

Prepared for:
Bureau of Land Management, Elko District Office
Elko, Nevada

Preparation Plan
for the **Barrick Goldstrike Mines Inc.**
Betze Pit Expansion Project
Supplemental Environmental Impact
Statement

September 2008

APPROVED:

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Acronyms and Abbreviations

| | |
|--------|--|
| ABA | Acid Base Accounting |
| APE | Area of Potential Effect |
| BGMI | Barrick Goldstrike Mines Inc. |
| BLM | Bureau of Land Management |
| BMRR | Bureau of Mining Regulation and Reclamation |
| CESA | Cumulative Effects Study Area |
| CEQ | Council on Environmental Quality |
| CFR | Code of Federal Regulations |
| EA | Environmental Assessment |
| EIS | Environmental Impact Statement |
| ENSR | ENSR Corporation |
| EO | Executive Order |
| ESA | Endangered Species Act |
| GIS | Geographic Information System |
| NDEP | Nevada Division of Environmental Protection |
| NDOW | Nevada Department of Wildlife |
| NDWR | Nevada Division of Water Resources |
| NEPA | National Environmental Policy Act |
| NNHP | Nevada Natural Heritage Program |
| NRCS | Natural Resources Conservation Service |
| NRHP | National Register of Historic Places |
| NWI | National Wetlands Inventory |
| PA | Programmatic Agreement |
| POO | Plan of Operations |
| SEIS | Supplemental Environmental Impact Statement |
| SHPO | State Historic Preservation Office |
| SOAPA | South Operations Area Project Amendment |
| STORET | Water Quality Database Monitored by the U.S. Environmental Protection Agency |

| | |
|-------|---------------------------------|
| U.S. | United States |
| USDI | U.S. Department of the Interior |
| USFWS | U.S. Fish and Wildlife Service |
| VRM | Visual Resource Management |

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1.0 Introduction

The Elko District Office of the United States Department of the Interior (USDI) Bureau of Land Management (BLM) received an Amendment to the Plan of Operations (POO) (NVN-070708) from Barrick Goldstrike Mines Inc. (BGMI) in January 2007 for the Goldstrike Mine located approximately 25 miles northwest of Carlin, Nevada. The POO was subsequently amended in June 2007 (BGMI and SRK 2007). BGMI is proposing an expansion of their mining operation and associated support facilities. BLM is serving as the lead agency in preparing the Supplemental Environmental Impact Statement (SEIS) for the proposed project. This document is the Preparation Plan to direct the SEIS which follows regulations promulgated by the Council on Environmental Quality (CEQ) for implementing procedural provisions of the National Environmental Policy Act (NEPA) (40 Code of Federal Regulations [CFR] 1500-1508) and BLM's NEPA Handbook (H-1790-1).

The proposed project would result in a net disturbance of 1,180 acres with 12.4 million tons of ore mined, requiring an expansion of the Betze Pit, construction of the Clydesdale Waste Rock Facility and haul road, construction of the Goldstrike No. 3 Tailings Facility at the existing Goldstrike Mine and an extension of employment for 4 years. The mine is located in Eureka and Elko counties (**Figure 1-1**) on unpatented mining claims on public lands administered by the BLM Elko District Office and private land owned by BGMI.

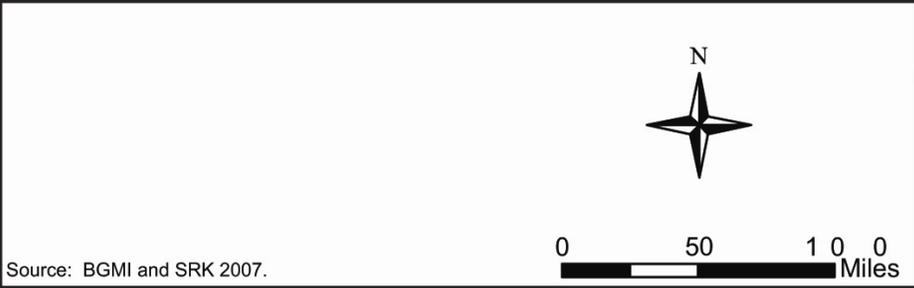
An Environmental Impact Statement (EIS) was first completed for the Betze Project by the BLM in 1991 (BLM 1991a,b). This SEIS Preparation Plan is an internal guidance document to incorporate determinations made during scoping for the proposed Betze Pit Expansion Project. It has been written to set limits on the resource analysis, guide preparation of the SEIS, and facilitate coordination between participants involved in preparation of the SEIS and those with approval and oversight responsibilities. Parties involved include management and interdisciplinary team members from BLM and ENSR Corporation (ENSR), an environmental consulting firm that BGMI contracted to prepare this SEIS. This SEIS Preparation Plan identifies the sources of existing data; plans for public participation; SEIS responsibilities of ENSR, BLM, and BGMI; specific tasks, issues, and proposed SEIS content by resource; and a preliminary SEIS outline and schedule.

1.1 Betze Pit Expansion Project

BGMI is currently authorized to disturb 7,882 acres (847 acres of public land and 7,035 acres of private land) within the Betze Project (aka Goldstrike Mine) POO boundary associated with pits, waste rock facilities, tailings facilities, process buildings, roads, and growth media stockpiles. BGMI is proposing to expand the existing pit and construct new waste rock and tailings facilities at the Barrick Goldstrike Mine. Disturbance associated with the expansion would involve 1,180 acres (510 acres of public land and 967 acres of private land of which 297 acres are previously authorized disturbance). Currently authorized mining operations would continue through approximately 2011 (BGMI and SRK 2007). The Proposed Action would extend the active mine life by approximately 4 years. The proposed expansion of the BGMI facilities would entail the following:

- An expansion of the existing Betze Pit to include a layback to the north and west with associated in-pit and perimeter haul roads;
- Construction of a waste rock facility on the Clydesdale Block and associated access road and Bell Creek crossing;
- Construction and operation of the Goldstrike No. 3 Tailings Facility; and
- Extension of employment for 4 years.

The Proposed Action would accelerate reclamation of the existing Bazza Waste Rock Facility by 7 years.



**Betze Pit
Expansion Project**

Figure 1-1
General Location Map

Source: BGMI and SRK 2007.

1.2 Supplemental Environmental Impact Statement

BLM determined that preparation of a SEIS is required to comply with NEPA, and entered into an agreement with BGMI that provides for ENSR to prepare the SEIS under the guidance of the BLM, Elko District Office. The SEIS will be prepared in accordance with the CEQ regulations for Implementation of Procedural Provisions of NEPA (40 CFR 1500-1508) and the BLM's NEPA Handbook (H 1790-1). The SEIS will utilize analyses conducted for the Betze Project EIS (BLM 1991a,b) and the Betze Project SEIS (BLM 2003, 2000a). It will also incorporate information from the Cumulative Impact Analysis of Dewatering and Water Management Operations for the Betze Project, South Operations Area Project Amendment (SOAPA), and Leeville Project (BLM 2002b), Draft Supplemental Environmental Impact Statement, Leeville Project Cumulative Effects (BLM 2007a); Draft Supplemental Environmental Impact Statement South Operations Project Amendment Cumulative Effects (BLM 2007b); and other analyses such as the environmental assessment (EA) for BGMI's Meikle Mine Development (BLM 1993). The BLM is the lead agency for preparing the SEIS, and the Nevada Department of Wildlife (NDOW) and Elko County are cooperating agencies.

1.3 Purpose of and Need for Action

As noted on page 1-1 of the 1991 Draft EIS for the Betze Project (BLM 1991), BGMI's purpose is to economically extract gold from the ore bodies known to exist in the Goldstrike Mine, provide continued employment to BGMI employees, and to supply the global market demand for gold. The project need is to meet the prevailing market demand for gold. The federal decision to be made is approval of the POO amendment. BLM's authority is described on page 1-4 of the 1991 Draft EIS. BLM's purpose in reviewing the proposed operations is to ensure that: 1) adequate provisions are included to prevent unnecessary or undue degradation of public lands; 2) measures are included to provide for reasonable reclamation; and 3) the proposed operations will comply with other applicable federal, state, and local laws and regulations.

1.4 Preliminary Identification of Alternatives

A range of alternatives to BGMI's proposed plan will be considered in the SEIS based on the following:

- Public or agency issue or concern;
- Potential environmental advantage over BGMI's Proposed Action; and
- Technical or economic feasibility.

The reason(s) why any alternative was not considered 'reasonable' and so will not be analyzed in detail will be explained in the alternatives chapter of the SEIS.

1.5 Potential Alternatives to be Evaluated in the SEIS

BLM and BGMI have suggested the following alternatives described below be analyzed in detail.

1.5.1 No Action

Under the No Action Alternative, BLM would not approve the proposed Betze expansion project. BGMI would continue to operate the Goldstrike Mine under current authorizations and permits. Reclamation and closure of the mine would proceed under the current schedule. The No Action Alternative will be described and evaluated in the SEIS in a manner that updates authorizations and mining since the "Proposed Action" of the 1991 Betze Project EIS was approved, and thus serves as a 'baseline' for analysis of the impacts of the currently proposed expansion.

