desert tortoise would be less than significant.

The California Department of Fish and Game has determined that authorization of take of endangered or threatened animals, in this case, the desert tortoise and Mohave ground squirrel, is not necessary because none appear to be present on the project site as stated in their comment to the Notice of Preparation in Appendix II of the Draft EIR/EIS.

The Surface Mining Reclamation Plan, including bonding requirements, is contained in Appendix III of the Draft EIR/EIS.

Response to Comment 31-12

A Mitigation Monitoring Program is contained in Section 7.0 of the Final EIR/EIS.

Response to Comment 31-13

The comment is noted and included for the record.

Cal/EPA

Lahontan
Regional Water
Quality Control
Board

Victorville Office

14428 Civic Drive,
Suite 100
Victorville, CA 92392
(760) 241-6583
FAX (760) 241-7308

Pete Wilson
Governor

August 4, 1997

Glenn A. Barnhill
County of Kern Planning Department
2700 "M" Street, Suite 100
Bakersfield, CA 93301

Dear Mr. Barnhill:

COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT (EIR/EIS) FOR THE SOLEDAD MOUNTAIN PROJECT, KERN COUNTY

Regional Board staff (staff) has reviewed the subject document. The Regional Board, as a responsible agency under CEQA, will use the final EIR/EIS as part of an application submitted to the Regional Board for consideration of adopting waste discharge requirements for the project. Information regarding water quality in the draft EIR/EIS must be sufficient such that the Regional Board can fully consider approval for the project. As such, staff requests that Kern County fully address the comments below in the final EIR/EIS for the project.

Previous Comments Made

Staff originally submitted comprehensive written comments dated July 19, 1996, on the Notice of Preparation for the draft EIR/EIS. All previous comments were addressed in the draft EIR, with exception to comments regarding waste from former mines located at the project site. Specifically, the following comments need to be addressed in detail in the final EIR/EIS:

32-1

1. a description of the Gold Fields America project and all chemicals that were used at the site;

2. an assessment of any past impacts to the project site and vicinity and any potential future impacts related to mobilization of tailings remaining from past mining operations;

3. a description of any other former mining operations that were located on the project site and chemicals that were used;

4. an assessment of each former mining operation, including analysis of any remaining actual or potential threats to water quality from past discharges of waste, and, if necessary, measures to address any actual and/or potential impacts to water quality; and

32-1 5. a statement regarding the responsibility of Golden Queen to address any past environmental impacts, including ground water impacts, due to former mining operations on the project site and vicinity.

New Comments

The following are new comments that must be addressed in the final EIR/EIS:

Leach Pads and Leaching - Section 2.2.2.2.3

32-2 On page 60 of the draft EIR/EIS, it indicates that a wick drain system would be used for the leachate collection and removal system (LCRS). The project proponent has submitted information recently to the Regional Board that the wick system design has been changed to a geotextile-geogrid-geotextile system design, which has not received complete formal review by staff. The draft EIR/EIS should indicate that the new geotextile-geogrid-geotextile system design is the preferred alternative LCRS design to be proposed to the Regional Board for approval.

Analytical Laboratory - Section 2.2.2.3.3

32-3 On page 72, the draft EIR/EIS states that hazardous materials form the on-site analytical laboratory will be accumulated and transported to licensed offsite waste disposal facilities. The draft EIR/EIS should also state the preferred, final, legal method for disposal of non-hazardous waste generated from the analytical laboratory.

If you have any questions, please contact Ted Evans (Project Manager) at (760) 241-7393 of myself at (760) 241-7404.

Sincerely,

Kenn Carter

Kenn Carter
Senior Engineer

cc: Regional Board members
Francis McChesney, Office of Chief Counsel, Sacramento
Ahmed Mohsen, Bureau of Land Management, Ridgecrest Resource Area
Terry Murray, Lancaster

Comment Letter 32 from:

Kenn Carter
Senior Engineer
Lahontan Regional Water Quality Control Board
August 4, 1997

Response to Comment 32-1

The fact that surface disturbances, due to historic mining, exist within the project area is noted in Section 3.2.1.1 on page 151 of the Draft EIR/EIS. A Report of Tailings Analysis was submitted to the Lahontan Regional Water Quality Control Board in July 1997 as an appendix to the Report of Waste Discharge. This report is available to the public at the Lahontan Regional Board office in Victorville. Following is a summary of the report which addresses the issues in this comment letter.

Previous mining at the site is described in Section 3.7.1 on page 234 of the Draft EIR/EIS. The Gold Fields American Development Company established an operation with a mill, cyanidization in tanks and a Merrill-Crowe process in the 1930's. There is no record of the chemicals used on the site. Typically the historical mines would have used blasting material, cyanide, lubricants, greases, motor oil and fuels. It is typical for the Merrill-Crowe process to use powdered zinc and minor amounts of lead acetate. No stains or evidence of chemical spills or chemical disposal were observed on the site.

Tailings and waste rock piles remaining on the project site from historic operations include approximately 200,000 tons of processed ore from the Gold Fields of America project, 15,000 tons of tailings from the Echo Mine, and small isolated piles of tailings and waste rock from the Queen Esther and Karma mines. The tailings and waste rock were analyzed for acid generation potential and CAM-17 metals. The results are included in the report submitted to the Lahontan Regional Board.

The tailings from the Gold Fields of America Project and other historic ore processing facilities do not have a net acid generating potential. All analyses for CAM-17 metals are below Soluble Threshold Limit Concentrations (STLC) levels except for one sample from the Queen Esther mine which contained lead at concentrations higher than the STLC. The Gold Fields tailings pile is suitable for use as soil liner material for the heap leach pad. The other tailings will be processed with the ore on the heap leach pad.

Of the waste rock piles from historic operations, a few of the samples indicate that some of the remaining waste rock piles have a net acid generation potential. All CAM-17 analyses were below the STLC levels. The waste rock piles will be processed with the ore on the heap leach pad.

Groundwater has been tested in monitoring wells placed north of the proposed heap leach pad #1 as part of ongoing background monitoring in accordance with requirements for waste management units. The analytical results have been submitted to the Lahontan Regional Water Quality Control Board and do not indicate the presence of impacts to water quality from previous mining operations.

Post-project closure will be in accordance with the Surface Mining and Reclamation Act of 1975. The responsibility for remediation varies based on agency-specific regulations and the enabling laws that govern such activities. Golden Queen by virtue of its most recent ownership assumes responsibility for environmental impacts including, to some degree, those stemming from activities of previous owners. However, if Golden Queen assumed blanket responsibility for any past environmental impacts, then Golden Queen would essentially preclude their right to share the remediation burden with the previous owners. Such blanket statements can create jurisdictional conflicts and expose the project proponent to undue burden.

Tailings and waste piles which are incorporated as part of the project will be subject to reclamation and closure requirements required for the entire project.

Response to Comment 32-2

It is noted that the applicant has submitted a revised liner system design to the Lahontan Regional Board which includes a geotextile-geogrid-geotextile system design in place of the geotextile wick drain system described in Section 2.2.2.2.3 on page 60 of the Draft EIR/EIS.

Response to Comment 32-3

As stated in Section 2.2.3.5 on page 75 of the Draft EIR/EIS, all waste will be either recycled or disposed of in accordance with applicable local, state and Federal laws and regulations.

Dear Sirs, 8-6-97

Thank you very much for the opportunity to comment on the Soledad Mountain Mining Project.

33-1 I am concerned about the fine dust blowing down on us. I already have respiratory ailments and I noticed a difference when they were doing all that blasting up there on that mountain. What assurance do I have that they are going to operate properly and meet the requirements set by the state and federal agencies.

33-2 The water is another concern of mine. The mine should test local residents wells to make sure that the quality of my water is maintained and that the depth does not drop to a point where I can no longer pump water from my own well.

33-3 The transportation of chemicals is another issue that concerns me. How are these folks going to see to it that these independent contractors are handling these chemicals on our roads safely and that their driver are knowledgeable about the chemicals they are transporting. Also, how is the excessive use

33-4 and ware and tare on the roads going to be accounted for. Are we as tax payers going to have to pay for the deterioration of the roads by these trucks hauling all this material for 15 years. I find this ware and tare not to be less that significant.

I hope you give these things close attention before permitting this project.

Sincerely,

Otis Oliver

Mr Otis Oliver
1318 Backus Rd
Mojave CA 93501-7302

Comment Letter 33 from:

Otis Oliver
Resident of Mojave
August 6, 1997

Response to Comment 33-1

As stated in Section 1.2.4.1 on page 9 of the Draft EIR/EIS, construction and operation of the Soledad Mountain Project will be subject to Federal, state and local rules and regulations pertaining to air pollutants. Kern County Air Pollution Control District will have primary regulatory authority over potential sources of air pollution associated with the project. Air quality modeling shows that the proposed project PM_{10} emissions added to the average background concentration of PM_{10} at the project site will not exceed Federal or California ambient air quality standards as stated in Section 3.5.2 on pages 210 and 211 of the Draft EIR/EIS. Monitoring of the project will establish compliance with air quality rules. Recurring exceedances will require additional mitigation by the mine operator to return to compliance with the air permits.

Response to Comment 33-2

Please refer to the response to Comment 19-1.

Response to Comment 33-3

As stated in Section 2.2.3.3 on page 74 of the Draft EIR/EIS, drivers will be trained in the safe handling of both solid and liquid cyanide shipments. Hazardous materials transported to the site will be shipped in United States Department of Transportation (DOT)-approved containers (Section 3.12.2 on page 274 of the Draft EIR/EIS). The routes of hazardous materials being shipped to and away from the proposed project will be coordinated with the California Highway Patrol or other appropriate agencies (Section 3.12.5 on page 276 of the Draft EIR/EIS).

Response to Comment 33-4

Please see the response to Comment 6-3.

Kern Co. Planning Dept.
2700 M Street, Suite 100
Bakersfield, CA 93301
ATTN: Glenn Barnhill/Scott Denny

August 7, 1997

Dear Mr. Barnhill,

I wish to thank you for the opportunity to comment on the Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Soledad Mountain Project.

After reviewing the draft EIR/EIS, I still have some real concerns about the project.

34-1 I have a number of concerns regarding this project. One is that the document stated in one place that there were approximately 15 residents located south of the mine and then in another place it stated approximately 10 residents south of the project. This shows conflicting information as well as very inaccurate data. A neighbor personally counted over 96 dwellings. This information in the document is very misleading and anyone who reads this document and is not familiar with the area would think that this site was very isolated and a safe distance from anyone or anything. This is just not so and needs to be addressed. The state and federal agencies need to be aware of how close this project is from residents who will be significantly impacted by the project. We had the same land use 9 miles to the west of us and saw first hand the results. We saw how Kern County denied any wrong doing and played down the Mercury spill. The only problem is that the spill affected the people down wind and the mine was not held accountable for their actions. Cactus Gold Mine was not required to clean up the area they contaminated, and so they didn't. Mercury doesn't just go away. The residents have had many of their chickens tested and excessive levels of mercury were found. They can no longer raise chickens to eat or for the eggs because they are contaminated. We have seen how the residents were denied a fair deal. This project's boundaries are less than 1 mile from my home and we are in the direct path of the wind rose that was prepared for the EIR/EIS document.

34-2

34-3 The map showing well locations was grossly inaccurate. Our own well was not shown on this map as well as many others that have been there for over 5 years. Current data is available at the Kern County Environmental Health Services Department. The data used to prepare this document was old and out dated. This is just another example of misleading information going out to State and Federal agencies. How can they make good decisions when they don't have all the information. No wonder the document could mitigate these important issues and show them less than significant. The fact that the mining operation will not use another source of water until they reach a 200% error in their predicted data concerns me. A 200% error is not less than significant and should be reconsidered.

34-4 Air quality is another real concern of mine. The data that was used in the document was out dated and inaccurate. There is lots of current wind data in Mojave that shows much higher readings than were used in the document. Again, no wonder they were able to say they could mitigate so much.

34-5 Before this project is approved, these issues need to be addressed. The conditional use permit needs to state very clearly how they can and cannot operate. They should have to post a significant bond for any clean up or health problems that occur as a result of this operation. Golden Queen Mining Company confidently states that there are no negative effects as a result of this project. Perhaps they are willing to post a 20 million dollar bond to back up this statement!

I hope this helps to make this project a safe and successful one.

Sincerely,

Sue Mathis

Sue Mathis

Comment Letter 34 from:

Sue Mathis
Resident of Ridgecrest
August 7, 1997

Response to Comment 34-1

The number of possible residences in the area of the proposed project has been investigated in response to comments. Please see Section 6.3.1.2.

Response to Comment 34-2

Please see Section 6.3.1.1.1 for a discussion of the historic mercury release and native mercury concentration.

Response to Comment 34-3

As stated in Section 3.4.2.1 on page 188 of the Draft EIR/EIS, known water wells are shown on the well location map (Exhibit 3.4-4). The locations were derived from the Hydrology Study Summary in Appendix V and from databases acquired from the Department of Water Resources and Kern County Environmental Health Services Department. Information about private water wells in California is considered confidential and the information in the databases includes location only. Detailed information about wells within one mile of the waste management units was gathered with the permission of the well owners for the Report of Waste Discharge, which has been submitted to the Lahontan Regional Water Quality Control Board. The Report of Waste Discharge is considered public information.

Please see the response to Comment 19-1.

Response to Comment 34-4

The use of site-specific meteorological data was required and approved by the Kern County Air Pollution Control District, in accordance with United States Environmental Protection Agency guidance.

Golden Queen contracted for the operation of a meteorological data gathering station on its property starting in 1989 with operations continuing for approximately two years. This data was collected in accordance with US EPA guidelines and verified for completeness. Based on analysis using peak receptor locations and the proposed sources, the 1991 meteorological data provided the highest estimated excess risk at the peak receptor location and was utilized in the evaluation (page 10 of Appendix VII of the Draft EIR/EIS).

Response to Comment 34-5

Golden Queen will post three bonds. A bond for successful reclamation of the project site is required for the Surface Mining and Reclamation permit. The bond amount is itemized in Table 4 of Appendix III of the Draft EIR/EIS.

As stated in Section 3.4.2.5 on page 198 of the Draft EIR/EIS, Golden Queen is required to post financial bonds for neutralization and closure of the heap leach piles and an amount sufficient to initiate and complete corrective actions for a reasonably foreseeable potential release to the environment. These amounts will be determined as a result of the Report of Waste Discharge and Waste Discharge Requirements with Lahontan Regional Water Quality Control Board.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

97 AUG 15 P 2:4

Mr. Ahmed Mohsen
Bureau of Land Management
Ridgecrest Resource Area
300 South Richmond Road
Ridgecrest, California 93555

Dear Mr. Mohsen:

The U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) for the **Soledad Mountain Project, Mojave, Kern County, California.** Our comments are provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality's NEPA Implementation Regulations at 40 CFR 1500-1508, and Section 309 of the Clean Air Act. We appreciate your granting us a two-week extension on the comment period. As you know, we received the document rather late.

The DEIS analyzes the impacts of alternatives to a gold-silver mining project, which involves excavation of an open pit, construction and operation of heap leach facilities, overburden rock piles, ore stockpiles, and processing and ancillary facilities. The proposed project would disturb approximately 930 acres over a period of about 15 years and involves the excavation of about 290 million tons of combined ore and overburden material.

We have rated this DEIS as EC-2 -- Environmental Concerns-Insufficient Information. (See the enclosed "Summary of Rating Definitions and Follow-up Action"). Our rating reflects our concerns regarding impacts to air quality, and ground water quality, and the need for additional information in the Final Environmental Impact Statement (FEIS) regarding air and water quality, and mitigation of environmental impacts.

While we feel that the DEIS is generally well done, we do have concerns with the extent of information provided in the DEIS relative to the impacts associated with the possible sale of aggregate and construction materials, as well as the impacts associated with possible underground mining operations. We recommend that these activities be fully described in the FEIS,

perhaps in the cumulative impacts section, pursuant to 40 CFR 1508.25 and 1508.7.

We also suggest that additional information be provided on the impacts of past mining activities, and specifics on heap leach pad design and mitigation measures that would be undertaken to ensure against structural failures and/or uncontrolled solution discharges. Our detailed comments are enclosed.

We appreciate the opportunity to review this DEIS. Please send two copies of the FEIS to this office when it is officially filed with our Washington, D.C., office. Should you have any questions, please contact me at (415) 744-1584, or Karl Kanbergs at (415) 744-1579.

Sincerely,

David J. Farrel, Chief
Federal Activities Office

002895/97-181

Enclosures

cc: Glenn Barnhill, Kern Co. Dpt. of Planning

SUMMARY OF RATING DEFINITIONS AND FOLLOW-UP ACTION

Environmental Impact of the Action

LO-Lack of Objections

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC-Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO-Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU-Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of environmental quality, public health or welfare. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommend for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1-Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2-Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3-Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From: EPA Manual 1640, "Policy and Procedures for the Review of Federal Actions Impacting the Environment."

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

Alternatives

Several alternatives were considered in the DEIS including: no action; increasing the proposed mining and processing rate by 20 percent; decreasing the proposed mining and processing rate by 20 percent; reducing project size to avoid topographic impacts to significant ridge lines; and, partial backfilling. A number of inconsistencies exist:

35-1a The underground mining alternative was eliminated from consideration (pg. 104), yet underground mining is still considered as a possible future action in other parts of the DEIS. On page S-19, under "Increased Mining and Processing Rates" it is stated that "...consideration of increased mining rates should not be precluded." This statement is contradicted on pg. S-22, Table S-1, where the increased mining rate and processing alternative has been eliminated from consideration. These issues should be clarified in the FEIS.