1.5.2 Proposed Betze Pit Expansion Project (Proposed Action)

As described in Section 1.1, BGMI is proposing to construct the following facilities:

- An expansion of the existing Betze Pit to include a layback to the north and west with associated in-pit and perimeter haul roads;
- Construction of a waste rock facility on the Clydesdale Block and associated access road and Bell Creek crossing; and
- Construction and operation of the Goldstrike No. 3 Tailings Facility.

This alternative is the Proposed Action Alternative that will be fully described and evaluated in the SEIS. As a result of the Proposed Action, construction and mining activities employment at the mine would be extended for 4 more years and reclamation of the existing Bazza Waste Rock Facility would be accelerated by 7 years.

1.5.3 Bazza Waste Rock Facility Alternative

The Bazza Waste Rock Facility Alternative would result in the continued use of this existing waste rock facility without construction of the proposed Clydesdale Waste Rock Facility. The environmental benefit of this alternative would be the elimination of disturbance to 535 acres of sagebrush habitat and preservation of the existing wildlife migration corridor along Bell and Rodeo creeks. Environmental trade-offs would be the potential loss of Carlin material (a good growth medium) excavated from the current authorized pit expansion and from the proposed northwest laybacks for use in reclamation of the Bazza Waste Rock Facility. Carlin material does not stockpile well due to its physical properties and slope stability concerns and therefore would be disposed of in the Bazza Waste Rock Facility.

This alternative also would result in the delay in reclamation of the Bazza Waste Rock Facility by 7 years. The 2500-acre Bazza Waste Rock Facility is constrained from expansion by the Betze Pit to the north, and mine boundaries to the east, south, and west. The only potential for expansion would be to the northwest across Rodeo Creek where the proposed Clydesdale Waste Rock Facility would be located. Expansion of the Bazza Waste Rock Facility vertically is limited by slope stability, reclamation potential, and additional costs associated with a longer haulage of waste rock.

1.6 Alternatives Considered but Eliminated

This section identifies alternative actions initially considered for evaluation in the SEIS and the rationale for eliminating them from detailed analysis in the SEIS.

1.6.1 Modified Clydesdale Waste Rock Facility

The modified Clydesdale Waste Rock Facility Alternative would reduce the footprint by 62.5 acres and would increase facility height by 220 feet with a continued capacity of 350 million tons. The additional haulage requirements to place waste in this higher waste rock facility would require an additional fuel consumption of 5.6 million gallons and an additional cost of \$17.5 million over the Proposed Action.

The modified design was developed to minimize new surface disturbance and to preserve as much of the existing wildlife corridor as possible along Rodeo and Bell creeks yet still provide a suitable location for a waste rock facility. Although the footprint of the modified Clydesdale Waste Rock Facility Alternative would reduce surface disturbance along the western border, it would not reduce surface disturbance along the Bell and Rodeo creek migration corridor. This alternative was eliminated from consideration due to lack of significant environmental benefits to affected resources, including the mule deer migration corridor, and increased costs.

1.6.2 Off-Site Waste Rock Facility

A new waste rock facility could potentially be located outside the Goldstrike Mine boundary at another location to minimize impact on the existing wildlife migration corridor along Bell and Rodeo creeks. This alternative was eliminated because of administrative issues associated with locating a facility outside of the mine boundary and the associated environmental and economic impacts: a longer haul road would cause greater

environmental impacts due to increased land disturbance, air quality degradation, and higher costs of transporting waste rock.

1.6.3 Underground Mining Alternative

The pit ore could potentially be extracted using underground mining methods rather than surface extraction methods that require pit laybacks. Underground mining would reduce the amount of tailings and waste rock, produced, thus making it possible to reduce the size of the proposed Clydesdale Waste Rock Facility as well as reducing the volume of haul road traffic.

However, the current pit expansion zone, while meeting the economic requirements for open pit mining, is not of high enough grade to be mined with underground methods. Underground cut off grades are on the order of 0.25 ounce per ton while open pit cut off grades are on the order of 0.05 ounce per ton. Other factors, such as continuity of the mineralized material, depth to mineralization and volume of material to be mined were also considered. The mineralized zone in the pit expansion meets economic reserve requirements for open pit mining in part because it is an expansion and consequently has a significant amount of waste stripping already accounted for by the current open pit mining. This alternative was eliminated due to geotechnical and engineering constraints leading to unfeasible economic costs.

1.6.4 Reduced Tailings Facility

The Reduced Tailings Facility Alternative would entail constructing the Goldstrike No. 3 Tailings Facility only on private land, thereby reducing the amount of surface disturbance by 46 acres, and reducing the capacity of the facility compared with the Proposed Action. The reduction in size of the tailings storage capacity would result in the need for additional tailings storage capacity in another facility, either the existing North Block Tailings Facility, or construction of another new facility. The reduced Tailings Facility Alternative does not provide any environmental benefits when compared with the Proposed Action and would be more costly to implement.

2.0 Scope-of-Work

This scope-of-work identifies the tasks required to prepare an SEIS for the proposed project. This scope is based on ENSR's review of existing environmental data and reports, the Betze Project EIS (BLM 1991a,b); the POO amendment for the proposed project (BGMI and SRK 2007); previous documents including the Betze Project SEIS (BLM 2000a, 2003), Cumulative Impact Analysis of Dewatering and Water Management Operations for the Betze Project, SOAPA, and Leeville Project (BLM 2000b); site reconnaissance; discussions with the BLM, other relevant agencies (such as the Nevada Division of Environmental Protection/Bureau of Mining Regulation and Reclamation (NDEP/BMRR), NDOW; and requirements of federal, state, and local agencies.

ENSR's technical approach is organized according to environmental resources. Although detailed studies vary, the overall approach is consistent for all resources. Section 2.1 describes the interdisciplinary tasks associated with the overall preparation of the SEIS. Chapter 3.0 details the scope of specific data and analytical needs for each resource.

2.1 Interdisciplinary Analysis

Interdisciplinary analysis is the primary responsibility of the project management team; interdisciplinary coordination activities relate directly to requirements of the NEPA process.

The objectives of interdisciplinary analysis are to:

- Define the scope of the environmental analysis;
- Prepare the description of the Proposed Action (including connected and cumulative actions);
- Develop alternatives to the Proposed Action to be analyzed in the SEIS, including the No Action Alternative;
- Ensure that the analyses are legally defensible and meet the informational requirements of NEPA;
- Facilitate interdisciplinary communication among project team members to ensure that direct, indirect, and cumulative impact concerns are understood and addressed; and
- Write, review, edit, and produce the SEIS.

The following sections describe the tasks associated with interdisciplinary coordination.

2.1.1 Project Initiation

Project initiation includes a variety of activities designed to refine the scope-of-work for Contractor preparation of an EIS, and to ensure that the studies are responsive to the information and scheduling needs of the BLM and BGMI. Project initiation activities include the following:

- Project kickoff meeting with the BLM and BGMI;
- Site reconnaissance by key project personnel;
- Public scoping meeting to identify public and agency issues, concerns, and opportunities;
- Determination of specific information needs, document formats, and project schedule; and
- Establishment of a signed contract or other budget authorization and institution of internal project files, schedules, budgets, and cost tracking systems.

A kickoff meeting was held May 23, 2007, at the BLM's Elko District Office. The kickoff meeting included key BLM project management and resource specialists, the NDOW representative, BGMI representatives, and ENSR's project management team. The purpose of the kickoff meeting was to establish communication channels among the parties, clarify communication and documentation processes, discuss scheduling and the scope-of-work, clarify key environmental issues, identify preliminary sources of existing information, and review the status of the POO Amendment and other project description information.

The public scoping meeting was conducted on June 25, 2007, in Elko. Key BLM project staff, ENSR's project manager, an NDOW representative, and BGMI representatives attended the meeting. The BLM distributed to ENSR and BGMI the comments received from the public and agency personnel. ENSR, in coordination with the BLM, has reviewed the comments to identify issues to be addressed in the SEIS and other potential alternatives to be analyzed.

2.1.2 Description of the Proposed Action and No Action Alternatives

ENSR is responsible for preparing the description of the Proposed Action for the SEIS based on BGMI's Amendment to the POO (BGMI and SRK 2007) (see Section 1.5). As part of this process, ENSR will review the POO Amendment and develop a preliminary list of additional design information required for the SEIS project description and impact analyses. ENSR will work with BGMI representatives to obtain the necessary information or to make reasonable assumptions when the required information is unavailable. This coordination will help ensure that SEIS and permitting requirements, as well as appropriate mitigation measures, are considered in the project design. The continuing nature of this task throughout the project also will ensure that the SEIS accurately reflects changes that may evolve in the project design during this period.

In addition to the Proposed Action, ENSR is responsible for preparing the description of the No Action Alternative for the SEIS (see Section 1.5).

BGMI has identified potential alternatives evaluated by their environmental and engineering staff for feasibility. Based on this information, BLM has identified the preliminary list of alternatives that may be evaluated in the SEIS (see Section 1.5). Alternatives considered but eliminated from detailed study and the reasons for their elimination also will be discussed in the SEIS (see Section 1.6).

2.1.3 Identification of Public Issues, Concerns, and Opportunities

The issues and concerns identified during the public scoping process are summarized in the Public Scoping Report (published separately). Key issues, concerns, and opportunities are summarized below:

1. Cumulative impacts along the Carlin Trend;
2. Impacts to wildlife/wildlife migration corridors/wildlife habitat;
3. Pit lake water quality and associated ecological risks;
4. Ecological risks associated with the Goldstrike No. 3 tailings facility and potential release of contaminants;
5. Release of toxic materials, including mercury;
6. Extension of employment at the Goldstrike Mine for another 4 years and associated socioeconomic impacts;
7. Accelerated reclamation of the 2,500-acre Bazza Waste Rock Facility;

8. Cultural resources - a total of five National Register of Historic Places (NRHP)-eligible sites potentially affected by the Proposed Action;
9. Adequacy of long-term mitigation and monitoring funds; and
10. Dewatering impacts.

2.1.4 Description of the Environmental Baseline Conditions

ENSR will prepare environmental baseline descriptions for incorporation into Chapter 3.0, Affected Environment and Environmental Consequences, of the SEIS. These descriptions will present the environmental conditions found in the resource study areas as of 2007 or the date of the most recent data sources available. Thus, the descriptions will serve as the existing conditions associated with the No Action Alternative, and with the addition of reasonably foreseeable actions, will form the 'environmental baseline' for use in the analysis of cumulative effects, by resource. The study areas for individual resources will be delineated based on the area of potential direct and indirect environmental impacts associated with the proposed project. For some resources such as geology, soils, and vegetation, the affected area most likely will be the physical location and immediate vicinity of the areas directly disturbed by the proposed project. For other resources, such as water quantity and quality, air quality, and social and economic values, the affected environment will comprise a larger area (e.g., watershed, airshed, local counties, etc.). The resource-specific study areas and cumulative effects study areas (CESAs) (as developed in coordination with the BLM) for each resource to be addressed in the SEIS are identified in Chapter 3.0 of this plan.

The environmental baseline information will be obtained from previously completed or ongoing field and laboratory studies and NEPA analyses, such as the 1991 Betze Project EIS, the 2002/2003 Betze Project SEIS, and the SEIS for Newmont's Leeville and Gold Quarry mine projects, published sources, unpublished materials, and communication with relevant government agencies and private individuals with knowledge of the area. Since the impact analyses will be based on these baseline descriptions, the level of detail presented for each resource will reflect the importance of the anticipated impacts.

2.1.5 Impact Assessment

The impact assessment will emphasize important physical, biological, and human resource issues identified in this plan and in the public scoping process. Since this is a supplemental EIS, this analysis will update and emphasize changes in impacts to public resources discussed in the 1991 EIS for the Betze Project and other NEPA analyses associated with amendments to its POO. Impacts to private land may be analyzed in this SEIS, but only as a portion of possible cumulative effects. Only impacts to public resources relevant to the Proposed Action will be addressed in this SEIS. This section addresses the overall approach for analyzing impacts; specific approaches for analyzing the resource-specific impacts are described in Chapter 3.0 of this plan. Impact analyses will be conducted to define direct, indirect, and cumulative impacts, and the analyses will depend on explicit cause-and-effect relationships associated with the proposed project. The major elements listed below will be addressed in each resource impact analysis based on available information.

- Components or activities of the proposed project or alternatives that would cause effects or impacts will be identified.
- Impacts will be quantified, if possible. If quantification is not possible, impacts will be described in qualitative terms.
- The locations and areal extent of impacts will be determined and documented.
- The duration of impacts will be analyzed for different seasonal conditions, as appropriate. The duration of certain activities and seasonal variations may influence impacts and affect their severity.
- The probability of impacts occurring will be determined.

- The importance of impacts will be assessed to help determine the need for mitigation measures. A systematic approach will be used to quantitatively determine the magnitude of impacts.
- The rationale for conclusions reached in the impact analysis will be documented by references identified in the literature, by discussion of rationale and methodologies used, or by other supportable means, such as relevant case studies. Emphasis in the SEIS will be placed on summarizing the analyses for the non-technical reader, and the technical details will be documented in appendices, as required.

ENSR will work with the BLM to identify mitigation measures that are effective, practical, and enforceable. ENSR, under the direction of the BLM and with technical input from BGMI, will evaluate the effectiveness of all reasonable mitigation measures.

2.1.6 Cumulative Impact Assessment

The proposed project may result in impacts that are interrelated with other past, present, and reasonably foreseeable future actions by BGMI and others in the area that cause impacts affecting the same resources and overlap in a geographic and temporal manner with the anticipated impacts from the Proposed Action. ENSR will consult with the BLM to identify activities related to the Proposed Action to be included. This includes coordinating with BLM's ongoing analysis for the cumulative impacts of the Leeville and Gold Quarry Mine SEISs, and for the proposed Emigrant Mine.

Direct or indirect impacts must be identified for the proposed project to a resource in order for cumulative impacts to occur to that resource. For resources where project-specific impacts are identified, the SEIS will evaluate the cumulative effects associated with the proposed project together with other activities at the site and other past, present, and reasonably foreseeable future actions. The preliminary resource-specific CESAs and a description of the cumulative effects assessment proposed for each resource are described in Chapter 3.0.

Where possible, the cumulative effects assessment will be based on previous regional analyses and will address the resource-specific CESAs defined for the project.

2.1.7 Mitigation Recommendations

Mitigation measures may be recommended and analyzed for residual impacts when adverse impacts are identified. ENSR's resource specialists will work with BLM specialists to recommend mitigation measures that may be feasibly implemented, provide successful mitigation (e.g., effectiveness), and be cost-effective. ENSR will work closely with the BLM and BGMI to identify and evaluate the most effective and reasonable measures, where necessary.

2.2 SEIS Preparation and Deliverables

The SEIS will be written by the ENSR management team and resource specialists from information obtained during the field reconnaissance, coordination with BLM management team and specialists, other data sources, and previous site-specific studies. Major emphasis will be placed on producing a concise document that clearly describes the anticipated environmental consequences of implementing the Proposed Action or alternatives.

Specific technical reports to provide supporting documentation to the SEIS are not anticipated to be required; rather, the data will be presented in the SEIS in summary form, and the detailed data in the previous reports will be incorporated by reference. The previous reports themselves will be available for public review at the BLM Elko District Office. Appendices in the SEIS will be prepared for those analyses requiring detailed information from the data collection and for impact analysis tasks that are too technical or lengthy to be included in the body of the SEIS itself.

Technical files will be maintained by all resources. The content and format of the technical files will vary among resources according to professional standards for the resource and the specific information collected. In general, the technical files will include: 1) raw data or other information sources used to prepare the SEIS; 2) methods, assumptions, and calculations used to analyze impacts; 3) BGMI's previous consultants' reports, maps, etc.; and 4) communication records documenting phone conversations or other information sources. ENSR's project files will be maintained in a manner to facilitate incorporation by the BLM into the administrative record for the project.

Data for mapping will be obtained from a variety of existing maps, including BGMI engineering and baseline data in AutoCAD or Geographic Information System (GIS) format. Editing and formatting of graphics for the SEIS will be accomplished by ENSR's GIS/graphics department. Any additional figure requirements (e.g., CESA maps) will be prepared by ENSR using base maps provided by BGMI or BLM. SEIS figures will be presented at appropriate scales in 8.5- by 11-inch or 11- by 17-inch format to show the area of interest.

ENSR will prepare color graphics as necessary for clarity. ENSR will word process and reproduce the SEIS, bind copies, and mail copies of the Draft and Final SEISs to the recipients on BLM's mailing list. ENSR may hire a subcontractor to reproduce and bind the large volume deliverables.

Following receipt of comments on the Draft SEIS, ENSR will work with the BLM to prepare responses to the public and agency comments and revise the SEIS as necessary. After comments, responses, and any revised analyses are incorporated into the Final SEIS, it will be resubmitted to the BLM for final review.

The following written documentation will be produced as 'deliverables' to BLM during the course of the study with the suggested number of hard and electronic copies:

- Draft Scoping Report (electronic copy);
- Final Scoping Report (electronic copy);
- SEIS Draft Preparation Plan (electronic copy);
- BLM Approved SEIS Preparation Plan (5 copies);
- Preliminary Draft (PD) SEIS (15 hard copies, 1 electronic .pdf document);
- Interim Draft 1 SEIS (15 hard copies, 1 electronic .pdf document);
- Interim Draft 2 SEIS (15 hard copies, 1 electronic .pdf document);
- "Print-ready" Draft SEIS (15 hard copies, 1 electronic .pdf document);
- Camera-ready Draft SEIS (1 hard copy to BLM and 1 .electronic pdf document);
- Public Draft SEIS (150 copies, 50 CDs);
- Preliminary Draft of "DSEIS Comments and Responses" (Final SEIS Appendix; 15 hard copies, 1 electronic);
- Preliminary Final SEIS (15 copies);
- Final SEIS (15 copies);
- Camera-ready Final SEIS (1 copy to the BLM); and
- Public Final SEIS (125 hard copies; 25 CDs).

2.3 Public Meeting on Draft SEIS

ENSR will coordinate with the BLM to develop the format and agenda for one public comment meeting on the Draft SEIS. ENSR will develop the associated graphics for open-house format meeting, in coordination with

the BLM. ENSR will work with the BLM to select the best approach for conducting the meeting in an organized, efficient, informative and receptive manner.

ENSR will participate in the meeting in the capacity requested by the BLM. ENSR's project manager and assistant project manager will attend the public meeting.