35-1b The DEIS states that mining rates for ore will vary between about 4 and 6 million tons per year (pg. 4). Inasmuch as 6 million tons is 50 percent more than 4 million tons, the 20 percent reduction or increase alternatives appear rather contrived and not meaningful. The DEIS appropriately includes estimates of the total suspended particle emissions (TSP) based on the maximum mining rate. For the purposes of consistency, we recommend that all other potential impacts, be discussed in terms of the maximum mining rate.

35-1c 35-1d 35-1e Council on Environmental Quality (CEQ) Regulations at 40 CFR 1502.14 require all reasonable alternatives be evaluated. Because the sale of overburden and aggregate is stated as part of the Proposed Action, an alternative without this "sale" option should also be evaluated. Similarly, if limited underground mining is also intended to be part of the proposed action, a no underground mining alternative should be evaluated. In addition, we suggest that a reduced sized project, based on economics, be considered. We recognize that Golden Queen wishes to maximize the utilization of resources and meet the financial expectations of its shareholders while being environmentally responsible,

35-1e however, an alternative based on a higher grade/lower tonnage scenario would be an option that would incorporate the economic purpose of the proposed project and address reduction of visual impacts and other impacts such as air quality.

Cumulative Impacts

35-2a The DEIS does not appropriately address cumulative impacts. For example, on page 143 the DEIS states that "there are no other proposed precious mineral projects within the area, therefore, there are no related cumulative impacts." CEQ Regulations (40 CFR 1508.7) define cumulative impacts as the "...impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions..." Accordingly, the FEIS should address cumulative impacts associated with past mining activities as well as other past, present, and reasonably foreseeable future actions pursuant to 40 CFR 1508.25. This would include the cumulative impacts of the possible underground and industrial mineral operations.

35-2b On page 126, the Project Location Map depicts a "Super Fund" site, although no mention of it is made in the text. Based on information provided by Kern County, this site is a California EPA site, listed as "A and W Smelters and Refiners." The environmental impacts associated with this site should be discussed within the context of cumulative impacts. Full disclosure of this site's characteristics would help provide good baseline information.

Socioeconomic Analysis

35-3a The proposed project's stated Purpose and Need is based on economics. The Socioeconomic Analysis (Economic Development/Fiscal Analysis, pp. 267 - 272, and Appendix XI, Analysis of Socioeconomic Impacts) describe positive economic gains to the community. The fiscal impact figures used throughout the analysis are calculated using the estimated revenues generated by the project. Since mining company revenues can be very sensitive to metals prices, fiscal impact figures reported can be quite misleading unless the metals prices used

35-3a in calculations are reported. For the purposes of fully evaluating the socioeconomic analysis presented, the gold-silver cost basis used for the analysis should be included in the FEIS.

35-3b Appendix XI indicates that operations are expected to continue for 7 - 10 years and employ 144 people. In the DEIS it is stated that the project may be expected to continue for up to 15 years (pg. 2) and "the project will create an estimated 230 full-time jobs." These disparate figures should be reconciled in the FEIS.

PROJECT DESIGN AND PROCESSES

Leach Pads and Leaching

35-4a We recommend that additional information be provided in the FEIS on the proposed design and safety mitigation measures of the toe berm portions of the heap leach pads. These mitigation measures should provide sufficient assurance that the wellbeing and water supply of nearby residences would be protected. As discussed in the DEIS, the leach pads are designed so that the toe berm would provide internal solution storage capability within the leach pad. Eliminating open bodies of cyanide bearing solution is clearly environmentally preferable. According to the DEIS, the toe berm, constructed to a maximum height of 25 feet, would also provide vehicular access to the pad area. Accordingly, the toe berm would not be subject to the jurisdiction of the State of California Department of Water Resources, Division of Safety of Dams (DSDD). Rather, the BLM and project proponent defer to the conformance requirements of the Lahontan Regional Water Quality Control Board.

We are specifically concerned with the stability of the toe berm and possible breach of the berm by a storm situation greater than the 100 year event. Supplemental information received by our office (Soledad Mountain Project Heap Leach Facilities Geotechnical Design Report, Glasgow Engineering Group, Inc., January 24, 1997) indicates that the downstream portion of the toe berm has the most critical slope configuration. A maximum slope of 2.5H:1V was required to satisfy pseudo-static loading. The FEIS should assure that loading from vehicular traffic has also been considered. A minimum factor of safety of 1.0 for pseudo-static loading should be incorporated into design specifications.

35-4a The physical design of the berm and the availability of appropriate borrow material is also of concern. A detailed cross section of the down slope berm should be included in the FEIS. The section and/or accompanying text should describe types of construction materials, lift heights and compaction methods.

35-4b No mitigation measures are provided for spillover in cases of a storm exceeding the 100-year 24 hour event. We find this problematic inasmuch as annual precipitation in the western United States is extremely variable. To accommodate spillover in such an event so as to minimize risk to nearby residences, the facilities design should include overflow catchment ponds and a mechanism to control diversion of storm water and pregnant solution(and neutralization of cyanide). A number of factors may influence the designed internal solution storage capacity. While the estimate of 33% heap leach material porosity seems reasonable, the basis for its calculation is not documented. For instance, how will porosity of the heap change over mine life, and will zinc precipitates from the Merrill Crowe process affect porosity? An external spillway system would appear to be preferable. In addition, it appears that several of the internal cells would require significant sub excavation to keep the facility from falling under the jurisdiction of DSDD. We suggest that due to cost considerations alone it may be preferable for the project to conform to DSDD specifications.

35-4c According to the DIES, the cyanide-bearing solution would be moved via pumps. We recommend that the facilities have independent emergency backup power, automatic shut off and an alarm and telephone dialling system.

Other Project Design Comments

35-5a On page 43, Schematic Site Drainage Profile, overburden slopes are shown with graded slopes at ½ percent. The design should be increased to approximately 1 percent, and no more than 2 percent to ensure that no ponding occurs. This would also apply to the heap leach piles.

35-5b On page 49, Cross Section A-A' (Exhibit 2.2-6) should be labelled "Proposed Leach Pad", rather than "Proposed Overburden Pile".

Mine Process Wastes

35-6 The processing of ores will generate moderate quantities of slag,

35-6 as shown on the process plant flow diagram, pg. 68. The FEIS should state what will be done with these slags. It is common practice in many gold operations to reclaim these slags for optimum extraction of metals and profits. Under 40 CFR 261.4, slag from gold operations does not qualify for exclusion as a hazardous waste. Under no circumstances should these slags be mixed with overburden pile materials.

Reclamation and Public Safety

35-7 The reclamation plan places minimal emphasis on safety considerations for anyone entering the pit after mine closure. The project is near major population centers, and will undoubtedly constitute an "attractive nuisance." Berms designed to prohibit vehicle entry and fencing along portions of the pit perimeter should be incorporated into the reclamation plan and discussed in the FEIS. At time of mine closure, the accessible portions of the pit should be assessed in the context of public safety. Potentially unstable pit walls should be stabilized and final deep excavations in the pit bottom should be filled. Ridgecrest BLM and Kern County should identify a responsible party for monitoring of post-closure safety and general monitoring of post-closure reclamation conditions. We recommend that ground water monitoring wells be left open after mine closure, for purposes of long term water quality and water table level evaluation.

WATER RESOURCES

According to information provided in the DEIS, there is a potential for the project to significantly impact water resources, but because of the relatively deep water table and no threatened surface water bodies in the immediate area, these impacts would not be immediate. We believe that a few additional design considerations and mitigation plans can ensure that less than significant impacts would occur.

35-8a In addition to ground water monitoring wells down gradient of the leach pads, lysimeters should be emplaced a short distance down slope from the downstream portion of the cells holding pregnant solution so that potential leakage in this area may be detected prior to intersection with the water table. We also recommend that all of the municipal wells discussed in the text be identified on the Well Location Map (page 189 of the DEIS).

35-8b The DEIS states that agglomerated ore (which contains cyanide as part of the agglomeration process)may be loaded and hauled by trucks to leach pad 2. As part of mitigation measures a spill prevention and containment plan should be included in the FEIS.

35-8c We are concerned that potential underground operations could create acid generating waste rock which, in turn, could create long term ground water contamination. The DEIS does not provide the location or depth of the 11 rock type samples collected, and implies that all ore is oxidized. Silicious epithermal vein systems may often contain significant pockets of sulfides, encapsulated in silica, which can subsequently be exposed during blasting and mining operations. Additionally, an increase in sulfide content might be expected with depth. We believe additional samples should be taken to ensure that the survey is representative of rock types present (at least five different lithologies are reported). Locations and depth of samples should be provided in the FEIS.

35-8d It would appear that the final pit bottom will be above the water table. The FEIS should make a statement to that fact. Projected water table elevation should be included on all mine plan cross sections. Because most development is to the north, it would be preferable in the FEIS to depict the cross section on Page 195 on a north-south axis.

35-8e Appendix III, Attachment C, Reclamation and Re-vegetation Procedures, states that "Standing water will collect in the pit bottoms..." due to diversion of drainage upon mine closure. These waters could contain arsenic, sulfates, low pH, or high TDS that could be toxic to local fauna or migratory birds. If standing water would collect, geochemical modelling should be completed to make sure that water is not toxic. Contingency measures should be included in the FEIS to ensure against adverse impacts to wildlife.

35-8f EPA commends the BLM for attention in the DEIS to containment plans in areas exposed to sodium cyanide. Permanent gasoline fuelling stations should also be placed on liners or appropriate cement pads.

AIR QUALITY

35-9a It is apparent that significant air quality data collection and

35-9a modelling has been completed. We do, however, have concerns with respect to the health risk to residents located immediately downwind of the proposed mine and processing facilities. Over 100 residences, some of which are as close as one mile from the permit boundaries, may be affected. Additionally, the area is heavily subdivided and future growth might be expected. We are specifically concerned with total suspended particulates and PM_{10} emissions, and the potential for release of mercury during ore processing operations.

35-9b The dispersion modelling appears to have followed EPA protocol. The use of the Winnemucca station for upper air data is however suspect. Desert Rock, Nevada, or preferably Edwards Air Force base data would be more appropriate. These alternative data sets should be used, even if some data processing is required.

35-9c According to EPA guidelines, Guidelines for Air Quality Models(EPA-450/2-768-027R), one or more years of site specific meteorological data is preferred to off-site data. We commend the use of site specific data. A detailed location map should be included in the FEIS to note the location of the data collection station used, and the location of proposed monitoring stations. EPA guidelines also require modeling to assume worst case scenarios. It is unclear whether the sampling period used as data input represents worst-case conditions. This should be clarified in the FEIS.

35-9d On June 25, 1996, the Kern County Air Pollution Control District (KCAPCD) provided initial guidance which recommended that the "Applicant shall describe measures to be taken to reduce nuisance potential and method of control and record keeping to ensure control efficiencies assumed in emission calculations and risk characterization will be achieved in practice." The EPA recommends that the proposed meterological monitoring stations and records for emission calculations be officially included in the Mitigation Monitoring Program. The KCAPCD requirements include air quality monitoring for mercury and cyanide, upwind and downwind of the site, and monthly reporting. This should be acknowledged in the FEIS under mitigation measures.

35-9e Impacts to air quality from the proposed aggregate and construction material operations do not appear to have been considered in the DEIS. These impacts should be addressed in the FEIS.

35-9f Some of the soils proposed for stockpiling have a high wind

35-9f erosion potential. Stockpiles should be seeded and irrigated during the first year to ensure stability for the remainder of the project life.

35-9g The Proposed Action states that existing old tailings will be reclaimed and also used for subbase material for the leaching facilities. The FEIS should note if any of these tailings contain mercury or cyanide and if fugitive dust emitted during handling will pose a health risk.

35-9h The FEIS should discuss cumulative impacts from previous mining operations in the context of their effects air quality.

BIOLOGIC RESOURCES

35-10a While the DEIS states that the project area does not include sensitive species and that no mitigation measures are recommended, several bat species listed by California Department of Fish and Game (DFG) as Species of Special Concern (DEIS, pg. 229) were possibly observed at the proposed site. As appropriate, the FEIS should acknowledge and incorporate, to the extent possible, the mitigation measures suggested by Dr. Patricia Brown in Appendix 3, attachment B, e.g.,several mine workings should be gated to exclude humans while providing access for bats. These workings should be monitored as the recommendations suggest.

35-10b The FEIS should acknowledge whether or not the area is along any flyways for migratory birds, particularly since standing water may collect in the pit bottom. If migratory birds are expected, BLM's mitigation measures should be provided in the FEIS.

ENVIRONMENTAL JUSTICE/TRIBES

35-11 Pursuant to Executive Order 12898, the BLM should determine if this proposal presents a potential environmental justice concern. That determination and any analysis conducted as a result of the determination should be presented in the FEIS.

The FEIS should indicate the efforts made by BLM to enter into government to government consultations with potentially affected Tribes. The results of those consultations should also be presented in the FEIS.

Comment Letter 35 from:

David J. Farrel
Chief, Federal Activities Office
United States Environmental Protection Agency
August 11, 1997

Response to Comment 35-1a

Underground mining in lieu of open pit mining was eliminated as an alternative on page 104 of the Draft EIR/EIS. Underground mining is suitable for high-grade ore, but is not economical as an alternative to open pit mining for the grade of ore remaining on Soledad Mountain. As stated on page 39 of the Draft EIR/EIS, higher grade veins may be exposed within the open pit. If underground mining is used, it will be confined to access from the open pit and, therefore, is included in the worst case impact of the open pit mining scenario.

The increased mining rate alternative was not selected as the preferred alternative by BLM because air models indicate that this alternative results in exceedence of the PM_{10} standards. As stated on page S-19, this alternative may be considered if air monitoring data indicates that actual emissions are less than emissions predicted by the air model. Under this scenario, the increased processing rate would not result in an impact to air quality that was not analyzed.

Response to Comment 35-1b

Page 4 of the Draft EIR/EIS defines the reasonably foreseeable total ore reserve of "up to 60 million tons and a mining rate of up to six million tons of ore per year." As stated in Sections 2.3.4.2.1 and 2.3.4.2.2 on pages 120 and 121 of the Draft EIR/EIS, the changes in environmental impacts associated with an increase or decrease in mining rate are primarily related to the duration of activities and the consumptive uses associated with project operations. The total amount of ore and overburden mined over the life of the project and total surface disturbance will not vary with the mining rate. The potential impacts have been evaluated based on the maximum expected process rate of six million tons of ore per year.

Response to Comment 35-1c

The sale of overburden as aggregate from private land is included as a part of this project. The impacts of transportation offsite of the aggregate were analyzed in Section 3.13.2 on page 283 of the Draft EIR/EIS.

However, the processing of aggregate onsite is not a part of this proposed action. Therefore, particulate emissions associated with aggregate sales will result from loading the aggregate trucks and hauling the aggregate offsite. Particulate emissions from these actions represent approximately 1 percent of total project emissions. An alternative without the sale of aggregate would not be meaningful because the sale of aggregate is an insignificant portion of total project emissions.

Response to Comment 35-1d

Any underground mining will be within the confines of the open pit (see page 39 of the Draft EIR/EIS and response to Comment 35-1a above). Limited underground mining in this manner will not change the parameters or impacts of the project.

Response to Comment 35-1e

An alternative based on higher grade/lower tonnage will result in reduced project size which was evaluated in Section 2.3.4.3 on page 121 and Section 4.4 on pages 344 to 369 of the Draft EIR/EIS. As noted on page 121, a percentage reduction in total tonnage mined will not be reflected in a corresponding reduction in the surface area disturbed because the volume to surface area relationship of the overburden piles and heap leach piles becomes less efficient with decreasing size. Also, the same area is needed for facilities such as the process plant, offices, maintenance shops, etc.

Response to Comment 35-2a

The cumulative analysis includes past, present and reasonably foreseeable actions

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Past and present impacts are addressed in the setting section of each aspect as stated in Section 3.0.2 on page 125 of the Draft EIR/EIS and evaluated in Section 3.0 (see Sections 3.1.1, 3.2.1.1, 3.2.2.1, 3.3.1, 3.4.1.1, 3.4.2.1, 3.5.1, 3.6.1.1, 3.6.2.1, 3.7.1, 3.8.1, 3.9.1, 3.10.1, 3.11.1, 3.12.1 and 3.13.1 of the Draft EIR/EIS) and are supported by technical information contained in Appendices III, V, VII, VIII, IX, X and XI. Reasonable foreseeable future impacts were evaluated on a worst case basis for each aspect evaluated in Section 3.0 (see Sections 3.1.4, 3.2.1.4, 3.2.2.4, 3.3.4, 3.4.1.4, 3.4.2.4, 3.5.4, 3.6.1.4, 3.6.2.4, 3.7.4, 3.8.4, 3.9.4, 3.10.4, 3.11.4, 3.12.4 and 3.13.4 of the Draft EIR/EIS).

Response to Comment 35-2b

A and W Smelters and Refiners is a Cal-EPA site located approximately one-quarter mile east of Highway 58 and immediately north of Silver Queen Road. Exhibit 2.1-2 on page 33 and Exhibit 3.0-1 on page 126 of the Draft EIR/EIS have been changed to show that the site is a Cal-EPA site. The primary land use of the facility was the milling of ore to recover silver and gold. Soils on the site have elevated levels of lead and arsenic. There are no cumulative impacts related to the A and W Smelters and Refiners site because the proposed project has been designed as a "zero discharge" facility (Section 2.2.2 on page 42 of the Draft EIR/EIS).

Response to Comment 35-3a

The socioeconomic impact of the project was evaluated using a gold price of $375.00 per ounce and silver price of $5.00 per ounce.

Response to Comment 35-3b

As noted in Section 3.11.2 on page 270 of the Draft EIR/EIS, the socioeconomic analysis contained in Appendix XI was prepared at an early stage of the project scoping process. Some of the parameters, e.g., project duration and employment, have undergone minor changes subsequent to preparation of the socioeconomic analysis, but the changes do not substantially affect the conclusions of the analysis. Increased employment and length of project would improve the socioeconomic benefits of the proposed project.

Response to Comment 35-4a

The Draft EIR/EIS is a summary document for public disclosure. Because of its detailed nature, inclusion of geotechnical design criteria of the toe berm within the body of the EIR/EIS was considered not warranted for the CEQA/NEPA compliance.

The toe berm will be designed and constructed in conformance with the requirements of the Lahontan Regional Water Quality Control Board as stated in Section 2.2.2.2.3 on page 57 of the Draft EIR/EIS. The Report of Waste Discharge, including the Heap Leach Facilities Geotechnical Design Report with detailed descriptions of the toe berm, has been submitted to the Lahontan Regional Board for approval and issuance of Requirements of Waste Discharge. The comments

about the technical specifications of the toe berm including vehicular loading are noted for the record and future design consideration.

Response to Comment 35-4b

The internal solution storage capacity of the heap leach pad is designed in conformance with regulatory requirements and standard engineering practice and has been submitted to the Lahontan Regional Board in the Report of Waste Discharge. The comments about the installation of a spillway, porosity of the heap leach pile and the conformation to DSDD standards are noted for the record and future design consideration.

Response to Comment 35-4c

As stated in Section 2.2.3.1 on page 73 of the Draft EIR/EIS for backup power, in case of a commercial power outage, diesel powered electric generators will be maintained, primarily to provide power to the heap leach pumping operations. In addition, appropriate authorities will be notified of the power outage.

Response to Comment 35-5a

A Site Drainage Plan was revised in May 1997 to show minimum drainage slopes to be 1 percent, as stated in a letter report in Appendix III, Attachment E, of the Draft EIR/EIS. The legend on Exhibit 2.2-4 on page 43 and on Exhibit 14 of Appendix III of the Draft EIR/EIS was inadvertently left unchanged and has been modified to show "slope at 1 percent." The heap leach piles will be contoured to prevent surface ponding as stated in Section 3.6.2.6 on page 232 of the Draft EIR/EIS.

Response to Comment 35-5b

Cross section A-A' on page 49 of the Draft EIR/EIS is shown with north to the left and south to the right. The heap leach pad is on the north side of the mountain and the overburden pile is on the south side of the mountain. The cross section is labeled correctly as shown in the Draft EIR/EIS.

Response to Comment 35-6

As stated in Section 3.12.8 on page 278 of the Draft EIR/EIS, all wastes including smelter slag will be handled in accordance with applicable Federal, state and local regulations. This will include

proper characterization of each type of waste and disposal in a permitted facility or recycling as may be appropriate.

Response to Comment 35-7

Portions of the pit will be fenced as stated in Section 7.2 on page 27 of the Reclamation and Revegetation Procedures, Attachment D, of Appendix III of the Draft EIR/EIS. After closure, the pit walls will be left in a safe and stable configuration as stated in Section 2.2.5.7 on page 97 of the Draft EIR/EIS. The bottom of the mine pit will be a series of isolated depressions or subpits. Each subpit will terminate on a bench. Therefore, the subpit bottoms will be flat and will be subject to revegetation as part of the reclamation of the project.

Monitoring of the project site during closure and post-closure periods will take place according to the Closure and Post-Closure Maintenance Plan as stated in Section 3.4.2.5 on page 198 of the Draft EIR/EIS. Groundwater monitoring wells will be sampled and analyzed for constituents of concern for a number of years after closure of the heap leach pad as part of The Final Closure and Post-Closure Maintenance Plan which will be approved 180 days before the start of closure by the Lahontan Regional Board.

Response to Comment 35-8a

Lysimeters are planned to be placed under the fluid portion of the cells as stated in Section 2.2.2.2.3 on pages 60 and 61 of The Draft EIR/EIS. The final placement of lysimeters will be determined as a result of Waste Discharge Requirements established by the Lahontan Regional Water Quality Control Board.

The Mojave municipal wells are listed as wells #31 and #33 on Exhibit 3.4-7 on page 194 of the Draft EIR/EIS, and the locations of wells #31 and #32 are shown on Exhibit 3.4-4 on page 189 of the Draft EIR/EIS. The wells are located in Section 22, Township 11 North, Range 12 West, San Bernardino Base and Meridian.

Response to Comment 35-8b

A Spill Prevention, Control and Countermeasure Plan will be enacted for the site as stated in Section 2.2.2 on page 42 of the Draft EIR/EIS.

Response to Comment 35-8c

The samples collected for the acid generation potential analysis are representative of the rock types which will be present in the open pit. The samples did not show acid generating potential as stated in Section 3.4.1.1 on page 178 of the Draft EIR/EIS. The acid generation potential of materials on the project site is reviewed by the Lahontan Regional Water Quality Control Board (Section 3.4.1.2 on page 179 of the Draft EIR/EIS) as part of the Report of Waste Discharge process. Please refer to the response to Comment 35-8e.

Response to Comment 35-8d

The observation is correct. The groundwater in the vicinity of Soledad Mountain is approximately 2,590 feet above mean sea level as shown in Exhibit 3.4-5 on page 190 of the Draft EIR/EIS. The deepest part of the pit will be approximately 2,780 feet above mean sea level as stated in Section 2.2.2.1 on page 47 of the Draft EIR/EIS. Few wells are located north of the proposed project water supply wells from which a north-south cross-section could be constructed. Groundwater elevation contours and depth to groundwater (Exhibits 3.4-5 and 3.4-6 on pages 190 and 192 of the Draft EIR/EIS) provide data for areas north of the proposed mine.

Response to Comment 35-8e

Table 3.4-1 on page 178 of the Draft EIR/EIS gives the Acid Generation/Neutralization Potential of 11 waste rock samples representing the major rock types found in the Soledad Mountain orebody. Other samples were taken for analysis and are included in the Report of Waste Discharge submitted to the Lahontan Regional Board. There are approximately 15 miles of underground workings within the Soledad Mountain orebody. Some of the samples taken for the determination of acid generating potential were taken from these underground workings and some were taken from drill cuttings. The underground tunnels within the mountain cover most of the orebody and are even present below the deepest proposed pit bottom. The ore and waste rock throughout the mountain is oxidized. Analysis of the waste rock removed during prior underground mining also indicates a very low to negative acid generating potential.

Evaporation in the desert environment would quickly evaporate standing water in the pit. The level bottom of the numerous subpits (see response to 35-7) would expose more surface area to

evaporation. The low to negative acid generating potential of the waste rock and the high evaporation rate will reduce the potential for wildlife impacts. Water may accumulate in the pit bottom on occasion but the water will not pose an environmental hazard.

Response to Comment 35-8f

The project will include proper containment of all fueling areas as stated in Section 3.4.2.2 on pages 196 and 197 of the Draft EIR/EIS.

Response to Comment 35-9a

The number of residences in the vicinity of the project has been the subject of several comments from the public. The number of existing residences has been clarified in Section 6.3.1.2.

There is undeveloped, subdivided land surrounding the project site as discussed in Section 3.10.1 on pages 259 to 262 of the Draft EIR/EIS, and many undeveloped but approved subdivisions are discussed in Section 3.0 on pages 123 to 140 of the Draft EIR/EIS. The historical and projected annual population growth in the Mojave area is 2.2 percent (see Tables 3.0-2 and 3.0-3 on pages 130 and 131 of the Draft EIR/EIS). The Soledad Mountain Project is not growth-inducing nor has any growth-inducing project been identified in the area. Therefore, it is unlikely that development will occur in the immediate vicinity during the life of the Soledad Mountain Project. However, health risks associated with air emissions were evaluated in Appendix VII of the Draft EIR/EIS. The analysis includes mercury emissions contained in fugitive particulate emissions associated with the project. As noted on page 19 of Appendix VII, the highest estimated maximum carcinogenic risk observed offsite is located on the southern fence line of the property. The risk at this point is less than the significance level established by the Kern County Air Pollution Control District.

The mercury is contained in the ore and will be leached and precipitated with gold and silver (see Section 6.3.1.1.1). Mercury removal will be by a mercury retort which will be permitted through the Kern County Air Pollution Control District. Please see Section 6.3.1.1.1 for a complete discussion of mercury in the Soledad Mountain Project. Please refer also to the response to Comment 19-2.

Response to Comment 35-9b

The Winnemucca station is the nearest representative station with data processed and available to the public (see page 10 of Appendix VII of the Draft EIR/EIS). Use of this data was approved by the Kern County Air Pollution Control District.

Response to Comment 35-9c

The location of the meteorological data-gathering station is shown on Exhibit 6 of Appendix VII of the Draft EIR/EIS. The model used meteorological data from 1991 because it was determined that this data provided the worst case analysis (see page 10 of Appendix VII of the Draft EIR/EIS).

Response to Comment 35-9d

The Mitigation Monitoring Program in the Final EIR/EIS includes mitigation measures proposed by the applicant and additional measures identified by Kern County and BLM. Monitoring and other regulatory requirements are included in Section 3.0 under specific resources and summarized in Table S-2 in The Executive Summary of the EIR/EIS. In the case of air quality, monitoring requirements are summarized in Section 3.5.5 on page 218 of the Draft EIR/EIS. Locations of monitoring equipment will be determined by the KCAPCD through the permitting process.

Response to Comment 35-9e

The project includes aggregate sales, but does not include processing aggregate onsite (see response 35-1c above). Fugitive emissions associated with the loading and transport of aggregate are insignificant when compared with the estimated project emissions and were not included in the worst case analysis.

Response to Comment 35-9f

The stabilization of stockpiles is an applicant-proposed mitigation measure contained in Section 3.3.6 on page 174 of the Draft EIR/EIS.

Response to Comment 35-9g

Surface disturbances from previous mining operations on Soledad Mountain are noted in Section 3.2.1.1 on page 151 of the Draft EIR/EIS. A Report of Tailings Analysis was submitted to the Lahontan Regional Water Quality Control Board in July 1997 as an appendix to the Report of Waste Discharge. The report is available to the public at the Lahontan Regional Board office in Victorville. For a summary of the report, see the response to Comment 32-1. Because the tailings do not contain hazardous levels of mercury or cyanide, fugitive dust from handling these materials will not pose a chemical health risk.

Response to Comment 35-9h

The Soledad Mountain Project will reclaim prior surface disturbances within its project boundary and will place tailings from previous mining activity on the heap leach pad. Therefore, cumulative effects from prior mining activity on Soledad Mountain will be mitigated by the Soledad Mountain Project.

Response to Comment 35-10a

As stated in Section 3.6.2.6 on page 232 of the Draft EIR/EIS, some of the mine adits will be retained and gated and some of the mine shafts will be covered by grates to allow access by bats while excluding people. This applicant-proposed mitigation measure is subject to a monitoring program.

Response to Comment 35-10b

The project site is along the general migratory bird flyway which exists along the western portion of the United States. Monitoring of storm water runoff is a portion of the Waste Discharge Requirements which will be issued by the Lahontan Regional Board as stated in Section 3.4.1.5 on page 181 of the Draft EIR/EIS. The monitoring will include analysis for constituents of concern.

Response to Comment 35-11

BLM consulted with the Native American Council. BLM sent a letter on May 19, 1997 to the recognized Kiwasu/Paiute Native American elder. Also, BLM sent a letter on May 19, 1997 to the Native American Heritage Preservation Council of Kern County. Both letters outlined and identified details of the project and the results of the cultural resources inventories that have been completed.

The letters requested tribal input regarding information on special religious and cultural values within the project area. On May 28, 1997, both parties requested a site visit to the project area. The results of this site visit are documented in comment letter #17. The Kern River Paiute Council reviewed the Draft EIR/EIS. Please see comment letter #20.

6.3.3 Responses to Oral Comments

6.3.3.1 Rosamond Public Meetings

Following are responses to comments made at the public meeting held in Rosamond, California on June 24, 1997 by BLM. The entire proceedings were recorded by court reporter and are included in Appendix XIII. Each comment is identified with a comment number found in the margin of the court reporting document. The comments are presented in the order of their appearance in the report. However, in the event that an individual spoke more than once, his or her comments are grouped together. The page numbers on which the comment can be found in the report are listed after the comment number.

Wagner

R-1-1 Pages 14-16. The comment in support of the project is noted for the record.

Rombout

R-2-1 Pages 16-17. The comment in support of the project is noted for the record.

Chiodo

R-3-1 Pages 18-20. Mercury as it relates to previous mining in an area west of Soledad Mountain is addressed in Section 6.3.1.1.1. The air pollutants, including those in the dust, have been quantified and modeled in Appendix VII and Section 3.5 of the Draft EIR/EIS.

R-3-2 Page 19. Blasting will occur during daylight one time per day and will be engineered to minimize the amount of explosives used, according to United States Bureau of Mines guidelines as stated in Section 3.9.6 on page 257 of the Draft EIR/EIS.

R-3-3 Page 19. A description of the treatment of mercury is included in the last paragraph of Section 2.2.2.2 on Page 67 of the Draft EIR/EIS.

R-3-4 Pages 20-21. The Draft Environmental Impact Report/Environmental Impact Statement was mailed on May 31, 1997 to those agencies and interested individuals listed in Section 8.3 on pages 409-421 of the Draft EIR/EIS. The list includes agencies and individuals who requested the document in writing from Kern County or BLM, attended the scoping meetings in Mojave and Rosamond in April 1996 or

submitted comments to Kern County or BLM in response to the Notice of Preparation or Notice of Intent.

R-3-5 Page 66. As stated in Section 1.2.4 on page 9 of the Draft EIR/EIS, various aspects of the Soledad Mountain Project must be in compliance with applicable Federal and state environmental requirements. Related acts, codes, rules and regulations have been identified in Sections 1.2.4.1 Air Quality, 1.2.4.2 Water Quality, 1.2.4.3 Biological Resources, 1.2.4.4 Cultural Resources, 1.2.4.5 Hazardous Materials and 1.2.4.6 Relationship to Other Land Use Plans on pages 9 through 29 of the Draft EIR/EIS.

Blasting will occur during daylight one time per day and will be engineered to minimize the amount of explosives used according to United States Bureau of Mines guidelines as stated in Section 3.9.6 on page 257 of the Draft EIR/EIS. The mitigation monitoring program for blasting lists the responsible agency and Table 1.2-1 of the EIR/EIS has been modified to include agency phone numbers.

R-3-6 Pages 66 and 67. All modeling and impact studies were done using United States Environmental Protection Agency-approved models and methods approved by the Air Pollution Control District operating under Federal and state guidelines. Please see page 1 of the Executive Summary and Section III, Model Selection in the Air Toxics Emission and Impacts Assessment, in Appendix VII of the Draft EIR/EIS.

R-3-7 Page 66. Please see Section 6.3.1.2 General Responses, Number of Residences.

R-3-8 Page 67. The comment is noted and included in the record.

R-3-9 Page 77. The Soledad Mountain Project will be subject to separate inspections by the State of California and the Federal government. The state inspections will be performed by Cal-OSHA - Mining and Tunneling Unit. Cal-OSHA inspections are governed by the California Labor Code which requires the inspection of surface mines once per year, underground mines four times per year and tunnels six times per year (California Labor Code, Part 9, Section 7953). Federal inspections are conducted by the Mine Safety and Health Administration (MSHA) pursuant to the Federal Mine Safety & Health Act of 1977. Section 103(a) of the Act requires that

underground mines be inspected four times per year and surface mines be inspected at least two times per year.

MSHA and Cal-OSHA are responsible for inspecting operations within the mine site, the safety of those outside the mine site is regulated by other local, state and Federal agencies (see Mr. Mohsen's comments on pages 75 and 76 of the Rosamond Meeting transcripts).

Benson
R-4-1

Pages 22-24. The proclamation from the City Council of California City in support of the project is noted for the record.

Hooper
R-5-1

Page 25. The BLM and Kern County are aware of the potential for omissions and fabrications in monitoring and self reporting by a mining operator or any other permittee. However, time and manpower constraints necessitate that a mine operator do virtually all of the sampling and testing required by the various Federal and state permits. Regulatory personnel gain information on an operation from reporting, site inspections and from the intangible qualities stemming from interactions with mine personnel. If there is resistance or lack of commitment to corrective actions from a particular operator, then the agencies would raise their level of vigilance. Based on previous experience, it is noted that the big operators generally have too much to lose by covering up a violation or environmental impact. The adverse public and regulatory reaction to a coverup could be a fatal economic blow.

Another point of concern centers on the competency of personnel doing sampling or testing for a mining company. Based on experience, the larger companies generally have the resources to hire more experienced and better qualified personnel. The core members of the Golden Queen management team appear to be knowledgeable professionals committed to the success of the project.

Trust plays a large role in the relationship between mine operators, the regulatory agencies and the public. A positive relationship exists between Golden Queen Mining Company and the regulatory agencies at the present time. Kern County and BLM remain continually sensitive to the attitude and performance of any permittee.

Random inspections usually have a positive effect on the strict adherence to operating conditions and environmental protection measures.

R-5-2 Page 25. The comment that the project is in the wrong place was responded to by Ahmed Mohsen of the BLM in the public meeting. The response is located on pages 27 and 28 of the court reporting proceedings in Appendix XIII. A discussion of an alternative open pit mine location is located in Section 2.3.3.4.1 on pages 113 to 115 of the Draft EIR/EIS.