2.4 Project Coordination

ENSR's project manager will be in regular telephone communication with the BLM and BGMI and will be available to attend meetings as required. Monthly team progress teleconference calls will be held during the project and may be scheduled at more frequent intervals if needed. It is anticipated that on-site meetings with the BLM and BGMI will occur at approximately the following stages of the project.

- Kickoff meeting/site reconnaissance;
- Public scoping meeting;
- Preliminary Draft SEIS review meeting;
- Public meeting on Draft SEIS; and
- Preliminary Final SEIS review meeting.

3.0 Scope of Analysis per Affected Resource

The scope of analysis work for individual technical resources focuses on describing the existing environment and potential impacts associated with mine-related construction, operation, and reclamation. The following sections identify, by resource, the steps ENSR will take in evaluating and documenting potential project related impacts associated with the Proposed Action and alternatives and the potential cumulative effects. The resource-specific analyses will focus on the identified issues, concerns, and opportunities from scoping. The impacts of the No Action Alternative will be based on those identified by the 1991 EIS, as updated by subsequent analyses and monitoring of the Betze Project. These impacts will then be used to identify and compare changes in impacts associated with the action alternative(s). Where no change is anticipated, the issue will be eliminated from analysis in this SEIS. Only those resource impacts attributable to the Proposed Action will be included.

Under the Data Collection and Review section for each resource, note that all resources will review and reference the following common documents in the SEIS:

- Betze Project Draft EIS, Final EIS (abbreviated) (BLM 1991a,b);
- Betze Project Draft SEIS; Final SEIS (abbreviated) (BLM 2000a, 2003);
- Cumulative Impact Analysis of Dewatering and Water Management Operations for the Betze Project, SOAPA, and Leeville Project (BLM 2000b);
- SOAPA Draft EIS, Final EIS (BLM 2000c, 2002a);
- Leeville Project Draft EIS, Final EIS (BLM 2002b,c); and
- Draft SEIS SOAPA Cumulative Effects and Draft SEIS Leeville Cumulative Effects (BLM 2007a,b).

3.1 Geology and Minerals

Barrick's Goldstrike Mine is located within the Carlin Trend, the greatest concentration of large gold mines in the country. More than 107,000,000 ounces of known proven and probable gold reserves occur within the Carlin Trend. The production from this group of mines currently accounts for about one-half of Nevada's gold production and more than one-third of total United States (U.S.) production.

3.1.1 Resource-specific Issues

The primary geology and minerals issues associated with the proposed project include the following:

- The extent of mineral extraction;
- The amount of material associated with precious metals development;
- Distribution and concentration of heavy metals (in coordination with the water resources and air quality analyses);
- Total amount of disturbance;
- Mineralization and potential for generating acid; and
- Engineering/stability (geologic hazard) issues.

3.1.2 Data Collection and Review

The following data sources relative to geology and minerals will be reviewed and evaluated for data adequacy, as applicable.

- Goldstrike Mine POO, geology reports, and facility design reports;
- Survey Questionnaires of Mining Activity from the BLM Elko District Office;
- Case files for post 1981 activities for the Elko District; and
- Bureau of Mines Carlin Trend Report from the BLM Elko District Office.

3.1.3 Study Area and Cumulative Effects Study Area

The study area for geology and minerals will encompass the proposed project boundary. The CESA includes existing activities and reasonably foreseeable mining activity on the Carlin Trend through the year 2020.

3.1.4 Description of the Affected Environment

Based on the data sources identified above, ENSR will:

- Review BGMI's description of the geologic setting within the project and CESA and location of known mineral resources in the area. ENSR will reference and tier to existing documents rather than replicate information in the SEIS;
- Review available documentation on geologic resources within the BLM's Elko District Office, coordinating with the designated BLM specialist;
- Categorize the amounts of material (in tons), associated with precious metals development, relocated and expected to be relocated for applicable geologic resources within the project and CESA;
- Describe exploration and mining activities and estimate the total amount of disturbance that has been reclaimed based on available information from the Elko District Office;
- Review POOs and mining notices and provide overlays on mining authorized within the project area;
- Create a map of mining disturbances, including both mining operations and the locations of mining notices for the CESA (general locations).

3.1.5 Impact Assessment and Mitigation

For the Proposed Action and alternatives, ENSR will:

- Analyze the potential effects on geologic and mineral resources.

3.2 Groundwater Resources and Geochemistry, and Surface Water Resources

3.2.1 Resource-specific Issues

Issues related to water resources include the following:

- The quality and quantity of water resources within the Boulder Creek watershed;
- Potential impacts associated with an additional 4 years of Betze Pit dewatering and disposal under the No Action Alternative;
- Possible impacts from acid rock drainage and mobilization of heavy metals to surface water and groundwater quality; and
- Potential impacts from runoff, accelerated erosion and sedimentation to watersheds.

3.2.2 Data Collection and Review

The following data sources relative to water quality and quantity will be reviewed and evaluated for data adequacy.

- Elko BLM water inventory reports;
- Reports and publicly available data from the BLM, the Nevada Division of Water Resources, the Nevada State Engineer's Office, the U.S. Geological Survey, and U.S. Environmental Protection Agency, and NDEP, including STORET, well logs, topographic maps, aerial photography, and water rights records;
- BGMI Seep and Springs Reports;
- Boulder Valley Monitoring semiannual reports; and
- Runoff from past storm events will be discussed in relation to runoff from mining areas and effects to the diversion channels.

3.2.3 Study Area and Cumulative Effects Study Area

The direct effect study area includes areas within and near the POO boundary including Brush, Rodeo, and Bell creeks.

The CESA includes past, present and reasonably foreseeable future mining activities on the Carlin Trend. The CESA for water resources consists of approximately 2,073 square miles in 6 designated groundwater basins established by the Nevada Division of Water Resources (NDWR). The basin boundaries generally correspond to watershed divides for Susie Creek (NDWR Basin 50), Maggie Creek (NDWR Basin 51), Marys Creek (NDWR Basin 52), Boulder Flat (NDWR Basin 61), Rock Creek Valley (NDWR Basin 62), and Willow Creek Valley (NDWR Basin 63). There are possible cumulative effects resulting from mining on surface water and ground water.

3.2.4 Description of the Affected Environment

Based on the data sources identified above, ENSR will:

- Describe the current de-watering and water management systems in place with maps and figures as necessary;
- Discuss surface water and groundwater resources including perennial and intermittent streams, public and private springs and seeps, and wells, including depth to water, insofar as the proposed amendment affects groundwater;
- Describe the quantity and quality of Brush, Rodeo, and Bell creeks;
- Generally discuss water rights in the vicinity of the mine and the area of cumulative effects, including any potential Public Water Reserves if there is any additional information not already presented in previous NEPA analyses;
- Describe the proposed Rodeo Creek diversion from its current alignment north of the Betze Pit to a proposed channel to the south of the Betze Pit as part of the No Action Alternative. Fluvial geomorphology will be discussed in relation to the design of the diversion channel;
- Prepare a map showing the area watersheds and relevant points of interest;
- Prepare a map showing surface waters including perennial streams, springs, and wells within the area potentially affected by the proposed amendment; and
- Prepare a map showing diversion channels and direction of flow at an appropriate scale.

3.2.5 Impact Assessment and Mitigation

For the Proposed Action and alternatives, ENSR will:

- Discuss the expansion of the open pit and the additional evaporation due to the larger size that will affect the lake water level;
- Discuss the potential for mine waste rock to generate acid;
- Describe how the potential acid generating waste will be segregated, encapsulated, and monitored. Note the availability of mitigation funds to address unexpected events. Evaluate distribution and concentration of heavy metals and other potentially deleterious materials in the rocks which would form the pit wall or backfill materials, or would be relocated in the waste rock facility or tailings which could provide a source of contamination after being exposed to air;
- Evaluate water resources within the Boulder Creek watershed for quality and quantity. Possible impacts from the project to water wells, springs/seeps, and streams from mining will be analyzed;
- Evaluate the potential for water quality effects if Rodeo Creek water is diverted into the open pit after mining ceases;
- Analyze the possible impacts from acid rock drainage and mobilization of heavy metals to surface water and groundwater quality and associated beneficial uses (i.e., wildlife, fisheries, livestock, domestic, etc.);
- Present Acid Base Accounting (ABA) data collected applicable to the amendment;
- Characterize the distribution of and calculate volumes of acid generating rock, net neutralizing rock, and Net Neutralizing Capacity based on BLM's Instruction Memorandum IM96-79- Acid Rock Drainage Policy for Activities Authorized under 43 CFR 3802/3809;
- Review available data concerning surface water sources within the area of effects;
- Discuss any additional impacts to wetlands and riparian areas;
- Analyze the potential effects to surface water and groundwater quality in the project area from the proposed additional mining activities. ENSR will describe the potential for acid rock drainage from waste piles and disturbed areas containing sulfides or their salts. There will be a discussion concerning whether the Nevada water quality standards will be met for all applicable uses;
- Review existing data and determine the estimated degree of impact to water wells, springs, and streams affected by the proposed mining activities as applicable;
- Prepare a hydrologic map showing area and nearby watersheds at appropriate scale; and
- Prepare a hydrologic map showing drainages directly affected by the Proposed Action and alternatives at appropriate scale.