R-5-3 Pages 26-27. The number of residences in the area of the project have been investigated in response to comments. Please see Section 6.3.1.2.

Rigg

R-6-1 Page 30. The Soledad Mountain Project has not started. Cyanide has not been used in any capacity during road building and exploration drilling on the project site.

R-6-2 Page 30. The comment is noted and included in the record. Please refer to response to Comment R-6-1. For air quality during operations, please refer to Section 2.2.4.2 beginning on page 82 of the Draft EIR/EIS and Section 3.5.5 on page 218 of the Draft EIR/EIS for a summary of the air quality regulations related to the project.

R-6-3 Pages 30-31. The comment is noted and included in the record.

R-6-4 Page 61. Please see the response to Comment R-5-1.

Boetsch

R-7-1 Page 31. The project will create an estimated 230 full-time jobs. The payroll will be 7.6 million dollars, exclusive of benefits, as stated in the fourth paragraph of Section 3.11.1 on page 267 of the Draft EIR/EIS.

Zamora

R-8-1 Pages 31-32. The comment in support of the project is noted and included for the record.

Murray

R-9-1 Pages 32-33. The comment regarding health and safety is noted and included for the record. The historic occurrence of mercury in the area is addressed in Section 6.3.1.1.1.

R-9-2 Page 33. The removal of the ore from the mountain with processing in an alternate location is an alternative that is discussed in Section 2.3.3.4.2 on page 115 of the Draft EIR/EIS. Please refer also to the responses to Comments R-3-5 and R-6-2.

R-9-3 Page 61. Please see the response to Comment R-5-1.

R-9-4 Page 63. Please see Section 1.2.4.5.1 on pages 24 to 27 of the Draft EIR/EIS for notification programs.

Public notification of hazardous material releases is regulated under numerous Federal and state laws and regulations. In the event of a hazardous material release, the project applicant would notify Kern County Environmental Health Services Department and Kern County Fire Department. In accordance with approved emergency response plans, the Fire Department would determine whether or not notification of the surrounding public was necessary. All information regarding hazardous material releases is publicly available upon request from Kern County Environmental Health Services Department.

R-9-5 Page 63. The comment requesting in-home monitors is noted. Please refer to Section 6.3.1.1.1 and the response to Comment 19-2.

R-9-6 Page 63. The comment regarding total containment is noted.

R-9-7 Page 75. Please see Sections 3.12.5 and 3.12.6 on pages 276 to 277 of the Draft EIR/EIS for regulatory requirements and design features related to health hazards and public safety.

R-9-8 Page 76. Please see response to Comment R-3-9.

Skelton

R-10-1 Pages 33-35. The comment in support of the project is noted for the record.

Mathis

R-11-1 Page 35. The location of monitoring wells is described in Section 2.2.2.2.3 on page 61 of the Draft EIR/EIS. The parameters to be measured in the monitoring wells will be established by the Lahontan Regional Water Quality Control Board in the Waste Discharge Requirements and will include the depth to groundwater.

R-11-2 Pages 35-36. The number of possible residences in the area of the project has been investigated in response to comments. Please see Section 6.3.1.2.

R-11-3 Page 36. Please see the response to Comment 19-1.

R-11-4 Pages 36-38. Meteorological sampling was done according to a Sampling Protocol setup according to US EPA standards and requirements. The Sampling Protocol is included in Appendix VI as an addendum to the Meteorological Data Summary in the Draft EIR/EIS. As required, the instruments were calibrated several different days at approximately 1:00 P.M., but data was collected on a continuous basis.

All modeling and impact studies were done using US EPA-approved models and methods approved by the Air Pollution Control District operating under Federal and state guidelines. Please see page 1 of the Executive Summary and Section III, Model Selection in the Air Toxics Emission and Impacts Assessment, in Appendix VII of the Draft EIR/EIS.

Please refer to response to Comment 19-2.

Please refer to response to Comment R-5-1.

R-11-5 Page 38. Blasting will occur during daylight one time per day and will be engineered to minimize the amount of explosives used according to United States Bureau of Mines guidelines as stated in Section 3.9.6 on page 257 of the Draft EIR/EIS. The mitigation monitoring program for blasting lists the responsible agency and Table 1.2-1 of the EIR/EIS has been modified to include agency phone numbers.

R-11-6 Page 39. Table 1.2-1, which lists all the permits required for the project, has been modified to include the phone number of each responsible agency.

R-11-7 Page 39. *Monolopia lanceolata* is a common species located in a wide area in the mountain slopes and foothills to the north, west and south of the Mojave Desert. This species is not listed in the plant survey list and was not observed in the project area covered by the survey. This species may occur around the base and lower slopes of Soledad Mountain. *Monolopia lanceolata* is not listed as endangered, threatened or rare by the United States Fish and Wildlife Service or the California Department of Fish and Game. Please see the response to Comment 22-7.

Boetsch
R-12-1 Page 40. Published reports have estimated the recharge to the groundwater in the area to be approximately 18,000 acre feet per year, as discussed in the second paragraph of Section 3.4.2.1 on page 184 of the Draft EIR/EIS. The proposed project will use approximately 1,200 acre feet per year, as described in Section 3.4.2.2 on page 196 of the Draft EIR/EIS.

Settle
R-13-1 Pages 41-44. The comment in support of the project is noted for the record.

Boetsch, Jr.
R-14-1 Pages 44-45. Please see the first four paragraphs of Section 3.11.1 on page 267 of the Draft EIR/EIS.

Webb
R-15-1 Page 45. Published reports have estimated the recharge to the groundwater in the area to be approximately 18,000 acre feet per year, as discussed in the second paragraph of Section 3.4.2.1 on page 184 of the Draft EIR/EIS. The proposed project will use approximately 1,200 acre feet per year, as described in Section 3.4.2.2 on page 196 in the Draft EIR/EIS.

The withdrawal of groundwater will have a localized effect and would not have any effect on the Lancaster-Palmdale area. The comment is noted for the record.

R-15-2 Page 45. Please see Chapter VI, Discussion, on pages 17 and 18 of the Estimated PM_{10} and Air Toxics Emissions Report in Appendix VII of the Draft EIR/EIS. Modeling performed according to US EPA standards and using US EPA-approved dispersion models indicates that the total PM_{10} or dust from the proposed project when added to the annual average background concentration will be less than the California

Ambient Air Quality Standard. Therefore, the project should not affect flight testing at Edwards Air Force Base.

R-15-3 Page 46. At the end of the project, Kern County, BLM and other regulatory agencies will use the reclamation standards established by the permitting process to ensure completion of reclamation. Revegetation procedures are summarized in Section 2.2.5.6 on pages 92 to 97 of the Draft EIR/EIS. For more detail, refer to the Surface Mining and Reclamation Plan in Volume 3, Appendix III, which is administered by Kern County Planning Department upon approval.

R-15-4 Page 46. The Soledad Mountain Project will be bonded, as described in Section 2.2.5.8 on page 98 of the Draft EIR/EIS. Pursuant to SMARA, the bond will be reviewed annually to ensure its adequacy to cover the costs for an outside contractor to reclaim the project disturbance in accordance with the adopted Reclamation Plan.

R-15-5 Page 46. The comment is noted and included in the record.

R-15-6 Page 46. It is noted in Section 3.4.2.6 on page 199 of the Draft EIR/EIS that in the event the groundwater monitoring program shows a 200 percent difference between the actual data and the model results (as shown on Exhibit 14 of the Groundwater Supply Evaluation in Appendix V of the Draft EIR/EIS). Golden Queen will supplement the water supply with up to 300 gpm from Antelope Valley - East Kern Water Agency to maintain the appropriate drawdown.

R-15-7 Page 46. It is noted in Section 3.7.6 on page 241 of the Draft EIR/EIS that artifacts from the historical sites will be used to establish a small display of historical mining activities onsite. After conclusion of the project, the items on display will be donated to a museum located in Kern County.

R-15-8 Page 78. Complete backfilling of the mine was considered but eliminated, as discussed in Section 2.3.3.2 beginning on page 104 of the Draft EIR/EIS.

Landsgaard
R-16-1 Pages 49-51. The support of the Rosamond Chamber of Commerce is noted and included for the record.

Gainey
R-17-1 Pages 52-54. The comment in support of the project is noted and included for the record.

Spoor
R-18-1 Pages 55-56. The comment in support of the project is noted and included for the record.

Gutierrez
R-19-1 Pages 57-58. The comment in support of the project is noted and included for the record.

Shineflew
R-20-1 Pages 58-59. The comment on the general impact of the project is noted and included for the record.

Farmer
R-21-1 Pages 59-60. The comment in support of the project as it relates to the socioeconomics of the region is noted for the record.

Dale
R-22-1 Page 70. This comment was responded to by Ahmed Mohsen of the BLM in the meeting. The text of Mr. Mohsen's response on pages 70 to 72 in the court reporter's proceedings in Appendix XIII.

Grimes
R-23-1 Pages 74-75. The comment about mine safety and training is noted and included for the record.

Alfonso
R-24-1 Pages 82-83. The comment in support of the project is noted and included for the record.

Graeme
R-25-1 Pages 84-85. The comment about the use of the Internet for public disclosure of the project is noted and included in the record.

6.3.3.2 Mojave Public Meeting

Following are responses to comments made at the public meeting held in Mojave, California on June 25, 1997 by BLM. The entire proceedings were recorded by court reporter and are included in Appendix XIII. Each comment is blocked out in the report of the proceedings in the appendix and marked with a comment number for cross reference. The comments are presented in the order of their appearance in the report. However, in the event that an individual spoke more than once, his or her comments are grouped together. The page numbers on which the comment can be found in the report are listed after the comment number.

Hansen

M-1-1 Pages 13-14. The comment in support of the project is noted and included for the record.

M-1-2 Pages 14-15. The comment that the project is not expected to impact the visibility for aircraft in the area is noted and included in the record.

Baker

M-2-1 Pages 16-17 The comment in support of the project is noted and included for the record.

Babcock

M-3-1 Page 17. The comment in support of the project is noted and included for the record.

M-3-2 Page 18. The comment in support of the project is noted for the record.

Benson

M-4-1 Page 19. The comment in support of the project is noted for the record.

Hooper

M-5-1 Pages 20-21. Please see a discussion of the historic mercury release in Section 6.3.1.1.1. Please see also the response to Comment R-5-1 regarding agency responsibility.

M-5-2 Pages 22-23. The comment about the heap leach mining operation in a remote area near Death Valley is noted.

Please refer to Section 6.3.1.1.1 for a discussion of mercury monitoring and to response to Comment 19-2 for a discussion of air quality monitoring.

The land use designated for Soledad Mountain is discussed in Section 3.10.1 on page 259 of the Draft EIR/EIS. Please refer also to pages 27 and 28 of the court reporters proceedings of the Mojave public meeting in Appendix XIII for a discussion of land-use planning.

M-5-3 Pages 36-37. The comment about responsibility for loss is noted and included in the record for the Soledad Mountain Project.

Mathis

M-6-1 Pages 23-24. Mine management, regardless of the person in charge of the project at any time, is required to comply with the regulatory requirements, project design features and mitigation measures, as described in the EIR/EIS. Please refer to the response to Comment R-5-1.

M-6-2 Page 24. Most of the jobs created at the project are expected to be filled by persons who already live in the area. The jobs will replace jobs about to be lost in the area. It is expected that the Proposed Action will not produce significant growth-inducing impacts to the local area, as stated in Section 5.3 on page 401 of the Draft EIR/EIS.

M-6-3 Page 25. Please see Section 6.3.1.2 for a response to the issue of the number of residences in the area of the project.

M-6-4 Pages 25-26. Table 1.2-1, Permits Required for the Soledad Mountain Project, has been modified to include the contact position of responsibility at each agency and the contact phone number.

M-6-5 Page 26. Please see the summary of the impact on property values expected to be experienced by three residential areas in proximity to Soledad Mountain on page 3 of the Addendum to the Socioeconomic Study included in Appendix XI of the Draft EIR/EIS.

M-6-6 Page 26. Please see the responses to Comments 28-1c and 34-4.

M-6-7 Page 27. Please see the response to Comment 19-1.

Phillips
M-7-1 Page 28. Please see the response to Comment 19-1. Bottled water will be used for potable water at the mine site so that the expense of a purifying system will not be incurred.

M-7-2 Page 28. The comment that there is approximately one sonic boom per month in the area of the project is noted and included in the record.

M-7-3 Page 28. Please see the next to last paragraph on page 284 of the Draft EIR/EIS for a discussion of road maintenance on Silver Queen Road.

M-7-4 Page 28. Please see the response to Comment 27-1.

Stowell
M-8-1 Pages 31-34. The comment in support of the project is noted and included for the record.

Hodgkinson
M-9-1 Pages 37-38. The comment in support of the project is noted and included for the record.

Stewart
M-10-1 Pages 39-40. The comment in support of the project is noted and included for the record.

M-10-2 Pages 40-42. The comment in support of the project is noted and included for the record.

Land
M-11-1 Pages 42-43. The comment in support of the project is noted and included for the record.

Tucker
M-12-1 Pages 43-45. The comment in support of the project is noted and included for the record.

Gaeta

M-13-1 Page 46. As stated in Section 3.10.1 on page 263 of the Draft EIR/EIS, Golden Queen has acquired or is in final negotiation to obtain the necessary interests to mine for minerals. Appendix III of the Draft EIR/EIS contains a list of the mineral interests acquired by Golden Queen.

Golden Queen has the right to drill water wells on its property subject to acquisition of the necessary permits. Table 1.2-1 contains of list of the required permits for the Soledad Mountain Project. Water well drilling permits are included in the list.

M-13-2 Page 46. The anticipated life of the project is up to 15 years, as stated on page S-10 of the Draft EIR/EIS. It is not within the scope of the EIR/EIS to address the issue of what happens to the employees when the project is completed.

M-13-3 Page 46. At the end of the project, the mine will be reclaimed in accordance with the requirements of the Surface Mining and Reclamation Act of 1975, as described in Appendix III of the Draft EIR/EIS and summarized in Section 2.2.5 beginning on page 86 of the Draft EIR/EIS.

Zamora

M-14-1 Pages 47-48. The comment in support of the project is noted and included for the record.

Markiewitz

M-15-1 Pages 48-51. The comment in support of the project is noted and included for the record.

Hooper

M-16-1 Page 51. For a response to a comment about the historical release of mercury, please see Section 6.3.1.1.1.

7.0 MITIGATION MONITORING PROGRAM

As part of the CEQA process administered by Kern County, a Mitigation Monitoring Program has been prepared and incorporated in this section. The Mitigation Monitoring Program incorporates the design criteria and mitigation measures which have been developed to avoid potentially significant impacts related to the development of the project, and specific conditions of approval associated with the CUP.

The Mitigation Monitoring Program provides a method of tracking compliance with these design criteria and mitigation measures by recording and documenting the acquisition of various construction and operating permits and the results of various field inspections. Updated copies of the Mitigation Monitoring Program will be maintained by Golden Queen and Kern County, providing a mechanism for the public and all involved agencies to verify compliance with the approved CUP and Plan of Operations.

MONITORING PROGRAM #_1_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Exploration activity, consisting of drilling boreholes and analysis of rock samples, has been conducted to ensure mineral resources will not be covered by overburden or heap piles.

2. JUSTIFICATION (from EIR/EIS)

   Project has the potential to cover mineral resources with overburden.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Boreholes have been drilled and samples analyzed.*
   B. *Mining area and overburden areas are delineated on permit application and Plan of Operations.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Kern County issuance of Surface Mining and Reclamation Plan approval.*
   B. *BLM approval of the Plan of Operations.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM #_2_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   During final reclamation, overburden will be graded to break up the unnatural angles at the top edges.

2. JUSTIFICATION (from EIR/EIS)

   Natural ground contours will be significantly modified.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Requirement for grading of overburden included in approved reclamation plan.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Lead Agency will confirm adherence to mitigation measure prior to deeming reclamation complete.*
   B. *Lead Agency will file inspection results in case file.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM #_3_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Mine pit slopes will be evaluated by the applicant throughout operations to assure that excavation occurs at a slope angle that is safe, considering actual rock strength and structural conditions encountered.

2. JUSTIFICATION (from EIR/EIS)

   Steep slopes may cause safety hazard.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Applicant will adhere to data contained in existing Slope Stability Analysis.*
   B. *Applicant will revise the Slope Stability Analysis if necessary.*
   C. *Applicant will provide a pit slope report reviewed by a California Registered Engineering Geologist or Professional Civil Engineer to Kern County annually.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Compliance with Slope Stability Analysis shall be verified by Lead Agency during performance of annual inspections.*
   B. *Lead Agency will file inspection reports in the case file.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 4

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Old underground mining areas will be excavated or remediated.

2. JUSTIFICATION (from EIR/EIS)

   Earthquakes could cause collapse of old underground mine areas.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game		x
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Applicant will excavate or remediate old underground mining areas where feasible.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Compliance will be verified during performance of annual inspections by the Lead Agency.*
   B. *Lead Agency will file inspection reports in the case file.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM #_5_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Historical structures will be stabilized or removed by the applicant prior to site disturbance.

2. JUSTIFICATION (from EIR/EIS)

   Earthquakes could cause collapse of historical structures.

3. TRUSTEE AGENCIES

	JURISDICTION	
	YES	NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Applicant will effect the stabilization or removal of historical structures prior to site disturbance.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Applicant will submit proof of stabilization or removal to Lead Agency prior to site disturbance.*
   B. *Lead Agency will file documentation in case file.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM #_6_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Surface disturbance outside the project area will be kept to a minimum by clearly delineating operating areas to limit roads and vehicle traffic outside designated areas.

2. JUSTIFICATION (from EIR/EIS)

   Minimizing surface disturbance will reduce potential loss of topsoil.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Property boundary limits shall be clearly marked prior to the commencement of mining operations.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Proof of boundary delineation shall be submitted to the Lead Agency.*

   B. *Annual inspection by the Lead Agency shall confirm adherence to mitigation measure over the life of the project.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM #_7_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Growth media stockpiles will be stabilized by allowing germination of seeds naturally contained in the soil.

2. JUSTIFICATION (from EIR/EIS)

   Seed germination will reduce potential loss of topsoil.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Except for noxious weeds, applicant will not hinder natural germination of seeds in the growth media stockpile.*
   B. *If stabilization is not achieved by natural germination of seeds, the applicant shall consult with the Lead Agency as to another method of stabilization to be employed.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Growth media stockpile stabilization will be verified by Lead Agency during performance of annual inspections.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 8

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   The feasibility of inoculation of soil with biological components will be investigated in test plots.

2. JUSTIFICATION (from EIR/EIS)

   Inoculation with biological components may promote plant growth and enhance reclamation.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game		x
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Test plots will be established and inoculated with biological components within three years of the commencement of mining operations.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Results of the test plots will be submitted to the Lead Agency.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 9

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Site drainage will be inspected periodically to assure that excessive erosion is not occurring. In the event excessive erosion is identified, the drainage plan will be revised in consultation with the Kern County Planning Department.

2. JUSTIFICATION (from EIR/EIS)

   Potential loss of topsoil could occur from erosion.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Periodic inspections will be performed as needed by applicant during wet season.*
   B. *Applicant will revise the site drainage plan as necessary should excessive erosion occur.*
   C. *Applicant will submit the site drainage plan for review and approval to the Lead Agency.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Compliance with approved site drainage plan will be verified during performance of annual inspections by the Lead Agency.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 10

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

Additional erosion prevention techniques include:

- *Site drainage will be retained onsite.*
- *Site roads and drainages will be inspected by Golden Queen personnel after rainfall events which result in surface flow to ensure erosion prevention is maintained and upgraded as needed.*
- *Drainage from the tops of overburden piles will be directed away from the slopes toward the pit.*
- *Salvaged growth media will be stockpiled away from areas of concentrated drainage.*
- *Reclamation of disturbed areas will occur as soon as possible.*

2. JUSTIFICATION (from EIR/EIS)

Potential erosion resulting from alteration of drainage pattern.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____
Lahontan Regional Water Quality Control Board	x	____

4. MONITORING AGENCY/FIRM:

Kern County Planning Department, BLM and Lahontan Regional Board

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

A. *Site drainage plan included in Surface Mining and Reclamation Plan issued by Kern County.*
B. *Erosion control methods included in the Plan of Operations issued by BLM.*
C. *Submit and obtain approval of a General Construction Activity Storm Water Permit from the Lahontan Regional Water Quality Control Board.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

A. *Copy of approved General Construction Activity permit to be submitted to Kern County and BLM for placement in the case file.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM #_11_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   The overliner protective material placed in direct contact with the HDPE liner will not exceed one and one-half inches in diameter, and will not contain hard, sharp, angular pieces.

2. JUSTIFICATION (from EIR/EIS)

   Potential degradation of surface water and groundwater quality from project activities.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____
Lahontan Regional Water Quality Control Board	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department, Lahontan Regional Board and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Liner design included in Report of Waste Discharge for review and approval.*

   B. *Installation of the liner will be subject to quality assurance/quality control.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Issuance of and compliance with Waste Discharge Requirements issued by Regional Board.*
   B. *Copy of Waste Discharge Requirements shall be submitted to Kern County for placement in case file upon issuance.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM #_12_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   A cyanide destructing compound (e.g., hydrogen peroxide or calcium hypochlorite) will be maintained onsite for use in the event that a spill occurs.

2. JUSTIFICATION (from EIR/EIS)

   The presence of cyanide results in the potential for a spill and the potential to degrade water quality.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x

OTHER PUBLIC AGENCIES

Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____
Lahontan Regional Water Quality Control Board	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Applicant will maintain a cyanide destructing agent onsite.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Proof of the cyanide destructing compound will be submitted to the Lead Agency and Regional Board for placement in case file prior to receipt of cyanide onsite.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM #_13_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Historical mining wastes and tailings will be tested and processed with the ore on the heap leach pad or, if indicated, disposed of at an offsite permitted disposal facility, removing any future threat of surface water contamination.

2. JUSTIFICATION (from EIR/EIS)

   Potential degradation of surface water and groundwater from existing wastes and tailings.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____
Kern County Waste Management Department	x	____
Lahontan Regional Water Quality Control Board	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department, Lahontan Regional Board and Kern County Waste Management Department

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Historical wastes and tailing will be sampled and analyzed by an EPA-certified laboratory.*
   B. *Laboratory analysis will be submitted to the Lahontan Regional Board and Kern County Waste Management and Lead Agency for review and approval.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Copies of approved laboratory analysis submitted to Lead Agency for placement in case file.*
   B. *If the waste is not treated as ore, final deposition will be in accordance with existing regulations as approved by the regulatory agencies.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

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MONITORING PROGRAM #_14_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   The Lahontan Regional Board will be consulted prior to the use of dust suppression or soil stabilization chemicals.

2. JUSTIFICATION (from EIR/EIS)

   Potential degradation of surface water or groundwater quality from chemicals.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____
Lahontan Regional Water Quality Control Board	x	____

4. MONITORING AGENCY/FIRM:

   Lahontan Regional Board, Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Applicant will submit list of dust suppression or soil stabilization chemicals to the Lahontan Regional Board for review and approval prior to their application.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Copy of Lahontan Regional Board approval shall be submitted to Lead Agency for placement in case file.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM #_15_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   The evaporation of water and, therefore, the need for makeup water will be minimized by the use of enclosed solution storage.

2. JUSTIFICATION (from EIR/EIS)

   Potential drawdown of groundwater levels from project activities.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Enclosed storage will be constructed in accordance with the approved plan.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Compliance will be verified by Lead Agency during performance of annual inspection.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

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MONITORING PROGRAM # 16

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

Golden Queen will monitor the groundwater level on a monthly basis and compare the water level data collected by the monitoring program to water levels predicted by the groundwater drawdown model. In the event that the monitoring program shows that the actual water drawdown in the well when corrected for well conditions exceeds the predicted model for six consecutive months, Golden Queen will supplement the water supplied by the production wells with up to 300 gpm of water from Antelope Valley - East Kern Water Agency.

2. JUSTIFICATION (from EIR/EIS)

Potential drawdown of water levels due to project activities.

3. TRUSTEE AGENCIES

	JURISDICTION	
	YES	NO
State Department of Fish and Game		x
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	

4. MONITORING AGENCY/FIRM:

Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

A. *Applicant will monitor water withdrawal on a monthly basis and make comparisons to model.*
B. *Applicant shall cause an annual report to be prepared based upon monthly monitoring and submitted to the Lead Agency for review and approval.*
C. *If drawdown exceeds modeling analysis for six consecutive months, the Lead Agency will be notified immediately.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

A. *Annual report to be placed in Lead Agency case file.*
B. *AVEK water will be used to supplement project water should modeling analysis be exceeded for six consecutive months.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 17

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Onsite equipment and vehicles will be maintained on a routine basis, as recommended by manufacturer manuals, to reduce exhaust emissions.

2. JUSTIFICATION (from EIR/EIS)

   Potential impacts to air quality from project activities.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game		x
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Land Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	
Kern County Air Pollution Control District	x	

4. MONITORING AGENCY/FIRM:

   Kern County Air Pollution Control District, Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Applicant will maintain equipment as recommended by manufacturer.*
   B. *Applicant will keep maintenance records onsite.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Applicant will make maintenance records available to Kern County APCD on request.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

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MONITORING PROGRAM # 18

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Monitoring stations for PM_{10} will be established upwind and downwind from the processing facilities.

2. JUSTIFICATION (from EIR/EIS)

   Potential impact to visibility and air quality from project activities.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game		x
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	
Kern County Air Pollution Control District	x	

4. MONITORING AGENCY/FIRM:

   Kern County Air Pollution Control District and Kern County Planning Department

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Applicant will submit the location of monitoring stations to Kern County APCD for review and approval prior to the commencement of mining activity in the open pit.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Copy of Kern County Air Pollution Control District approval shall be submitted to the Lead Agency for placement in case file prior to commencement of mining operations.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

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MONITORING PROGRAM # 19

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   A mercury retort will be installed to control mercury emissions.

2. JUSTIFICATION (from EIR/EIS)

   Mitigation measure recommended to reduce potential mercury emissions to atmosphere.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game		x
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department	x	
Bureau of Land Management, Ridgecrest Resource Area	x	
Kern County Air Pollution Control District	x	

4. MONITORING AGENCY/FIRM:

   Kern County Air Pollution Control District

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Applicant shall apply to Kern County APCD for an Authority to Construct for a mercury retort.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Copy of Authority to Construct and Permit to Operate issued by Kern County APCD shall be submitted to the Lead Agency for placement in case file upon issuance.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

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MONITORING PROGRAM #_20_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   The size and number of blasts in the mine will be limited by good engineering design.

2. JUSTIFICATION (from EIR/EIS)

   There will be an incremental increase in noise and potential impact to visibility and air quality as a result of project activities.

3. TRUSTEE AGENCIES

	JURISDICTION	
	YES	NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____
Kern County Air Pollution Control District	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department, Bureau of Land Management and Kern County APCD

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *The applicant shall provide the Lead Agency, Southern California Gas Company and Kern County APCD with a schedule of blasting times prior to commencement of blasting operations.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *The Lead Agency shall file the blasting schedule in the case file.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM #_21_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   The existing tailings piles will be removed, thereby reducing the long-term fugitive emissions from the site.

2. JUSTIFICATION (from EIR/EIS)

   Potential impact to visibility and air quality due to fugitive dust from wind erosion.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x

OTHER PUBLIC AGENCIES

Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____
Kern County Air Pollution Control District	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Existing tailings will be used onsite, reprocessed or disposed of at an offsite permitted disposal facility.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Removal of tailings will be verified during performance of annual inspection by the Lead Agency.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 22

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   The adopted reclamation plan shall include reclamation of previously disturbed areas.

2. JUSTIFICATION (from EIS/EIS)

   Potential impact to visibility and air quality due to fugitive dust from wind erosion.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game		x
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	
Kern County Air Pollution Control District	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department, BLM and Kern County Air Pollution Control District

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *The reclamation of previously disturbed areas is included in the adopted Lead Agency Surface Mine & Reclamation Plan and approved BLM Plan of Operation.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

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MONITORING PROGRAM #_23_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Project disturbance will be minimized to that necessary for safe and efficient operation. The limits of the construction areas will be clearly marked and vehicles and equipment will be confined to these areas.

2. JUSTIFICATION (from EIR/EIS)

   Project activities will result in disturbance of vegetation.

3. TRUSTEE AGENCIES

	JURISDICTION	
	YES	NO
State Department of Fish and Game	x	
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	
United States Fish and Wildlife Service	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Property boundary limits shall be clearly marked prior to the commencement of mining operations.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Proof of boundary delineation shall be submitted to the Lead Agency.*
   B. *Annual inspection by the Lead Agency shall confirm adherence to mitigation measure over the life of the project.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 24

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Mature Joshua trees which may be disturbed will be salvaged and replanted in undisturbed areas within the property boundary.

2. JUSTIFICATION (from EIR/EIS)

   Project activities may result in disturbance of Joshua trees.

3. TRUSTEE AGENCIES

	JURISDICTION	
	YES	NO
State Department of Fish and Game	x	
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	
United States Fish and Wildlife Service	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Mitigation measure has been included as a condition of approval in Lead Agency adopted Surface Mine and Reclamation Plan and BLM approved Plan of Operations.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 25

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   The use of seedlings for revegetation will be investigated in test plots.

2. JUSTIFICATION (from EIR/EIS)

   Project activities will result in disturbance of vegetation.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	x	
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x

OTHER PUBLIC AGENCIES

Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	
United States Fish and Wildlife Service	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Test plots will be established within three years of the commencement of mining operations.*
   B. *Seedlings will be planted in test plots.*
   C. *The test plots will be monitored to determine success rate of seedlings.*
   D. *Applicant shall cause a report to be prepared which discusses the outcome of the test plots and any transplant criteria developed as a result.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Reports concerning the results of the test plots will be forwarded to the Lead Agency for review and placement in case file.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 26

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Fencing around the heap leach pile will remain in place until vegetation is established or as otherwise specified in the Reclamation Plan.

2. JUSTIFICATION (from EIR/EIS)

   Project will result in disturbance of vegetation.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	x	
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	
United States Fish and Wildlife Service	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Applicant will place fencing around the heap leach pile.*
   B. *Proof of fencing shall be submitted to the Lead Agency.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Compliance will be verified during performance of annual inspections by the Lead Agency during the life of the project.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 27

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Grading for the project will be minimized to the extent consistent with safe and efficient operations to limit the total area of surface disturbance.

2. JUSTIFICATION (from EIR/EIS)

   The project construction and operation will disturb or alter wildlife habitats.

3. TRUSTEE AGENCIES

	JURISDICTION	
	YES	NO
State Department of Fish and Game	x	
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department	x	
Bureau of Land Management, Ridgecrest Resource Area	x	
United States Fish & Wildlife Service	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Property boundary limits shall be clearly marked prior to the commencement of mining operations.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Proof of boundary delineation shall be submitted to the Lead Agency.*
   B. *Annual inspection by the Lead Agency shall confirm adherence to mitigation measure over the life of the project.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM #_28_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Routine distribution of cyanide solution on the top of the heap leach pad will occur via a drip irrigation system and the heap leach pads will be contoured to prevent surface ponding which could attract birds and small animals.

2. JUSTIFICATION (from EIR/EIS)

   Ponding of the cyanide solution could be hazardous to birds and small animals.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	x	
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	
United States Fish & Wildlife Service	x	
Lahontan Regional Water Quality Control Board	x	

4. MONITORING AGENCY/FIRM:

   Lahontan Regional Water Quality Control Board

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Operation is delineated on application for Surface Mining and Reclamation Plan and Plan of Operations.*
   B. *Heap leach pads will be fenced to exclude large animals.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Access to heap leach will be made available to regulatory agencies for inspection purposes to verify adherence with mitigation measure.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 29

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Containers of reagents will be stored within controlled reagent storage areas and kept closed, stored in enclosed areas, or otherwise managed to prevent access by wildlife.

2. JUSTIFICATION (from EIR/EIS)

   Reagents have the potential to be harmful to wildlife.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	x	
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	
United States Fish & Wildlife Service	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Reagents will be stored in a manner that prevents access by wildlife.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Access to reagent storage will be made available to regulatory agencies for inspection purposes to verify adherence to mitigation measure.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 30

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Project waste will be properly managed at the site to control garbage that could attract wildlife.

2. JUSTIFICATION (from EIR/EIS)

   Project waste may have the potential to harm wildlife.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	x	
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	
United States Fish & Wildlife Service	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *A litter control program shall be implemented to reduce the attractiveness of the project site to common ravens, coyotes and any other desert tortoise predators. All trash shall be promptly placed in covered containers which shall be removed from the work site on a regular basis for disposal at an authorized landfill.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *A copy of the litter control program shall be submitted to the regulatory agencies.*
   B. *Access to trash storage areas will be made available to regulatory agencies for inspection purposes to verify adherence to mitigation measure.*
   C. *Any loss of wildlife will be reported to the regulatory agencies.*
   D. *In the event of loss of wildlife, applicant will take measures to prevent reoccurrence.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM #_31_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   The maximum vehicle speed will be 25 mph.

2. JUSTIFICATION (from EIR/EIS)

   Excess speed may have the potential to harm wildlife.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	x	
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department	x	
Bureau of Land Management, Ridgecrest Resource Area	x	
United States Fish & Wildlife Service	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Existing routes of travel shall be used during project activities to the maximum extent practical in order to minimize any potential impacts to tortoise or tortoise habitat not slated for development. Speed limits on unposted access roads leading to and from the mining site, ore processing areas, equipment stockpile or overburden areas, and other facilities shall not exceed 25 miles per hour. Project-related vehicle use shall be confined to designated routes.*
   B. *Applicant will post speed limit signs as approved by the Lead Agency.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Applicant shall submit proof to the Lead Agency that signs have been installed prior to the commencement of mining activity.*
   B. *Lead Agency shall verify compliance of sign posting during performance of annual inspection.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 32

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

Wildlife habitat awareness will be included in the workers education program.