3.3 Soils and Reclamation

Direct and indirect effects have occurred to soils and watersheds within the project area and the CESA. Past and present mineral exploration and mine development, including ancillary facilities, have removed or disturbed large areas of vegetation exposing soils to the erosive effects of wind and water. Impacts to the watershed and the sedimentation to Boulder Valley watershed, site productivity, and the reclamation potential of the site following mining activity will be considered.

3.3.1 Resource-specific Issues

Issues related to soils and reclamation include the following:

- Sufficient availability of suitable topsoil and growth media to successfully meet reclamation objectives; and
- Potential for successfully reclaiming mine-related disturbance.

- Potential impacts from accelerated erosion and sedimentation;
- Sufficient availability of suitable growth media to successfully meet reclamation objectives; and
- The potential for successfully reclaiming mine-related disturbance.

3.3.2 Data Collection and Review

The following data sources relative to soils will be reviewed and evaluated for data adequacy, as applicable and available:

- Order II soils map of the project area at a scale of 1:24,000 if appropriate. Existing NEPA documents will be referenced as appropriate;
- Color-infrared aerial photographs (scale 1:24,000) for Elko Resource Area (1998); and
- Black and white aerial photographs for Elko Resource Area (1979).

The Barrick Goldstrike reclamation plan will be reviewed and evaluated for adequacy in meeting BLM's reclamation goals:

- Leave areas disturbed by mining in a stable configuration that will withstand erosion and slump failure;
- Slope mining disturbances to blend and match the surrounding topography to the extent possible;
- Establish self renewing plant communities that at least equal the value of the vegetation that existed at the site before mining for planned post mining land uses; and
- Provide planning for the long-term use and rehabilitation of the pit lake, particularly that portion which will create a shoreline on public land.

ENSR will review the runoff and erosion potential of the soils in the analysis area. The upland and riparian condition of the upstream watershed will be considered when calculating runoff and soil loss. The impacts of runoff and soil loss to the downstream drainages also will be discussed. Runoff from past storm events will be discussed in relation to runoff from mining areas and effects to the diversion channels. The amount of Carlin material available for reclamation and the methods used to prevent loss of topsoil will be discussed.

3.3.3 Study Area and Cumulative Effects Study Area

The direct effects study area includes areas within and near the POO boundary including Brush, Rodeo, and Bell creeks.

The CESA includes existing activities and reasonable foreseeable mining activity in the Carlin Trend from the proposed Pinion Mine in the south to the Rossi Mine in the north through 2020.

3.3.4 Description of the Affected Environment

Based on the data sources identified above, ENSR will:

- Provide a brief overview of the soils in the CESA using the existing Order III soil survey, including those areas that are highly susceptible to erosion and could therefore add to erosion taking place both in terms of loss of site productivity and sediment delivery to local drainages; and
- Summarize the number of acres proposed to be disturbed by the amendment and the area's past, present, and anticipated future mining activities. This discussion will include the acres disturbed by mine components including waste rock facilities, tailings facility, the Betze Pit, ancillary facilities, and roads for both existing and projected mining activities, including exploration.

Based on the reclamation plan, ENSR will:

- Analyze the proposed reclamation plan, including the location and design of sediment control structures, revegetation, and erosion;
- Evaluate the materials to be reclaimed and whether there are any inherent problems with them that would inhibit plant growth; and
- Quantify the total volume of suitable growth media available for reclamation.

3.3.5 Impact Assessment and Mitigation

For the Proposed Action and alternatives, ENSR will:

- Review past, present, and anticipated future mining disturbance within the CESA. ENSR will compare acres disturbed by mining to total acres within the CESA;
- Review data collected from existing field investigations made in the proposed project area in order to analyze the soil of the project area. Map units will be designed around soil suitability as reclamation material and present vegetation communities. ENSR will review the suitability of soil as a reconstruction material, discuss total volume of topsoil available indicating quality of this material for reclamation, and use Table 620-11 in the National Soil Survey Handbook as a guide for determining suitability as a growth medium;
- Discuss the erosion potential of the project area from wind and water, indicating the potential for on site and off site damage during the life of the mine and loss of productivity resulting from accelerated erosion following reclamation. ENSR will consider the current upland and riparian conditions of the upstream watershed to contribute runoff to the project area. Revised Universal Soil Loss Equation will be used to evaluate soil loss in disturbed areas and soil stockpiles if appropriate;
- Review with the BLM resource specialist the appropriate Best Management Practices and mitigation measures that could be implemented to reduce or eliminate erosion especially into local drainages;
- Evaluate the ability of intermittent drainages to withstand the increased runoff from the proposed disturbed area and flow from channel diversions. ENSR will discuss the potential for accelerated erosion;
- Evaluate the reclamation potential of the different mining components in terms of the particular measures that would be followed to reclaim the area;
- Evaluate the above in terms of the growth medium applied to disturbed areas and the quality and quantity of soil that is available on-site;
- Address reclamation potential by comparing the potential for revegetating mining disturbances relative to the vegetation resources, which exist on the site along with BLM's long-term reclamation goals as well as a comparison with test plots and already completed reclamation on site such as the AA heap leach pad;
- Visit the site as required to: 1) evaluate present resource values in the area, 2) examine the present mining operation and the materials it produces, and 3) review the location of proposed facilities; and
- Consult with area reclamation specialists, including Elko District Office staff, to review past reclamation practices in the area and their results.

3.4 Vegetation Resources (including Wetlands and Riparian, Invasive Non-native Species, and Special Status Plant Species)

3.4.1 Resource-specific Issues

Issues related to vegetation include the following:

- Potential impacts to upland plant communities;
- Potential impacts to wetland/riparian vegetation; and
- Short-term loss of wildlife habitat and potential synergistic effects on big game use and watershed degradation.

Issues related to wetlands and riparian areas include the following:

- Pit lake construction, manipulation, and stability;
- Methods for reducing evaporation from the pit lake; and
- Pit lake engineering measures to create a flow-through system, if feasible.

Issues related to nonnative species include the following:

- Potential introduction and/or spreading of noxious weed and invasive species to currently uncontaminated areas within the project area and CESA; and
- Potential impact on existing vegetation types in the event noxious weed and invasive species are introduced.

3.4.2 Data Collection and Review

The following data sources relative to vegetation (including special status species) will be reviewed and evaluated for data adequacy in coordination with the BLM vegetation specialists, as applicable.

- Ortho-photo quadrangles showing soil surveys and Ecological Status Inventory of the Elko and Tuscarora areas;
- Nevada Natural Heritage Program (NNHP) data;
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps;
- USFWS Endangered and Threatened Wildlife and Plant lists, wildlife distribution maps, and checklist of Birds of Northeastern Nevada; and
- The Major Lands Resource Area Technical Guides from Natural Resources Conservation Service (NRCS) describing ecological sites.

The following data sources relative to wetlands and riparian areas will be reviewed and evaluated for data adequacy, as applicable.

- Color-infrared aerial photography for 1979 and 1998;
- NWI maps from USFWS;
- NNHP Data;
- Betze Seep and Springs Report; and
- BLM data/reports.

The following data sources relative to nonnative species will be reviewed and evaluated for data adequacy, as applicable.

- State and/or county weed boards;
- NRCS and BLM noxious weed and invasive species lists; and
- Field survey reports provided by BGMI.

3.4.3 Study Area and Cumulative Effects Study Area

The study area for vegetation will encompass the proposed project boundary. The CESA for vegetation includes existing activities and reasonably foreseeable mining activity on the Carlin Trend through year 2020.

The study area and CESA for wetlands and riparian areas would be the same as discussed for vegetation- the Carlin Trend from the proposed Pinion Mine in the south to the Rossi Mine in the north. The study area of analysis of effects will include the area of 10-foot groundwater drawdown associated with mine de-watering for the No Action Alternative.

The study area and CESA for noxious weed and invasive species will be the same as discussed for vegetation. The study area will encompass the proposed project boundary including riparian and wetland habitats.

3.4.4 Description of the Affected Environment

Based on the data sources identified above, ENSR will:

- Review upland and riparian ecological sites in the project area;
- Prepare a map of vegetation within the project area;
- Identify any upland or riparian vegetation that could be impacted by direct disturbance or possible related actions; and
- Identify acreage impacted by the Proposed Action and alternatives in terms of vegetative community types.

Based upon the results of the review of the data sources listed above, ENSR will prepare map(s) at scales appropriate for the SEIS showing distribution of wetland/riparian habitats within the project area boundary. For noxious weeds and invasive species, ENSR will:

- Develop a list of noxious weed and invasive species that could potentially occur in the project area. Habitat requirements for species identified on the list will be compared to suitable habitat in the project area. In coordination with the BLM and BGMI, ENSR will determine if additional field reconnaissance for noxious weed and invasive species will be required (as an out-of-scope task per direction provided in BLM Manual 9015); and
- Prepare a map of known noxious weed and invasive species' populations within the project area and vicinity.