2. JUSTIFICATION (from EIR/EIS)

Worker education will help prevent the potential harm to wildlife.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	x	
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department	x	
Bureau of Land Management, Ridgecrest Resource Area	x	
United States Fish and Wildlife Service	x	

4. MONITORING AGENCY/FIRM:

Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

A. *Prior to onset of mining activities, all employees shall be required to attend an endangered species education program. The program shall include information on the biology and occurrence of the desert tortoise and other sensitive species in the project area, measures being implemented for the protection of these possible species and their habitats during project activities, and means by which individual employees can facilitate this process. The employee education program shall be received, reviewed and approved by the Bureau of Land Management, California Department of Fish and Game and the United States Fish and Wildlife Service at least 15 days prior to the presentation of the program. The program may consist of a class or video developed by a qualified biologist (knowledgeable desert tortoise biologist approved by the Bureau of Land Management) and presented by a person trained by a qualified biologist. Wallet-sized cards with important information for workers are recommended. All employees shall attend the education program prior to initiation of construction activities. The Golden Queen Mining Company is responsible for ensuring that the education program is developed and presented prior to conducting activities. New employees shall receive formal approved training prior to working onsite. The program shall cover the following topics at a minimum:*

- *Distribution of listed and candidate species*
- *General behavior and ecology of these species*
- *Sensitivity to human activities*
- *Legal protection*
- *Penalties for violation of State and Federal laws*
- *Reporting requirements*
- *Project mitigation measure*

B. *Applicant will submit the worker education program to the Lead Agency and the Bureau of Land Management, California Department of Fish and Game and the United States Fish and Wildlife Service.*

C. *Golden Queen shall designate a field contact wildlife mitigation measures representative (FCR) who shall be responsible for overseeing compliance and for the coordination on compliance with the Bureau of Land Management. The name and phone number of the FCR will be supplied in writing to the BLM. The FCR shall have the authority to halt any action that might result in harm to a desert tortoise. The FCR shall have a copy of all terms and conditions.*

D. *The FCR will be informed in the event that a desert tortoise is observed or there is a sign of desert tortoise during mining. Employees shall be notified that they are not authorized to handle or otherwise move desert tortoise encountered on the project site.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

A. *Copies of program approval shall be submitted to Lead Agency for placement in case file.*

B. *Applicant will provide the Lead Agency with proof of completion of worker education program for each employee. FCR will be identified to regulatory agencies.*

7. COMMENTS:

Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM #_33_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

Some of the mine adits will be retained and gated and some of the mine shafts will be covered by grates to allow access by bats, while excluding people.

2. JUSTIFICATION (from EIR/EIS)

Fencing some mine shafts and adits will retain bat habitat and prevent human intervention.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	x	
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	
United States Fish and Wildlife Service	x	

4. MONITORING AGENCY/FIRM:

Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

A. *Map detailing location of gated adits and mine shafts covered by grates shall be submitted to Lead Agency within one year of the commencement of mining.*
B. *The shaft feature on the west edge of proposed cell 3 of heap leach pad #1 and the shaft feature on the west edge of proposed cell #4 of heap leach pad #1 will be backfilled in the warm season (May through September). Existing timber will be burned before backfilling to prevent voids or subsidence. The shaft feature above and southeast of the former Karma Mine will be backfilled slowly between May and September if it is not consumed by the open pit mine.*
C. *Monitoring of bats using the gated adits and shafts will be done two years after commencement of operations, then every three years thereafter for at least three monitoring periods. If no bats are found for two consecutive monitoring periods, after the initial monitoring period, then monitoring will be discontinued.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

A. *Compliance will be verified during performance of annual inspections by the Lead Agency.*
B. *Results of each monitoring session will be submitted to BLM.*

7. COMMENTS:
8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____
Prepared By: _____ Date: _____

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MONITORING PROGRAM #_34_
FOR
CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Artifacts from the historical sites will be used to establish a small display of historical mining activities onsite. After conclusion of the project, the items on display will be donated to a museum located in Kern County.

2. JUSTIFICATION (from EIR/EIS)

   Artifacts from the historical sites may be of public interest.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	x	____
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *A public display will be created onsite within one year of the commencement of mining operations. Displayed items will be donated to a museum located in Kern County at the conclusion of the project.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *The public display will be verified by the Lead Agency during performance of annual inspections.*
   B. *Applicant will donate items to a Kern County museum at the conclusion of the mining project and provide proof to the Lead Agency prior to deeming reclamation complete.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

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MONITORING PROGRAM # 35

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   As part of the worker education program, construction contractors and operations personnel will be instructed regarding the sensitivity of cultural resources and the presence of laws against unauthorized collection and disturbance.

2. JUSTIFICATION (from EIR/EIS)

   Worker education will help prevent the loss of cultural resources.

3. TRUSTEE AGENCIES

	JURISDICTION	
	YES	NO
State Department of Fish and Game		x
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield (SSJVIC)	x	
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Applicant will develop a worker education program prior to the commencement of mining activities that includes sensitivity of cultural resources and the presence of laws against unauthorized collection and disturbance.*
   B. *The worker education program will be submitted to the Lead Agency and SSJVIC for review and approval.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Copy of SSJVIC approval shall be submitted to Lead Agency for placement in case file.*
   B. *Proof of completion of the worker education program by all employees will be submitted to the Lead Agency and SSJVIC for placement in case file.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM #_36_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   If any unknown archaeological/cultural resources are discovered on private land during the course of the mining or reclamation, work in the area of discovery shall be stopped and a qualified archeologist contacted to evaluate the find and, if necessary, mitigate impacts prior to resumption of work.

2. JUSTIFICATION (from EIR/EIS)

   Project-related activities could disturb or destroy potentially-significant sites.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield (SSJVIC)	x	____
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Applicant shall notify the Lead Agency if archaeological/cultural resources are discovered.*
   B. *An archeological report completed by a qualified archaeologist shall be forwarded to the Lead Agency and SSJVIC.*
   C. *Proof of any mitigation measures shall be submitted to the Lead Agency.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Prior to recommencement of work in affected areas, written verification of compliance shall be submitted to the Lead Agency by the project archaeologist.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 37

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   A Phase III Data Recovery (salvage excavation and architectural recording) will be conducted at four sites.

2. JUSTIFICATION (from EIR/EIS)

   Project related activities could disturb or destroy potentially significant sites.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game		x
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield	x	
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Phase III Data Recovery (salvage excavation and architectural recording) will be conducted at the four sites identified in Section 3.7.1.1 of the EIR/EIS prior to the commencement of mining activity in those areas.*
   B. *A Phase III report shall be forwarded to the Lead Agency.*
   C. *Proof of any mitigation measures shall be submitted to the Lead Agency.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Prior to recommencement of work in affected areas, written verification of compliance shall be submitted to the Lead Agency by the project archaeologist.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

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MONITORING PROGRAM #__38__

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Seven sites will have an archaeological monitor review the areas during grading activity.

2. JUSTIFICATION (from EIR/EIS)

   Project related activities could disturb or destroy potentially significant sites.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	x	____

OTHER PUBLIC AGENCIES

Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *An archaeological monitor will be onsite during grading activity.*
   B. *The archaeological monitor will record and collect any archeological data that may be uncovered.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *The archaeological monitor will report any information uncovered or mitigation measures developed to the Lead Agency in accordance with the procedures set out in mitigation measure #36.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 39

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Surface disturbance will be minimized to that required for safe and efficient operation.

2. JUSTIFICATION (from EIR/EIS)

   Minimizing surface disturbance will reduce the potential to affect visual resources.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game		x
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Areas of surface disturbance are delineated in the adopted Surface Mining & Reclamation Plan. Mining shall be performed in accordance with Section 3503(a)(1) of SMARA.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Annual inspection performance by the Lead Agency will verify adherence to the approved plan and SMARA.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 40

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Historical mining disturbance will be reclaimed.

2. JUSTIFICATION (from EIR/EIS)

   Reclamation of historical disturbance will reduce the potential to affect visual resources.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game		x
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Areas to be reclaimed are delineated on the adopted Surface Mining & Reclamation Plan.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Reclamation of historical disturbance shall be verified by Lead Agency prior to deeming reclamation complete.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM #_41_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Buildings and structures will be painted with nonreflective earthtone colors to blend with the predominant background.

2. JUSTIFICATION (from EIR/EIS))

   The landscape color consists of brown, tans and grays. Earthtone colors will mitigate effects to visual resources.

3. TRUSTEE AGENCIES

	JURISDICTION	
	YES	NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x

OTHER PUBLIC AGENCIES

Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Building and structures constructed by applicant will be painted with earthtone colors.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Compliance shall be verified prior to finalizing of building permit or issuance of a Certificate of Occupancy.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 42

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Outdoor lighting for the mine pit and other areas of nighttime activities will be shielded and directed downward to reduce fugitive light. Light poles will be no higher than necessary for safe and efficient lighting. Low-pressure sodium bulbs or other appropriate technology will be used for outdoor lighting.

2. JUSTIFICATION (from EIR/EIS)

   Fugitive light from the project area may be visible at night.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game		x
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Outdoor lighting shall be designed and installed in accordance with the mitigation measure.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Lead Agency will verify adherence to measure during annual inspection conducted in accordance with SMARA requirements.*
   B. *Lead Agency shall file a Notice to Correct (Kern County Zoning Ordinance 19.100.070) should the mitigation measure not be adhered to.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 43

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Approximately 75 to 80 percent of construction activities will take place during daylight.

2. JUSTIFICATION (from Initial Study)

   Noise from the mining operations has the potential to cause significant impact to the level of noise in the area of the project.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game		x
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department	x	
Bureau of Land Management, Ridgecrest Resource Area	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Construction schedule will be designed so the majority of activity is during daylight hours.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *30-days prior to commencement of construction, the applicant shall file a construction schedule with the Lead Agency for placement in case file.*
   B. *Lead Agency shall file a Notice to Correct (Kern County Zoning Ordinance 19.100.070) should this applicant proposed mitigation not be adhered to.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM #_44_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Blasting will occur during daylight, one time per day, and will be engineered to minimize the amount of explosives used, according to United States Bureau of Mines guidelines.

2. JUSTIFICATION (from EIR/EIS)

   Noise from blasting has the potential to cause significant impact to the level of noise in the area of the project.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x

OTHER PUBLIC AGENCIES

Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *The applicant shall provide the Lead Agency with a tentative schedule of blasting times prior to commencement of blasting operations.*
   B. *The applicant shall adhere to United States Bureau of Mines guidelines.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *The Lead Agency shall file the blasting schedule in the case file.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 45

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Golden Queen has committed to hiring from the local population.

2. JUSTIFICATION (from EIR/EIS)

   The project could increase growth, causing a shortage of housing and services.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game		x
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project)

   A. *Available positions will be published in local newspapers.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor)

   A. *Copies of the newspaper publications will be submitted to the Lead Agency for insertion in the case file.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM #_46_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Fences will be erected around potentially hazardous areas to discourage entry by unauthorized mine personnel or visitors.

2. JUSTIFICATION (from Initial Study)

   The project could create a potential health hazard or threat to public safety.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x

OTHER PUBLIC AGENCIES

Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Fences will be established to prevent public access to the mine, heap leach pads and working areas prior to the commencement of mining activity.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *The existence of the fences shall be verified by the Lead Agency during performance of annual inspections.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 47

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Historical mining operations will be removed or closed to the extent feasible.

2. JUSTIFICATION (from Initial Study)

   Historical mining sites may be a threat to public safety.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game		x
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department	x	
Bureau of Land Management, Ridgecrest Resource Area	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Applicant will remove or close historical mining operations to the extent feasible.*
   B. *Prior to January 1, 1999, applicant shall submit a plan for the closure or removal of historical mining operations to the Lead Agency for review and approval.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Compliance shall be verified during performance of annual inspections by the Lead Agency.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # *48*

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Former mine waste will be removed.

2. JUSTIFICATION (from EIR/EIS)

   Former mine wastes are a potential health hazard.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x
OTHER PUBLIC AGENCIES		
Kern County Planning Department	x	____
Bureau of Land Management, Ridgecrest Resource Area	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Former mine waste will be removed and disposed of in an appropriate manner. Tailings piles will be used as liner material or be included with the ore and processed on the heap leach pad. Structures and old equipment will be sent to appropriate landfills.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Removal of former mine waste will be verified by the Lead Agency during performance of annual inspections.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 49

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Project design will be in accordance with a preconstruction design study.

2. JUSTIFICATION (from Initial Study)

   The project could create a potential health hazard or threat to public safety.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game		x
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department	x	
Bureau of Land Management, Ridgecrest Resource Area	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and BLM

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Project design has been incorporated into adopted Lead Agency Surface Mining and Reclamation Plan and approved BLM Plan of Operations.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM # 50

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   The entrance road from Silver Queen Road to the office area will be paved.

2. JUSTIFICATION (from EIR/EIS)

   The project will increase the level of traffic on roads in the vicinity of the project.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game		x
State Land Commission		x
State Department of Parks and Recreation		x
California State University, Bakersfield		x
OTHER PUBLIC AGENCIES		
Kern County Planning Department (Lead Agency)	x	
Bureau of Land Management, Ridgecrest Resource Area	x	
Kern County Roads Department	x	

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Applicant will pave the entrance road from Silver Queen Road to the office prior to the commencement of mining activities.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Proof of paving will be submitted to the Lead Agency.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

MONITORING PROGRAM #_51_

FOR

CUP #22 Map #214
CUP #41 Map #213
213-6 3 098 Streets & Highways
(Case Name and Number)

1. MITIGATION MEASURE:

   Provide a left-turn lane on Silver Queen Road at the entrance to the project site.

2. JUSTIFICATION (from EIR/EIS)

   The project will increase the level of traffic on roads in the vicinity of the project.

3. TRUSTEE AGENCIES

	JURISDICTION YES	JURISDICTION NO
State Department of Fish and Game	____	x
State Land Commission	____	x
State Department of Parks and Recreation	____	x
California State University, Bakersfield	____	x

OTHER PUBLIC AGENCIES

Kern County Planning Department (Lead Agency)	x	____
Bureau of Land Management, Ridgecrest Resource Area	____	x
Kern County Roads Department	x	____

4. MONITORING AGENCY/FIRM:

   Kern County Planning Department and Kern County Roads Department

5. PROCEDURE - STEPS TO COMPLIANCE (unique to each project):

   A. *Applicant will construct the left-turn lane prior to the commencement of mining activities.*

6. COMPLIANCE (each procedure step to be signed off and dated by monitor):

   A. *Proof of the left-turn lane will be submitted to the Lead Agency.*

7. COMMENTS:

8. Fees: _____ Receipt #: _____ Date: _____ Rec'd By: _____

   Prepared By: _____ Date: _____

FORM78.PDS (1/94)

8.0 REPORT PREPARATION

8.1 List of Preparers

This document was prepared by Kern County Planning and BLM with the assistance of WZI Inc., a third party contractor. Other individuals and companies also made significant contributions. The following is a list of individuals responsible for preparation of the Draft EIR/EIS.

Kern County Planning Department personnel include:

Ted James, Director
Glenn Barnhill, Special Projects Division Chief
Scott Denney, Associate Planner
Karen Northcutt, Contract Consultant

Bureau of Land Management personnel include:

Lee Delaney, Area Manger, California Desert District (CDD)
Linn Gum, Minerals Staff Chief, Project Lead, Ridgecrest Resource Area (RRA), CDD
Ahmed Mohsen, Resource Management Specialist, NEPA Coordinator, RRA, CDD
Jack Mills, Environmental Coordinator, Sacramento
George Deverse, Geologist, CDD
Joyce Schlachter, Biologist, CDD
Larry M. Vredenburgh, Geologist, Caliente Resource Area
Dan Fowler, Archaeologist, CDD
Glenn Harris, Natural Resource Specialist, CDD

WZI Inc. personnel include:

Mary Jane Wilson, President, Chief Executive Officer, B.S., Petroleum Engineering, Stanford University, California Registered Environmental Assessor No. 00050. Environmental Professional with over 20 years experience in projects including Environmental Impact Statements, Environmental Impact Reports, Environmental Assessments, Waste Discharge Requirements and air quality permits. Areas of expertise include regulatory compliance and strategic planning.

Steve Muir, Manager - Geotechnical Services, M.S., Geology, California State University, Northridge, B.S, Geology, University of California, Los Angeles. State of California Registered Geologist No. 3769, State of California Certified Engineering Geologist No. 1224, State of California Registered Geophysicists 945, State of California Registered Environmental Assessor No. 01917. Twenty years experience in conducting and supervising surface and sub-surface engineering of geological and geophysical mapping projects for natural resource exploration, geotechnical and environmental engineering investigations.

David Weiss, (currently with U.S. BORAX, Inc.), Manager - Mining Services, B.S. Mining Engineering, University of Missouri, State of Colorado Registered Professional Engineer No. 14253. Twenty-four years experience in the mining industry in designing and operating mining projects. Regulatory compliance experience includes Prevention of Significant Deterioration Permits, Conditional Use Permits, Surface Mine Permits, Surface Mine Reclamation Plans, Permits to Operate, Health Risk Assessments, Reports of Waste Discharge, Plans of Operation and Environmental Impact Analyses.

Laura Bazeley, Manager - Geology, M.S. Geology, University of Delaware, B.S., Geology, State University of New York at Binghamton. State of California Registered Geologist No. 4340. Over 17 years geologic experience in geologic investigations for natural resource exploration, contamination investigations, groundwater investigation and land use planning issues. Regulatory compliance expertise in wastewater disposal, hydrogeologic assessments, site characterizations, Conditional Use Permits, Environmental Impact Reports, Environmental Impact Statements and Reports of Waste Discharge.

Allen Waggoner, Senior Geologist, M.S., B.S. Geology, San Diego State University, State of California Registered Geologist No. 5719, State of California Certified Engineering Geologist No. 1818. Over 15 years experience as a geologist in geotechnical, environmental and natural resource industry. Experience in field investigations and geologic mapping for mineral exploration.

Greg McNeish, Senior Engineer, B.S. Chemical Engineering, University of Kansas, State of California Registered Engineer P.E. Over six years experience in air quality permitting and air dispersion modeling together with 16 years experience in natural resource production and waste water disposal. Experience includes PSD permit applications, preparation of health risk assessments and compliance with the California Environmental Quality Act.

Robert Langner, Projects Manager, M.B.A. California State University, Bakersfield, B.S. Management Information Science, California State University, Sacramento. California Registered Environmental Assessor No. 5576. Eight years experience in air quality permitting, air toxics, compliance with the California Environmental Quality Act and land use planning.

Steven S. Stillar, Technical Advisor, B.S. Chemical Engineering, Montana State University. Twenty-seven years in mining and mineral processing management, operations and engineering. Experience includes preparation of Environmental Impact Statements, Environmental Impact Reports, Environmental Assessments, Air Quality Permits, Mine Reclamation Plans, Plans of Operation and Conditional Use Permits.

Elizabeth T. Kendall, Staff Geologist, M.S. Geology, Oregon State University, B.S. Geology, Tufts University. Eight years experience in environmental and natural resource industry. Experience includes investigations for environmental assessments and geologic mapping for mineral development.

Scott Weaver, Staff Engineer, B.S. Chemical Engineering, University of California at Santa Barbara. Four years experience in air permitting, risk assessments and hazardous material handling.

Companies and individuals providing specialized background investigations include:

Archaeology

W & S Consultants:

David S. Whitley, Ph.D., Principal Investigator

Joseph H. Simon

Robert B. Rechtman, Ph.D.

Tamara K. Whitley, M.A.

Biological Resources

Bamberg Associates:

Samuel A. Bamberg, Ph.D., Senior Ecologist

Ingrid Hanne, M.S., Ecologist

Brown-Berry Biological Consulting:

Patricia E. Brown, Ph.D., Wildlife Biologist

J. Scott Altenbach, Ph.D., Biologist, University of New Mexico

Engineering

Glasgow Engineering Group, Inc.:

Don Andrew Poulter, California Registered Professional Engineer

John F. Abel, Jr., Ph.D., Mining Engineer

Herb Osborne, Consulting Metallurgical Engineer

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Richard Addison, P.E.
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Susan Poos, P.E.
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Rick Williamson

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Larry Czerwonka, Consultant

Hydrology
Water, Waste & Land, Inc.

Noise
Air Sciences, Inc.:
Rodger G. Steen, Principal
Jean Clawson
Jeffrey N. Herring
Hersh Acoustical Engineering, Inc.:
Joseph W. Celano, P. E.

PM_{10} and Meteorological Monitoring
Air Sciences, Inc.

Socioeconomics
Weaver Hawley Mills Consultants:
Susan Weaver, Principal
Sedway Kotin Mouchly Group:
Thomas Jirovsky, Principal
Carol Fredholm, Manager

8.2 Persons/Agencies Consulted

The following persons/agencies were consulted during the preparation of this Environmental Review.

State Agencies

California Department of Fish and Game, Jeffrey Single, Ph.D.
California Department of Transportation District 9, Katy Walton
Lahontan Regional Water Quality Control Board, Ted Evans

Federal Agencies

Edwards Air Force Base, Chris Rush, Kirk Buehler
United States Geological Survey, Steve Phillips
United States Fish and Wildlife Service, Kirk Waln

Local Agencies

Kern Council of Governments, Peter Smith
Kern County Agriculture Commissioner's Office, Matthew Peete
Kern County Air Pollution Control District, Mary Flynn, Will Lund
Kern County Environmental Health Services Department, Lloyd Weese, Joe Canas
Kern County Engineering and Survey Services, Aaron Leicht
Kern County Fire Department, Dale Heineman
Kern County Roads Department, Barry Nienke
Antelope Valley-East Kern Water Agency, Russell Fuller
Mojave Public Utilities District, Bruce Gaines

8.3 Distribution List for Draft EIR/EIS

Federal Agencies

Rosalie Faubion
Bureau of Reclamation
2666 North Grove Industrial Drive, Suite 106
Fresno, California 93727-1551

Ray Bransfield
Fish & Wildlife Service, Department of Interior
2493 Portola Road, Suite B
Ventura, California 93003

U.S. Department of Agriculture
Natural Resources Conservation Service
1601 New Stine Road, Suite 270
Bakersfield, California 93309-3698

U.S. Department of Interior - Bureau of Land Management / Ridgecrest Resource Area
300 South Richmond Boulevard
Ridgecrest, California 93555

State Agencies

Steve Hart
Cal OSHA - Division of Mines and Tunnels
2550 Mariposa, Room 4000
Fresno, California 93721

California Energy Commission
11516 Ninth Street, Room 200
Sacramento, California 95814

California Highway Patrol
Planning & Analysis Division
Post Office Box 942898
Sacramento, California 94298-0001

California Regional Water Quality Control Board
Lahontan Region
2092 Lake Tahoe Boulevard, Suite 2
South Lake Tahoe, California 96150

California State University, Bakersfield
Library
9001 Stockdale Highway
Bakersfield, California 93311-1099

CalTrans - District 6 - Bishop
Post Office Box 12616
Fresno, California 93778

James Pompy
Dept. of Conservation - Office of Mine Reclamation
801 "K" Street MS 09-06
Sacramento, California 95814-3529

Vince Paul
Integrated Waste Management
8800 Cal Centre Drive
Sacramento, California 95826

Native American Heritage Commission
915 Capitol Mall, Room 288
Sacramento, California 95814

Bob Penny
Public Utilities Commission
350 McAllister Street, Room 3230
San Francisco, California 94102

Southern San Joaquin Valley Archaeological Information Center
California State University, Bakersfield
9001 Stockdale Highway
Bakersfield, California 93311-1099

Barbara Fry
State Air Resources Board-Stationary Res. Division
Post Office Box 2815
Sacramento, California 95812

State Department of Health Services
5545 East Shields Avenue
Fresno, California 93727

State Department of Water Resources
San Joaquin District
3374 East Shields Avenue, Room A-7
Fresno, California 93726

State Fish and Game
1234 East Shaw Avenue
Fresno, California 93710

State Fish and Game
1416 Ninth Street
Sacramento, California 95814

State Lands Commission
100 Howe Avenue, Suite 100-South
Sacramento, California 95825-8202

State Office of Planning & Research
1400 Tenth Street, Room 121
Sacramento, California 95814

County of Kern

Kern County Administrative Office / Fiscal 1115 Truxtun Avenue, 5th Floor
Bakersfield, California 93301

Kern County Air Pollution Control District
2700 "M" Street, Suite 290
Bakersfield, California 93301

Carol Rush
Kern County Air Pollution Control Dist. Field Off.
1775 Highway 50
Mojave, California 93501

Kern County Engineering & Survey Services Department
Floodplain Management Section
2700 "M" Street, Suite 500
Bakersfield, California 93301

Kern County Engineering & Survey Services Department
Survey Department
2700 "M" Street, Suite 300
Bakersfield, California 93301

Kern County Environmental Health Services Department
2700 "M" Street, Suite 300
Bakersfield, California 93301

Kern County Fire Department
5642 Victor Street
Bakersfield, California 93308

Kern County Health Department
1700 Flower Street
Bakersfield, California 93305

Kern County Library, Beale Branch - Administration
1415 Truxtun Avenue
Bakersfield, California 93301

Kern County Library, Rosamond Branch
2646 Diamond
Rosamond, California 93560

Kern County Museum
3801 Chester Avenue
Bakersfield, California 93301

Kern County Parks Department
1110 Golden State Avenue
Bakersfield, California 93301

Kern County Planning Department - Special Projects
2700 "M" Street, Suite 100
Bakersfield, California 93301

Kern County Resource Management Agency - Fiscal
2700 "M" Street, Suite 350
Bakersfield, California 93301

Kern County Roads Department
2700 "M" Street, Suite 400
Bakersfield, California 93301

Kern County Roads Department - Transit 2700 "M" Street, Suite 400
Bakersfield, California 93301

Kern County Sheriff's Department - Fiscal Analysis
1350 Norris Road
Bakersfield, California 93308

Jon McQuiston
District 1 Supervisor, Kern County
1115 Truxtun Avenue, 5th Floor
Bakersfield, California 93301

Steve Perez
District 2 Supervisor, Kern County
1115 Truxtun Avenue, 5th Floor
Bakersfield, California 93301

Barbara Patrick
District 3 Supervisor, Kern County
1115 Truxtun Avenue, 5th Floor
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Ken Peterson
District 4 Supervisor, Kern County
1115 Truxtun Avenue, 5th Floor
Bakersfield, California 93301

Peter Parra
District 5 Supervisor, Kern County
1115 Truxtun Avenue, 5th Floor
Bakersfield, California 93301

Kern County Waste Management Dept.
Liquid Waste
2700 "M" Street, Suite 500
Bakersfield, California 93301

Kern County Waste Management Dept.
Solid Waste
2700 "M" Street, Suite 500
Bakersfield, California 93301

Kern County Waste Management Dept.
Special Districts
2700 "M" Street, Suite 500
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9.0 GLOSSARY AND REFERENCES

9.1 Glossary of Technical Terms

The definitions below are provided as clarification for terms used in this document.

TERM	DEFINITION
Active fault	Fault with recent seismic activity as to have displaced Holocene materials (up to 10,000 years old).
Activated carbon	A mostly pure carbon product that has been treated in a kiln to remove impurities and maximize its absorption capacity.
Adsorb	A chemical process where a molecule attaches loosely to the surface of another phase, without becoming incorporated into that phase.
Adit	A more or less horizontal surface opening to an underground mine.
Agglomeration	The process by which fine particles of crushed rock are bound to larger pieces of crushed rock so that fine particles within the heap leach pad do not inhibit percolation of leach solutions.
Average daily trips	The average number per day of vehicles passing a traffic count location.
Alluvium	A general term for geologic materials deposited by running water (e.g., streams, rivers). The term applies to deposits of recent time that have not been consolidated and cemented into rock.
Alquist-Priolo Special Studies Zone	Areas established around active faults as stated in the Alquist-Priolo Special Studies Zones Act, Chapter 75, Division 2 of the California Public Resources Code.
Ancillary facilities	Support structures and equipment.
Authority to Construct	Written permit which must be obtained from the KCAPCD prior to construction, alteration or replacement of any article, machine or equipment which may emit air contaminants or affect in any way the emission of those contaminants.

TERM	DEFINITION
Barren solution	Non-gold-bearing dilute sodium cyanide solution.
Baseline data	Data gathered to describe the conditions that exist before an action is taken.
Bedding	Layered structure of geologic deposits.
Beneficiation	The preparation and treatment of ore for recovery of mineral commodities. Beneficiation includes, but is not limited to, crushing, sizing, drying and leaching.
Berm	An elongated earthen structure, which acts as a barrier, for example, to make it difficult for a vehicle to cross, or to redirect the flow of water.
California Desert Conservation Area Plan	A program established by Congress with the Federal Land Conservation Policy and Management Act of 1976 which provides for the managed use of desert public lands and resources to safeguard the environmental, cultural and aesthetic values.
California Environmental Quality Act	Legislation enacted in 1970 to protect the quality of the environment for the people of California through requiring public agencies and decision makers to document and consider the environmental consequences of their actions.
California Porter-Cologne Water Quality Control Act	Division 7 of the State of California Water Code which establishes a statewide program for water quality control.
Candidate species	Federal: Those species for which the Fish and Wildlife Service has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule, but issuance of the proposed regulation is precluded. State of California: A native California species which is formally under review by the Department of Fish and Game to determine whether listing as threatened or endangered is warranted.

TERM	DEFINITION
Carbon column	A container in which the carbon absorption process takes place. Typically the column will be a cylindrical vessel five to six feet in diameter and up to 15 feet high, filled with activated carbon. The gold-bearing solution is introduced into the vessel, gold from solution absorbs onto the activated carbon and the barren solution exits the vessel.
Constituents of Concern	Any waste constituents, reaction products and hazardous constituents that are reasonably expected to be in or derived from waste contained in a waste management unit.
Contrast	The effect of a striking difference in form, line, color or texture of a landscape's features.
Cumulative impacts	Two or more individual effects which, when considered together, compound or increase the impact.
Doré	A French term used to describe metal bars comprised mostly of gold and silver, with some impurities.
Drawdown	The lowering of the water table or potentiometric surface caused by extraction of groundwater.
Drip irrigation	A process of distributing sodium cyanide solution across the top of the leach pile in order that gold may be leached from the ore. The process uses plastic tubing approximately one-half inch in diameter. A small opening about every 18 to 36 inches along the length of the tubing allows a small quantity of processing solution to drip out of the tube.
Dust palliative	A material, either water or chemical, used to suppress dust on unpaved surfaces.
End-dumping	The process of dumping material from the back of a dump truck. Overburden piles are constructed by backing a dump truck on the top surface of a pile to the edge of the pile, and end-dumping the waste rock over the side of the pile.

TERM	DEFINITION
Effects	Effect and impact are synonymous as used in this report. Direct or primary impacts are those caused by the project and occur at the same time and place. Indirect, or secondary, effects are those which result from the project which occur later in time or farther removed in distance or time, but are still reasonably foreseeable.
Emergency response	A plan required under the EPA Risk Management Program Plan which contains procedures for informing employees, the public, and emergency response agencies about accidental releases; documents first aid procedures; defines the use, testing, inspection and maintenance of emergency response equipment; provides for training of employees in emergency response; and ensures the review and update of the emergency response plan.
Endangered Species Act	Federal legislation enacted in 1973, as amended, that extends legal protection to plants and animals listed as "threatened" or "endangered" and includes consultation with the FWS.
Endangered species	An animal or plant species which is in danger of extinction throughout all or a significant portion of its range, as defined in the Endangered Species Act Amendments of 1982 and by the California Endangered Species Act of 1984.
Environment	The physical conditions which exist within the area which will be affected by a proposed project or alternative, including, but not limited to, land, air, water, minerals, flora, fauna, ambient noise and objects of historical or aesthetic significance. The environment includes both natural and man-made conditions.
Environmental Assessment	An analytical document prepared under the National Environmental Policy Act that outlines the potential environmental effects of the Proposed Action and its possible alternatives and leads to a decision to prepare an Environmental Impact Statement or a Finding of No Significant Impact.

TERM	DEFINITION
Environmental Impact Report	A detailed report prepared under CEQA describing and analyzing the significant environmental effects of a project and discussing ways to mitigate or avoid the effects. An EIR is prepared for use by the public, public agencies and agency decision makers to weigh the environmental consequences of a proposed action.
Environmental Impact Statement	An analytical document prepared under NEPA that portrays potential impacts to the human environment of a particular course of action and its possible alternatives. An EIS is prepared for use by the public, public agencies, and agency decision makers to weigh the environmental consequences of a proposed action.
Fault	A surface or zone along which there has been displacement of the geologic materials on either side relative to one another as a result of seismic activity.
Feasible	Capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors.
Fee land	Land in which the United States government has conveyed the fee simple interest in the surface, and possibly the minerals, into private ownership.
Geotextile	A filter fabric composed of a non-woven cloth of polypropylene monofilament fibers which, as part of the leachate collection and recovery system, provides continuous coverage for leaks within the liner system.
Groundwater	Water found beneath the land surface, in the zone of saturation below the water table.
Growth media	Geological and organic materials, including soils, that are suitable for use in growing plants.

TERM	DEFINITION
Habitat	The place where an animal or plant normally lives, often characterized by a dominant plant and co-dominant form, such as creosote bush habitat.
Haul road	A road used by large (50- to 100-ton capacity) trucks to haul ore and waste rock from the open pit to other locations.
Hazardous material	A substance which, because of its potential for either corrosivity, toxicity, ignitability or chemical reactivity may cause injury to persons or damage to property.
Hazardous Materials Business Plan	An inventory of hazardous materials handled on a project or business site, including name, quantity, physical state, physical health hazards and where stored.
Head (static)	The height of fluid above a reference point (e.g., a plastic liner). The head is the driving force that exerts pressure and causes fluid to migrate.
Heap	A pile of crushed ore underlain by a liner system engineered to collect the leach solutions. Care is taken during the placement of the crushed ore so as to avoid compaction, in order that the leach solutions can flow freely through the ore to extract the gold.
High density polyethylene	A crystalline thermoplastic organic polymer which is used to form a "geomembrane," a flexible membrane liner resistant to ultraviolet radiation. The liner is used for solution containment.
Holocene	The epoch of the Quaternary period of geologic time from 10,000 years ago to the present.
Hydraulic conductivity	Ratio of flow velocity to driving force for viscous flow under saturated conditions of a specified liquid in a porous medium.
Kern County Resource Management Agency Planning Department	Local Lead Agency responsible for implementing the California Surface Mining and Reclamation Act of 1975 and the California Environmental Quality Act and approving a Conditional Use Permit with the accompanying Reclamation Plan subject to conditions.

TERM	DEFINITION
Lahontan Regional Water Quality Control Board	The California Regional Agency responsible for protection of the waters of the state in the Lahontan Region. This agency is responsible for implementing California regulations, through the issuance of Waste Discharge Requirements, Waste Discharge Orders and National Pollution Discharge Elimination System permits, which regulate discharges to the waters of the state.
Leachate Collection and Recovery System	A system installed within the liner system to provide a detection method for leaks in the upper liner and to remove any liquid which may pass through the upper liner to prevent it from potentially passing through the lower liner.
Leaching	A process by which gold is extracted from ore using a dilute sodium cyanide solution.
Lead Agency	The public agency which has the principal responsibility for carrying out or approving a project (Title 14 CCR, 15367). The agency or agencies preparing or having taken primary responsibility for preparing the environmental impact statement (40 CFR, 1508.16).
Lysimeter	A device placed below the liner of the heap leach pad for sampling any fluid which may be found in the vadose zone.
Miocene	The epoch of the Tertiary period of geologic time encompassing the period between five and 23 million years before present.
Mitigation	A method or procedure which may: 1) avoid an impact altogether by not taking a certain action or parts of an action; 2) minimize impacts by limiting the degree or magnitude of the action and its implementation; 3) rectify the impact by repairing, rehabilitating, or restoring the affected environment; 4) reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action; and 5) compensate for the impact by replacing or providing substitute resources or environments.