3.4.5 Impact Assessment and Mitigation

For the Proposed Action and alternatives, ENSR will:

- Prepare a table showing acres of vegetation community types affected by the Proposed Action and each alternative;
- Discuss the potential impacts to vegetation as a result of the Proposed Action and alternatives;

- Review existing studies on current riparian vegetation within the project area;
- Review existing studies on current upland vegetation using the Order II and III soil surveys and BLM Ecological Status Inventory within the project area;
- Discuss the reclamation schedule and the potential plans under the proposed amendment for the accelerated reclamation of the Bazza Waste Rock Facility;
- Discuss potential direct impacts to wetland/riparian plant communities;
- Discuss indirect impacts to wetland/riparian plant communities;
- Discuss cumulative impacts to wetland/riparian plant communities;
- Assess the likelihood of the introduction and/or spread of noxious weed and invasive species within the project area based on the presence and/or absence of noxious weed and invasive species (Class A, B, or C weeds per Manual 9015) in the project area site and in surrounding areas;
- Evaluate impacts related to noxious weed and invasive species within the cumulative effects area. In conjunction with the vegetation discussion, disturbance acreages resulting from the development of the Proposed Action will be added to disturbance acreages associated with past, other present, and reasonably foreseeable future actions identified during discussions with the BLM and BGMI. The total disturbance acreage will be compared to the total acreage present within the CESA;
- Evaluate control and eradication efforts as stated in the Reclamation Plan pertaining to the potential to reduce the likelihood of the introduction and spread of noxious weed and invasive species;
- Evaluate the consequences of establishment of noxious weed and invasive species in the project area based on vegetation types present and potential effects of noxious weed and invasive species establishment on these vegetation types and rangeland; and
- Recommend mitigation measures as appropriate, including measures to control existing noxious weed and invasive species and measures to be incorporated into reclamation planning for the proposed project.

3.5 Wildlife Resources

3.5.1 Resource-specific Issues

Issues related to wildlife include the following:

- Potential impacts to wildlife, wildlife habitat, and wildlife migration corridors;
- Potential impacts from implementation of the Proposed Action such as relocation of populations or migration routes; and
- Potential cumulative impacts include population viability in the Carlin Trend.

3.5.2 Data Collection and Review

The following data sources relative to wildlife and fisheries, including special status species, will be reviewed and evaluated for data adequacy, as applicable:

- Maps of mule deer, pronghorn antelope, elk, and sage grouse habitat and migration routes;
- Maps of sage grouse strutting grounds;
- Maps of raptor nesting sites;
- Maps of regional fire activity;
- Ecological site map from the BLM Elko District Office;

- Map of big game seasonal use areas at a scale of 1:250,000 from the BLM Elko District Office;
- Locations of sage grouse strutting and wintering grounds from the BLM Elko District Office;
- Raptor nest location data base including both BLM and NDOW data from the BLM Elko District Office;
- Species information on file with the BLM, NDOW, and NNHP;
- Endangered Species Act (ESA) documents, including BLM Biological Assessment(s) and USFWS species lists, Biological Opinions;
- Nevada Sage-grouse Conservation Team. 2006. Nevada Sage-Grouse Conservation Project. W-64-R-6 Federal Aid Report. 36 pp.; and
- Non-game wildlife specialist at NDOW Pete Bradley, and NDOW mining biologist Rory Lamp, and terrestrial wildlife specialist for the BLM Elko District Office, Nycole Burton, will be consulted.

3.5.3 Study Area and Cumulative Effects Study Area

The study area for wildlife will encompass the proposed project area as well as those areas directly impacted by the Proposed Action in adjacent areas.

The CESA for wildlife encompasses a portion of NDOW Wildlife Management Area 6 as determined by BLM and NDOW. The CESA includes a contiguous area that provides crucial seasonal habitat for mule deer, a species of concern because of habitat losses associated with wildfires and mining. The CESA extends from the northern end of the Independence Range in the north to the Humboldt River and northern end of the Pinion Range in the south.

3.5.4 Description of the Affected Environment

Based on the data sources identified above, ENSR will:

- Identify the type and extent of terrestrial wildlife habitat affected as a result of current and projected levels of surface disturbance, including an extended area of influence resulting from potential displacement of wildlife;
- Review regional fire activity maps to assess impacts on wildlife habitat;
- Consider species including mule deer, pronghorn antelope, sage grouse, chukar, Hungarian partridge, dove, bats, pygmy rabbits, and all raptor species indigenous to the project area;
- Assess impacts to Nevada BLM-sensitive species (Information Bulletin No. IB- NV-2003-097), migratory birds, and other species of concern including small mammals and predators;
- Extend general wildlife and bird surveys from Carlin Trend EISs as necessary and include information appropriate for areas utilized by the Area 6 mule deer herd and sage grouse;
- Review available documents for wildlife habitat and population information;
- Review Elko Resource Area soil-vegetation inventory Ortho-photo 7.5-minute quadrangles and determine the acres of habitat impacted or possibly impacted by mining operations within the affected watersheds; and
- Review riparian case files for stream conditions and trends.

3.5.5 Impact Assessment and Mitigation

For the Proposed Action and alternatives, ENSR will:

- Review the big game seasonal use maps, relating the amount of proposed and existing disturbance to seasonal use areas and migration routes for mule deer and antelope;

- Assess how opportunities for big and upland game hunting would be affected by the Proposed Action, in terms of public access restrictions, or impacts to big game as a result of additional road construction;
- Determine if proposed environmental protection measures are required to satisfy conservation requirements of the Migratory Bird Treaty Act and Executive Order (EO) 13186;
- Assess the impacts of mining activity on the potential for wildfire and its resulting impacts to wildlife habitat;
- Assess the effects to resident and migratory wildlife species from potential exposure to cyanide solutions;
- Identify the types of habitat desired to exist following reclamation of disturbed areas;
- Assess the effects of resident wildlife populations to mining and reclamation as it relates to adjacent area population dynamics;
- Discuss impacts to wildlife species resulting from noise associated with existing and reasonably foreseeable future mining operations;
- Assess the effects of changes in water quality and loss of stream and/or spring flows on wildlife;
- Review actions proposed to benefit or protect wildlife, both on and off site;
- Describe and assess alternatives for replacing lost or impacted wildlife habitats;
- Analyze the impacts of habitat fragmentation on wildlife species occurring as a result of mining development and exploration;
- Assess the impacts of any ancillary facilities (i.e., power lines or access roads) on raptors and other wildlife species; and
- Analyze seasonal impacts by reviewing file information on raptor nest locations, sage grouse strutting and wintering ground locations, and mule deer/antelope wintering ranges.

3.6 Aquatic Resources

3.6.1 Resource-specific Issues

Issues related to aquatic resources include the following:

- Potential direct and indirect impacts to aquatic species including Lahontan cutthroat trout (LCT) as a result of mine dewatering;
- Potential direct and indirect impacts to aquatic species in Rodeo and Bell creeks from the Clydesdale Waste Rock Facility; and
- Potential cumulative impacts include population viability in the Carlin Trend.

3.6.2 Data Collection and Review

Issues related to aquatic resources include the following:

- Species information on file with the BLM, NDOW, and NNHP;
- ESA documents, including BLM Biological Assessment(s) and USFWS species lists, Biological Opinions; and
- Review habitat and abundance/distribution data for LCT in the Maggie Creek drainage on file with BLM and USFWS.

3.6.3 Study Area and Cumulative Effects Study Area

The study area for aquatic resources will encompass the proposed project area as well as those areas directly impacted by the Proposed Action in adjacent areas.

The CESA for Aquatic Resources will be the same as the CESA used for Groundwater and Surface Water Resources.

3.6.4 Description of the Affected Environment

- Describe aquatic habitat and fish abundance and distribution in drainages potentially affected by surface disturbance and mine dewatering. Baseline characterization would include habitat occupied by LCT;
- Include a section to summarize past and current ESA/section 7 consultation actions to address any change in impacts from the amended project on the threatened LCT; and
- Summarize the status of restoration efforts/management plans in the Maggie Creek basin.

3.6.5 Impact Assessment and Mitigation

- Analyze impacts to aquatic species if the Proposed Action would result in different or additional surface water impacts compared with currently permitted activities. (For ESA compliance, BLM will advise ENSR if any work is needed to assess impacts to LCT);
- Assess the effects of changes in water quality and loss of stream and/or spring flows on wildlife;
- Describe and assess alternatives for replacing lost or impacted aquatic habitats;
- Assess the effects of surface disturbance and mine dewatering on aquatic habitat and species including LCT;
- Develop appropriate mitigation measures if impacts are identified for LCT. Consult with the BLM Fishery Biologist in developing mitigation measures; and
- Assess the cumulative effects of mine dewatering and other actions on aquatic species and their habitat within the cumulative effects study area, as defined by the groundwater drawdown area.

3.7 Grazing Management

The Proposed Action is within the existing POO privately held boundary for the Goldstrike Mine and the ranching operation in the area is owned by Barrick Goldstrike. Grazing is excluded within the Goldstrike Mine operations boundary. As a result, there will be no impacts to grazing resources as a result of the Proposed Action. A section addressing this resource will not be included in the SEIS.

3.8 Paleontological Resources

Existing studies have confirmed that there are no known significant paleontological resources the project area. As a result, the proposed project will no have impacts to these non-renewable resources. Therefore, a section addressing this resource will not be included in the SEIS.

3.9 Cultural Resources

3.9.1 Resource-specific Issues

Issues related to cultural resources include:

- Potential direct and indirect impacts to known prehistoric and historic cultural sites, particularly NRHP— eligible sites; and

- Potential impacts to unanticipated discoveries, including human remains.

3.9.2 Data Collection and Review

ENSR received copies of cultural resources inventories previously conducted within the entire analysis area or area of potential effect (APE), the BLM- and State Historic Preservation Office (SHPO) approved data recovery plan for five NRHP-eligible sites located in the APE as a result of previous inventories, and the 1991 Programmatic Agreement (PA) between Barrick Goldstrike, the Advisory Council on Historic Preservation, Nevada SHPO, and BLM Elko District Office.

3.9.3 Analysis Area and Cumulative Effects Study Area

The analysis area for cultural resources will encompass the APE. The CESA will encompass an area along the Carlin Trend extending from the Bootstrap Mine in the north to Gold Quarry in the south.

3.9.4 Description of the Affected Environment

Based on the data sources identified above, ENSR will:

- Identify and define the APE and CESA;
- Describe the PA and its function;
- Summarize the five NRHP-eligible sites undergoing data recovery (i.e., archaeological excavation); and
- Briefly describe the NRHP-eligible sites located adjacent to the APE.

3.9.5 Impact Assessment and Mitigation

For the Proposed Action and alternatives, ENSR will:

- Describe the results of data recovery at the five NRHP-eligible sites;
- Summarize potential indirect effects to NRHP-eligible sites located adjacent to the APE;
- Describe the role of the PA in mitigating potential indirect impacts (e.g., illegal collecting) to sites adjacent to the APE and direct impacts to unanticipated discoveries (including human remains); and
- Summarize cumulative effects to NRHP-eligible sites located within the CESA as a result of data recovery (i.e., loss of information that may be collected in the future when new theories, methods, and techniques would be available) and illegal collection.

3.10 Native American Traditional Values

3.10.1 Resource-specific Issues

Issues related to Native American traditional values include potential impacts to NRHP-eligible traditional cultural properties or properties of cultural and religious importance to Native American tribes.

3.10.2 Data Collection and Review

Data acquisition regarding Native American traditional values will be undertaken by the Elko District Office (Gerald Dixon) and the data will be provided to ENSR for inclusion in the SEIS.

3.10.3 Analysis Area and Cumulative Effects Study Area

The analysis area for Native American Traditional Values encompasses the project boundary. The CESA encompasses an area along the Carlin Trend extending north to the Ivanhoe Mine, south to the Gold Quarry/South Operations, and southwest to Rock Creek.

3.10.4 Description of the Affected Environment

Based on the data sources identified above, ENSR will:

- Describe the regulatory framework protecting Native American traditional values;
- Summarize the Native American consultation process; and
- Describe Native American traditional values associated with the project area including, but not limited to historical, cultural, and religious values.

3.10.5 Impact Assessment and Mitigation

For the Proposed Action and alternatives, ENSR will:

- Assess the effect of the Proposed Action and each alternative on Native American traditional values (BLM Manual 8160);
- Address the cumulative effect on Native American traditional values;
- Review the comments received from Native American consultation and compare the Proposed Action and the alternatives for effects to Native American traditional values; and
- Discuss the effects to the Western Shoshone people in the context of the Towsawih "Homeland" considering other projects including the effect of the possible reduction of Native American heritage.

If places of traditional, cultural and/or religious importance to the tribes are identified, their locations will be considered sensitive and confidential and will not be included in the SEIS.

3.11 Air Quality

3.11.1 Resource-specific Issues

Issues related to air quality include:

- Potential impacts to the airshed and air quality associated with project-generated air pollution emissions such as fugitive dust, emissions from ancillary facilities, and vehicular emissions;
- Release of potentially toxic pollutants, including mercury; and
- Effects on local and regional air quality, especially Class I airsheds.

3.11.2 Data Collection and Review

The following data sources relative to air quality will be reviewed and evaluated for data adequacy:

- National Oceanographic Atmospheric Administration data, Elko Station;
- Data from National Atmospheric Deposition Program, National Trends Network and National Dry Deposition Network stations co-located at the Saval Ranch, including annual summaries;
- BGMI air quality permits;
- NDEP Bureau of Air Quality data; and

- BGMI air monitoring data.

3.11.3 Study Area and Cumulative Effects Study Area

The study area and CESA for air quality will encompass the proposed project boundary and its corresponding local airshed, including downwind parts of Nevada, Utah, and Idaho.

3.11.4 Description of the Affected Environment

Based on the data sources identified above, ENSR will:

- Present baseline of regional air quality data; and
- Research available data for pollutants resulting from mining activities in the area.

3.11.5 Impact Assessment and Mitigation

For the Proposed Action and alternatives, ENSR will:

- Identify emission sources that provide current levels of pollutants;
- Identify changes or additional releases potentially attributable to the Proposed Action or alternatives;
- Assess potential effects on air quality to local, regional, and any Class I airsheds; and
- Evaluate anticipated cumulative impacts to air quality from the Proposed Action and other past, present, or reasonably foreseeable future actions.

3.12 Access and Land Use

Access and land use for the Proposed Action and alternatives are non-issues since there are no conflicts nor impacts associated with existing or proposed land use authorizations within the Goldstrike Mine boundary. A section addressing this resource will not be included in the SEIS.

3.13 Recreation/Wilderness

Because there is no wilderness, nor wilderness study areas, and the area of the Proposed Action is within the POO boundary for the Goldstrike Mine, which means the area has only limited access to the general public, the impact to recreation and wilderness values is expected to be minimal and wilderness to be non-existent and therefore should not need a comprehensive analysis. A section addressing this resource will not be included in the SEIS.

3.14 Social and Economic Values

3.14.1 Resource-specific Issues

Issues related to social and economic values include:

- Effects associated with the continued employment of current BGMI workers at the proposed project site;
- The potential growth effects of increased employment required for the proposed project;
- The economic impacts of 4 years of additional employment for a large proportion of the mining workforce in the area;
- The effects of the No Action Alternative as workforces from existing mines may be unable to find local employment after closure of approved projects; and

- The effects of the closure of the Goldstrike Mine (as they relate to both the Proposed Action and No Action Alternative) will be analyzed not only in terms of immediate effects, but also include those effects that will occur as operations slow and ultimately terminate.

3.14.2 Data Collection and Review

The following data sources relative to social and economic values will be reviewed and evaluated for data adequacy, as applicable. ENSR will reference or tier to existing documents rather than replicate all information from previous documents in the SEIS. In addition to the documents cited in the introduction to Chapter 3.0, the following information also will be reviewed:

- Socioeconomic questionnaires for Elko Resource Area, 1989; and
- Proposed Elko County, Nevada, Study of Economic Impacts of Mining.

3.14.3 Study Area and Cumulative Effects Study Area

The study area and CESA for social and economic values will address Elko and Carlin area communities; Eureka and Elko counties; and all mining and related activity on the Carlin Trend from the Pinion Mine in the south to the Rossi Mine in the north.

3.14.4 Description of the Affected Environment

Information will be assembled on the changes likely to affect local socioeconomic conditions from gold mining jobs, direct expenditures for equipment and materials, and taxes payable to local jurisdictions. Pertinent information also will be collected on existing community infrastructure; local, social, and economic characteristics; and relationships from mining companies and other entities, consistent with the standards of BLM's Guide to Social Assessment. Based on the information collected and data from the sources identified above, ENSR will prepare a summary of existing social and economic conditions in the study area with reference to previous environmental documents. Maps, tables, and figures will be included, as appropriate, to present the information in a clear and concise manner.

3.14.5 Impact Assessment and Mitigation

For the Proposed Action and alternatives, ENSR will:

- Compare the differences in impacts between the No Action Alternative for currently permitted projects and the impacts resulting from extending mining at Goldstrike for an additional 4 years. This will include analyses of impacts on social services, local economies, and revenues to local and state governments with special emphasis on post-mining impacts to the local populations including social dislocations, declining real estate markets, and potential mitigation measures; and
- Model the direct, indirect, and induced effects, with and without the proposed project, on the key areas of population, employment, income, housing, schools, public services, and local tax revenues compared with local public expenditure requirements. The analysis of social and economic effects will be conducted with guidance from the Guide to Social Assessment (BLM 1982).

3.15 Environmental Justice

3.15.1 Resource-specific Issues

Issues related to Environmental Justice are specified in EO 12898. They include potential for disproportionate adverse health or environmental effects to minority or low-income populations from development of the proposed project or alternatives.

The BLM Elko District Office staff's evaluation is that there are no Environmental Justice issues associated with this project. There are no minority communities that are known to have a greater amount of negative impacts compared to any non-minority community in the area. A section addressing this issue will not be included in the SEIS.

3.16 Visual Resources

3.16.1 Resource-specific Issues

Issues related to visual resources include:

- Direct and indirect effects to the visual quality of the public lands;
- Potential visual impacts to the viewshed in the project vicinity; and
- Cumulative effects from the additional exploration activities in the area.

3.16.2 Data Collection and Review

The following data sources relative to visual resources will be reviewed and evaluated for data adequacy, as applicable:

- Definition of the viewshed;
- BLM Visual Resource Management (VRM) classifications of the Elko Resource Area;
- U.S. Forest Service VRM documents;
- BLM Manual Handbook 8410-1, Visual Resource Inventory (1986); and
- BLM Manual Handbook 8431-1, Visual Resource Contrast Rating (1986).

3.16.3 Study Area and Cumulative Effects Study Area

The study area for visual resources will encompass the viewshed of the proposed project boundary. The CESA includes existing activities and reasonably foreseeable mining activity on the Carlin Trend through year 2020.