TERM	DEFINITION
Mojave Desert Air Basin	An area designated by the Air Resources Control Board as a unit based on similar meteorological and geographical conditions for the purpose of adopting standards of ambient air quality. This area includes that portion of eastern Kern County encompassing the project area.
Monitoring well	A well drilled and completed in a specific area relative to a potential groundwater contamination source to allow periodic checks on the groundwater quality.
Multiple use	The management of the public lands and their various resource values so that they are utilized in the combination that will meet the present and future needs of the American people; making the most judicious use of the land for some or all of the resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish and natural scenic, scientific and historical values; and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment, with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output.
National Environmental Policy Act	Legislation enacted in 1969 that requires agencies to include in the decision-making processes: 1) appropriate consideration of all environmental effects; 2) procedures to avoid or minimize adverse effects; and 3) restore and enhance environmental quality as much as possible.

TERM	DEFINITION
Notice of Intent	A notice that an environmental impact statement will be prepared and considered. This is the NEPA-equivalent to a Notice of Preparation.
Notice of Preparation	A brief notice sent by the public agency with principal responsibility for carrying out or approving a project to notify other agencies that an EIR is being prepared under CEQA.
Open pit mine	The area from which ore and overburden materials are removed.
Ore	Rock that can be mined for extraction of a mineral commodity under conditions that allow a profit to be made.
Overburden	Rock which contains either no gold or gold in quantities that cannot be economically extracted. Because such rock either lies on top of ore or is mixed in with the ore, overburden must be removed in advance of or at the same time as the mining of the ore.
Ozone	An end product of complex reactions between reactive organic gases (or non-methane hydrocarbons) and Oxides of Nitrogen in the presence of ultraviolet radiation.
Prevention of Significant Deterioration	A term used to describe an air quality permitting process that is triggered by any project that emits certain pollutants above levels prescribed by law.
Patented claims	Mining claims for which the United States government has conveyed the fee simple interest in the surface and minerals into private ownership.
Permeability	A measure of the relative ease with which a porous medium can transmit a liquid under a potential gradient.
Pregnant solution	A gold-bearing, water-based dilute sodium or calcium cyanide fluid which contains sufficient quantities of gold that it can be sent to the processing plant to recover the gold.
Process facilities	As used in this document, generally means the stationary equipment and facilities used to prepare the ore for the leaching and extraction of gold.

TERM	DEFINITION
Project	The whole of an action, which has a potential for resulting in a physical change in the environment.
Public land	Any land and interest in land owned by the United States within the several states and administered by the Secretary of the Interior through the BLM, without regard to how the United States acquired ownership, except: 1) lands located on the Outer Continental Shelf and 2) lands held for the benefit of Indians, Aleuts and Eskimos.
Quaternary	The period of the Cenozoic Era of geologic time between 1.8 million years ago and the present. The Quaternary period includes the Pleistocene and Holocene epochs.
Rare species	A species which, although not presently threatened with extinction, is in such small numbers throughout its range that it may become endangered if its present environment worsens.
Recharge	Process by which water infiltrates and is added to an aquifer, either directly or indirectly by way of another rock formation. This term can also be used in reference to the water itself.
Receiving water	The waterbody to which a surface waterbody is a tributary or a contributor.
Report of Waste Discharge	A report submitted to the Regional Board containing information on waste characteristics and geologic and climatologic characteristics of the unit and surrounding region and other information as requested in Title 23 CCR, Chapter 15, Article 9 §2590 leading to an issuance of Waste Discharge Requirements.
Reserve	The tonnage or volume of material which can be mined under the economic and technological conditions prevailing at the time of appraisal.
Resource	The entire mineralized tonnage or volume of material which has been identified and quantified through the use of a sampling campaign.

TERM	DEFINITION
Responsible Agency	The organization that has the legal duty to ensure that a project complies with the appropriate rules and regulations.
Secondary containment	A method of preventing spills from established tanks, pipes and other holding areas from contacting the ground surface.
Seismicity	Oscillation of the ground resulting from shifting of the earth's crust.
Sensitive species	Generic term for any plant or animal species which is recognized by the government or conservation group as being depleted, rare, threatened or endangered.
Significant effect	A substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise and objects of historical or aesthetic significance (Title 14 CCR, 15382). Requires consideration of both context and intensity. Under the federal definition, there may be a significant Beneficial impact (40 CFR, 1508.27).
Site Drainage Plan	A report, including drainage, erosion control, engineered fills and the heap leach pad; showing elevations, dimensions, location, extent and slopes in application of a grading permit from Kern County.
Sodium cyanide	A chemical compound comprised of carbon, nitrogen and sodium. Sodium cyanide is water-soluble and is used in ore processing solutions to extract gold from crushed rock.
Specific Plan	Specific Plan for Soledad Mountain - Elephant Butte and Vicinity-South of Mojave: adopted by the Kern County Board of Supervisors as Resolution 73-485.
Tertiary	The period of the Cenazoic Era of geologic time between 1.8 and 65 million years before present.
Threatened species	Species which, although not presently threatened with extinction, are likely to become endangered in the foreseeable future in the absence of special protection and management efforts.

TERM	DEFINITION
Uniform Building Code	The most widely adopted model building code in the United States, published by the International Conference of Building Officials.
Vadose Zone	The unsaturated zone which occurs above the water table where the soil pores are only partially filled with water (the moisture content is less than the porosity). The fluid pressure is less than atmospheric. This zone is limited above by the land surface and below by the surface of the zone of saturation, that is, the water table.
Visual Resource Management	The systematic means to identify visual values, establish objectives which provide the standards for managing those values, and evaluate the visual impacts of proposed projects to ensure that the BLM objectives are met.
Waste Discharge Requirements	A permit issued by the California Regional Water Quality Control Board which governs the construction, operation and closure of the heap leach pad and the precious metals recovery plant.
Wick Drain System	Part of the leachate collection and recovery system located within the heap leach pad liner system, consisting of polypropylene drains spaced 50 feet apart and overlain by a polypropylene monofilament fiber filter fabric.

9.2 Acronyms

The definitions below are provided as clarification for abbreviations and acronyms used in this document.

ABBREVIATION	DEFINITION
A-1	Limited Agriculture Zone
AB2588	Air Toxics "Hot Spots" Information and Assessment Act, California
ADT	average daily trips
AP	acid generating potential
ASME	American Society of Mechanical Engineers
ATF	Bureau of Alchol, Tobacco and Firearms
BACT	Best Available Control Technology
BLM	United States Bureau of Land Management
CAAQS	California Ambient Air Quality Standards
Cal OSHA	California Occupational Health and Safety Administration
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CDA	California Desert District

ABBREVIATION	DEFINITION
CDFG	California Department of Fish and Game
CEQ	Council of Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CO	carbon monoxide
CUP	Conditional Use Permit
dB	decibel
DHS	California Department of Health Services
DMG	California Division of Mines and Geology
DOT	United States Department of Transportation
DSDD	California Department of Water Resources Division of Safety of Dams
E 2-1/2	Estate Residential Zone, minimum parcel size two and one-half acres
EA	Environmental Assessment
EIR	Environmental Impact Report
EIS	Environmental Impact Statement

ABBREVIATION	DEFINITION
EPA	United States Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
°F	degrees Fahrenheit
FCC	Federal Communication Commission
gpd	gallons per day
gpm	gallons per minute
HCN	hydrogen cyanide
HDPE	high density polyethylene
KCAPCD	Kern County Air Pollution Control District
KOP	key observation point
L_{dn}	day-night noise level
LCRS	leachate collection and recovery system
LOS	level of service
MCL	maximum contaminant level
MOU	Memorandum of Understanding
mph	miles per hour

ABBREVIATION	DEFINITION
MPUD	Mojave Public Utility District
MSHA	Federal Mine Safety and Health Administration
MSL	mean sea level
NAAQS	National Ambient Air Quality Standards
NEC	National Electric Code
NEPA	National Environmental Policy Act
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NFMS (or NMFS)	National Marine Fisheries Service
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
NOI	Notice of Intent
NOP	Notice of Preparation
NP	neutralization potential
NPDES	National Pollutant Discharge Elimination System

ABBREVIATION	DEFINITION
NPPA	Native Plant Protection Act of 1977
NRHP	National Register of Historic Places
NSR	New Source Review
O_3	ozone
OEHHA	California Office of Environmental Health Hazards Assessment
OHV	off-highway vehicle
OSHA	Federal Occupational Safety and Health Administration
pH	The negative logarithm of the hydrogen ion activity used in expressing both acidity and alkalinity on a scale whose values run from 0 to 14 with 7 representing neutrality.
$PM_{2.5}$	suspended particulate matter less than 2.5 microns in aerodynamic diameter.
PM_{10}	suspended particulate matter less than 10 microns in aerodynamic diameter.
ppm	parts per million
PRC	Public Resources Code
PSD	Prevention of Significant Deterioration
PSM	Process Safety Management

ABBREVIATION	DEFINITION
RCRA	Resource Conservation and Recovery Act
Regional Board	California Regional Water Quality Control Board
RMP	Risk Management Program
RMPP	Risk Management and Prevention Plan
RRA	Ridgecrest Resource Area
SBBM	San Bernardino Baseline and Meridian
SCS	United States Soil Conservation Service
Service	United States Fish and Wildlife Service
SIC	Standard Industrial Classification
SMARA	Surface Mining and Reclamation Act of 1975
SO_2	sulfur dioxide
SPCC	Spill Prevention, Control and Countermeasure Plan
SWRCB	State Water Resources Control Board
TRI	toxic chemical release inventory
TSP	total suspended particulates
UBC	Uniform Building Code

ABBREVIATION	DEFINITION
VOC	volatile organic compound
VRM	Visual Resource Management
WAD	weak acid dissociable
WDR	Waste Discharge Requirements

9.3 References

Blake, Thomas, *EQSEARCH, Version 2.01*, Computer Program, 1996.

Blake, Thomas, *EQSEARCH, Version 2.20*, Computer Program, 1996.

Bloyd, R. M., Jr., *Water Resources of the Antelope Valley - East Kern Water Agency Area, California*, United States Geological Survey, Water Resources Division, Open File Report 67-21, 1967, 69 p.

California Air Pollution Control Officers Association (CAPCOA), *CAPCOA Air Toxics "Hot Spots" Program Revised 1992 Risk Assessment Guidelines*, Santa Barbara, California, 1993.

California Air Resources Board, *California Air Quality Data, Summary of (Year) Air Quality Data, Gaseous and Particulate Pollutants*, Annual Summaries, 1988 to 1994.

California Air Resources Board, Aerometric Data Division, *California Surface Wind Climatology*, 1992.

California Department of Conservation, Division of Mines and Geology, 1980, *Geothermal Resources of California Map*.

California Department of Water Resources (DWR), *Groundwater Occurrence and Quality, Lahontan Region*, Bulletin No. 106-1, 1964.

California Publications, *CEQA Handbook, A Practical Guide to Implementing the California Environmental Quality Act*, 1994.

California Regional Water Quality Control Board - Lahontan Region, *Water Quality Control Plan for the Lahontan Region*, 1994.

Cornerstone Engineering, Inc., *Final Environmental Impact Report, Camelot Specific Plan-Phase VI Billig Amendment*, May 1994.

Dibblee, T. W., Jr., *Aerial Geology of the Western Mojave Desert, California:* United States Geological Survey, Prof. Paper 522, 1967, 153 p.

Dibblee, T. W., Jr., *Geology of the Willow Springs and Rosamond Quadrangles, California*, United States Geological Survey, Bulletin 1089-C, 1963, 253 p.

Duell, Lowell, F. W., Jr., *Geohydrology of the Antelope Valley Area, California, and Design for a Groundwater Quality Monitoring Network*, United States Geological Survey, Water Resources Investigations Report 84-4081, 1987, 72 p.

DuPont, *Facts About Sodium Cyanide.*

EIP Associates, *Draft Environmental Impact Report West Mojave Project*, April 1991.

Environmental Protection Agency, *Gold/Silver Heap Leaching and Management Practices that Minimize the Potential for Cyanide Releases*, EPA Document 600/2-88-002, January 1988.

Environmental Protection Agency, *Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources*, EPA Publication No. AP-42, Fifth Edition, GPO Stock No. 055-000-00251-7, January 1995; Section 13.2.3, Heavy Construction Operations.

Environmental Protection Agency, *Gold/Silver Heap Leaching and Management Practices that Minimize the Potential for Cyanide Releases*, EPA Document 600/2-88-002, January 1988.

Environmental Protection Agency, *Workbook for Plume Visual Impact Screening and Analysis*, EPA Document 450/4-88-015, September 1988.

Federal Emergency Management Agency, *Flood Insurance Rate Map, Kern County, California, Panel 1825 of 2075*, 1995.

Hernandez, Jennifer, William S. Ziebron, Terence O'Hare, Suzanne Ness and Nancy Darkin, *CEQA Handbook, a Practical Guide to Implementing the California Environmental Quality Act*, California Environmental Publications, 1994.

Hutchinson, Ian P. G. and Richard D. Ellison, *Mine Waste Management*, California Mining Association, 654 p.

Jennings, Charles W., *Fault Activity Map of California and Adjacent Areas*: California Department of Conservation, Division of Mines and Geology, 1994.

Kern Council of Governments, *1990 Census*, plus yearly updates through July 1994.

Kern Council of Governments, *1991 Kern Data Book.*

Kern Council of Governments, *1993 Kern Data Book.*

Kern Council of Governments, *Population and Housing*, July 1994.

Kern County, *Annual Traffic Census 1994: Kern County, California*, 1995.

Kern County Air Pollution Control District, *1991 Air Quality Attainment Plan: Southeast Desert Kern County*, July 1991, amended June 1992.

Kern County Air Pollution Control District, *1994 Attainment Demonstration*, October 31, 1994.

Kern County General Plan, Circulation Element, 1992.

Kern County General Plan, Noise Element, December 1989.

Kern County Planning Commission, *Specific Plan for Soledad Mountain - Elephant Butte and Vicinity - South of Mojave*, 1973.

Kern County Planning Department, *Staff Report for CUP 20, Map 214.*

Kern County Planning Department, *Staff Report for CUP 21, Map 196.*

Kern County Planning Department, *Staff Report for CUP 20, Map 214*, 1994.

Kern County Department of Planning and Development Services, *EIR Cunningham Specific Plan & Jamason Ranch Specific Plan*, February 1992.

Kern County Planning Department and Bureau of Land Management, *Rand Project, Randsburg, Kern County, California, Final Environmental Impact Statement/ Environmental Impact Report: Bakersfield, California and Ridgecrest Resource Area, Ridgecrest, California*, 1995.

Kern County Public Works Department, *Kern County Mean Annual Precipitation: Kern County, California*, 1985.

Mabey, Don R., *Gravity Survey of the Western Mojave Desert - California*: Geological Survey, Professional Paper 316-D, 1960.

Munger, Averill H., Editor, *Munger Map Book*, 1994.

National Research Council, *Surface Mining of Non-Coal Minerals*, prepared by the Committee on Surface Mining and Reclamation, Report No. ISBN-0-309-02942-2, November 1979.

Nickells, H. R., C. F. Johnson and W. I. Duvall, *Blasting, Vibration and Their Effects on Structures*: United States Department of Interior, Bureau of Mines, Bulletin 656, 1971.

Owenby, James R. and D. S. Ezell, *Monthly Station Normals of Temperature, Precipitation and Heating and Cooling Days, 1961-1990, California*: United States Department of Commerce, National Climatic Data Center, January 1992.

Parks, William H., *Seismic Hazard Atlas, Soledad Mountain Map*, prepared for Kern County Council of Governments.

Slade, Richard C. and Associates, *Perennial Yield Assessment of Chaffee Subunit in the Fremont Valley Groundwater Basin*, unpublished draft report prepared for Mojave Public Utilities District and California City, 1994.

Smith, Adrian and J. B. Barton-Bridges, *Some Considerations in the Prediction and Control of Acid Mine Drainage Impact on Groundwater from Mining in North America*, proceedings from EPPIC Conference, Johannesberg, South Africa, 1991.

Sobek, A. A., W. A. Schuller, J. R. Freeman and R. M. Smith, *Field and Laboratory Methods Available to Overburdens and Minesoils*: United States Environmental Protection Agency, EPA Document 6001 Z-78-054, 1978, 203 p.

United States Department of Agriculture, Soil Conservation Service, *Soil Survey of Kern County, California, Southeastern Part*, 1981.

United States Department of the Interior, Bureau of Land Management, *California Desert District, Needles Resource Area, Castle Mountain Project, San Bernardino County, California, Final EIR/EIS Master Summary and Response to Comments*, 1990.

United States Department of the Interior, Bureau of Land Management, *National Environmental Policy Act Handbook*, BLM Handbook H-1790-1, Release 1-1547, October 25, 1988.

United States Department of the Interior, *Geological Survey, Mojave Quadrangle*, 7.5 Minute Series, 1973.

United States Department of the Interior, *Geological Survey, Soledad Mountain Quadrangle*, 7.5 Minute Series, 1973.

United States Department of Transportation and State of California Department of Transportation, *Draft Tier 1 Environmental Impact Statement/Environmental Impact Report, State Route 58 - Mojave Freeway*, March 1994.

Wartenweiler, Otto, *The New Mill of the Golden Queen*: Engineering and Mining Journal, July 1936.

Yelverton, Charles, *Groundwater Resources Investigation, Tract 3554, Kern County, California*, unpublished.