3.16.4 Description of the Affected Environment

Based on the data sources identified above, ENSR will:

- Review the VRM classifications for the Elko Resource Area in coordination with the designated BLM specialist; and
- Describe the BLM VRM classifications for the project area and the associated management objectives for the classifications.

3.16.5 Impact Assessment and Mitigation

For the Proposed Action and alternatives, ENSR will:

- Define the viewshed of the Proposed Action and alternatives in consultation with the BLM;
- Discuss the impacts from current and potential pits, waste rock facilities, roads, and associated activities that may affect the area's Class IV VRM objectives;
- Describe how existing and future mined areas within the project area are expected to appear within the existing landscape following reclamation in 2020;

- Present a listing of mitigating actions that pertain to visual resources for the proposed amendment;
- Evaluate reclamation plans to determine what form the different mine areas will have topographically; and
- Review existing EAs and EISs on gold mining activities to determine visual effects.

3.17 Noise

The Proposed Action and proposed alternatives will result in noise impacts that are similar to current authorized operations. A section addressing this resource will not be included in the SEIS.

3.18 Hazardous Materials and Solid Waste

3.18.1 Resource-specific Issues

Issues related to hazardous materials and solid waste include potential impacts associated with the transport, use, storage, and disposal of hazardous materials and waste for the proposed project, including the Goldstrike No. 3 Tailings Facility if the materials contained therein are considered hazardous. The analysis of hazardous materials in this SEIS will focus on only those materials affected by the Proposed Action (or proposed alternatives), rather than analyze all hazardous materials that might be generated at the mine site but are not affected by the Proposed Action (or proposed alternatives).

3.18.2 Data Collection and Review

The following data sources relative to hazardous materials will be reviewed and evaluated for data adequacy:

- The list of hazardous materials and substances proposed for use at the site, to be provided by BGMI; and
- Hazardous Materials Spill and Emergency Response Plan, Reclamation Plan, and Materials Transportation Plan, all to be provided by BGMI.

The analysis for hazardous materials will summarize information from previous NEPA documents and supplied by BGMI, and analyze only those changes that would result from the Proposed Action.

3.18.3 Study Area and Cumulative Effects Study Area

The study area for hazardous materials and waste will encompass the proposed project area. The CESA for hazardous materials and waste will encompass the major permitted mine sites in the Carlin Trend.

3.18.4 Description of the Affected Environment

ENSR will reference existing documents rather than replicating all information in the SEIS.

3.18.5 Impact Assessment and Mitigation

If there are no substantive differences in the presence or handling of hazardous materials compared to existing permitted actions, this section will reference previous NEPA documents.

4.0 Public Participation Plan

The public participation plan for the Betze Pit Expansion Project SEIS will include the components described below.

4.1 Notice of Intent

The BLM published a Notice of Intent to prepare an SEIS in the Federal Register on May 29, 2007.

4.2 Scoping Meeting

The public scoping meeting for the SEIS was held in Elko, Nevada, on June 25, 2007. The public scoping period for the SEIS closed on June 30, 2007. A Public Scoping Report that summarized the comments received during this period was prepared (ENSR 2008).

4.3 Public Review and Meetings

The BLM will publish Notices of Availability of the Draft SEIS and Final SEIS in the Federal Register. There will be a 45-day public review period following the publication of the Draft SEIS. There will be one public meeting during the Draft SEIS public review period; this meeting will be held in Elko, Nevada. Following the publication of the Final SEIS, there will be a 30-day public review period.

ENSR will coordinate with the BLM to assist in developing the format, agenda, and necessary materials for the public meeting.

The BLM will contact and hold briefings with the following agencies on an as-needed basis: USFWS, NDOW, and Elko and Eureka County Commissioners.

5.0 SEIS Responsibilities

5.1 Bureau of Land Management and Nevada Department of Wildlife

The BLM is the lead agency for preparing the Betze Pit Expansion Project SEIS. NDOW and Elko County are cooperating agencies.

Table 5-1 identifies the BLM staff members designated to serve on the SEIS interdisciplinary team. The designated NDOW representatives for the SEIS team are Rory Lamp and Katie Miller.

Table 5-1 BLM Interdisciplinary Team

| Resource | BLM Responsibility | BLM Office Location |
|---|--------------------|----------------------|
| BLM Project Lead; Geology and Minerals; Reclamation; Groundwater Quantity; Socioeconomics | Kirk Laird | Elko District Office |
| Cultural Resources | Bill Fawcett | Elko District Office |
| Visual Resources | Steve Dondero | Elko District Office |
| Surface Water Resources; Groundwater Resources and Geochemistry, Soils and Reclamation, Air Quality | Mark Dean | Elko District Office |
| Native American Religious Concerns | Gerald Dixon | Elko District Office |
| NEPA Coordinator | Lorrie West | Elko District Office |
| Hazardous Materials and Solid Waste | Deb McFarlane | Elko District Office |
| Wildlife Resources; Vegetation Resources; Aquatic Resources | Nycole Burton | Elko District Office |

5.2 ENSR

ENSR is the third-party environmental consultant responsible for preparing the SEIS under the direction of the BLM. ENSR's team organization is shown in **Figure 5-1**; the responsibilities of the individual team members are summarized in **Table 5-2**.

5.3 Barrick Goldstrike Mines Inc.

BGMI is responsible for providing information regarding the design of the proposed project and alternatives to be addressed in the SEIS. BGMI also is responsible for baseline data and analytical information (e.g., groundwater analyses, waste rock analyses, etc.) required for subsequent direct, indirect, and cumulative impact assessment by ENSR and BLM. Joe Giraudo is the primary BGMI contact for the Betze Pit Expansion Project SEIS.

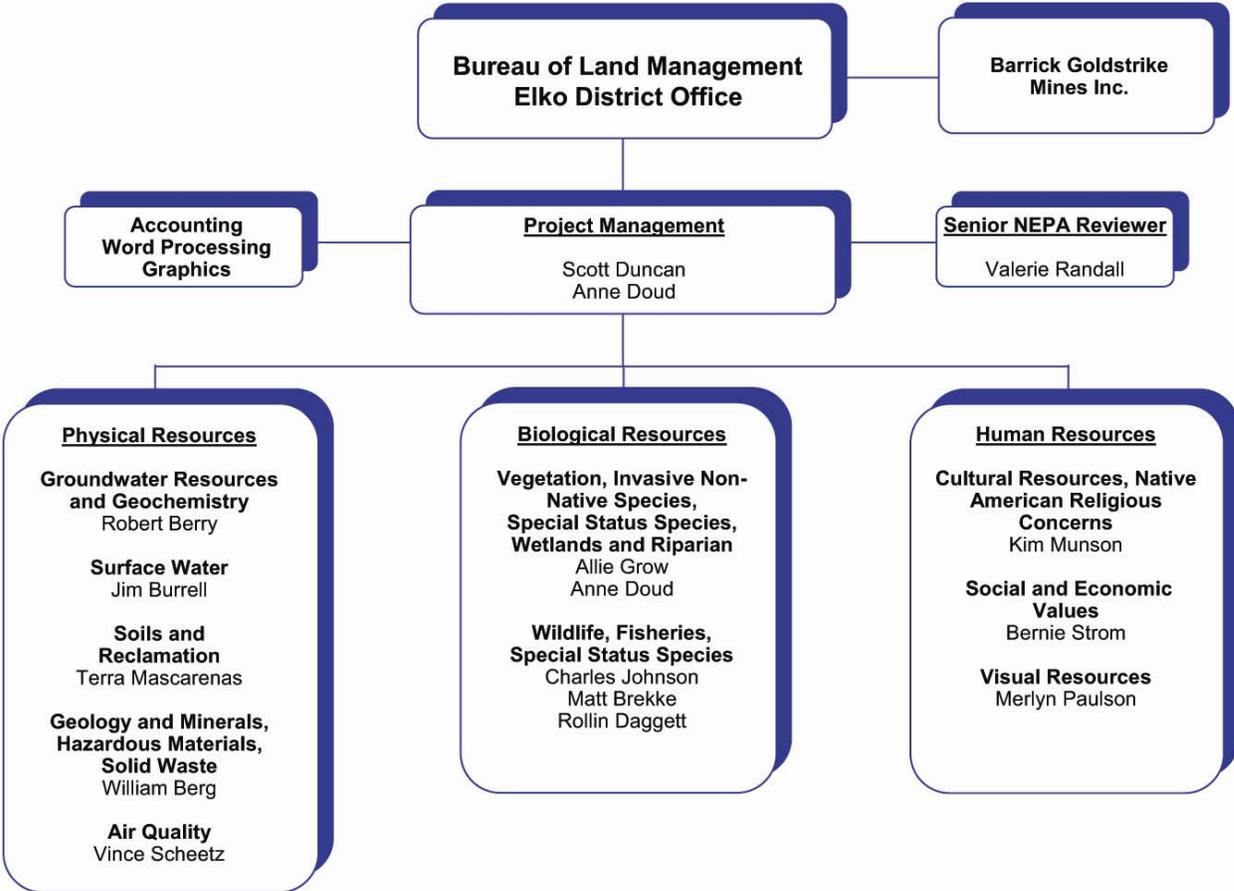


Figure 5-1 Project Team Organization

Table 5-2 ENSR's Key Personnel Responsibilities

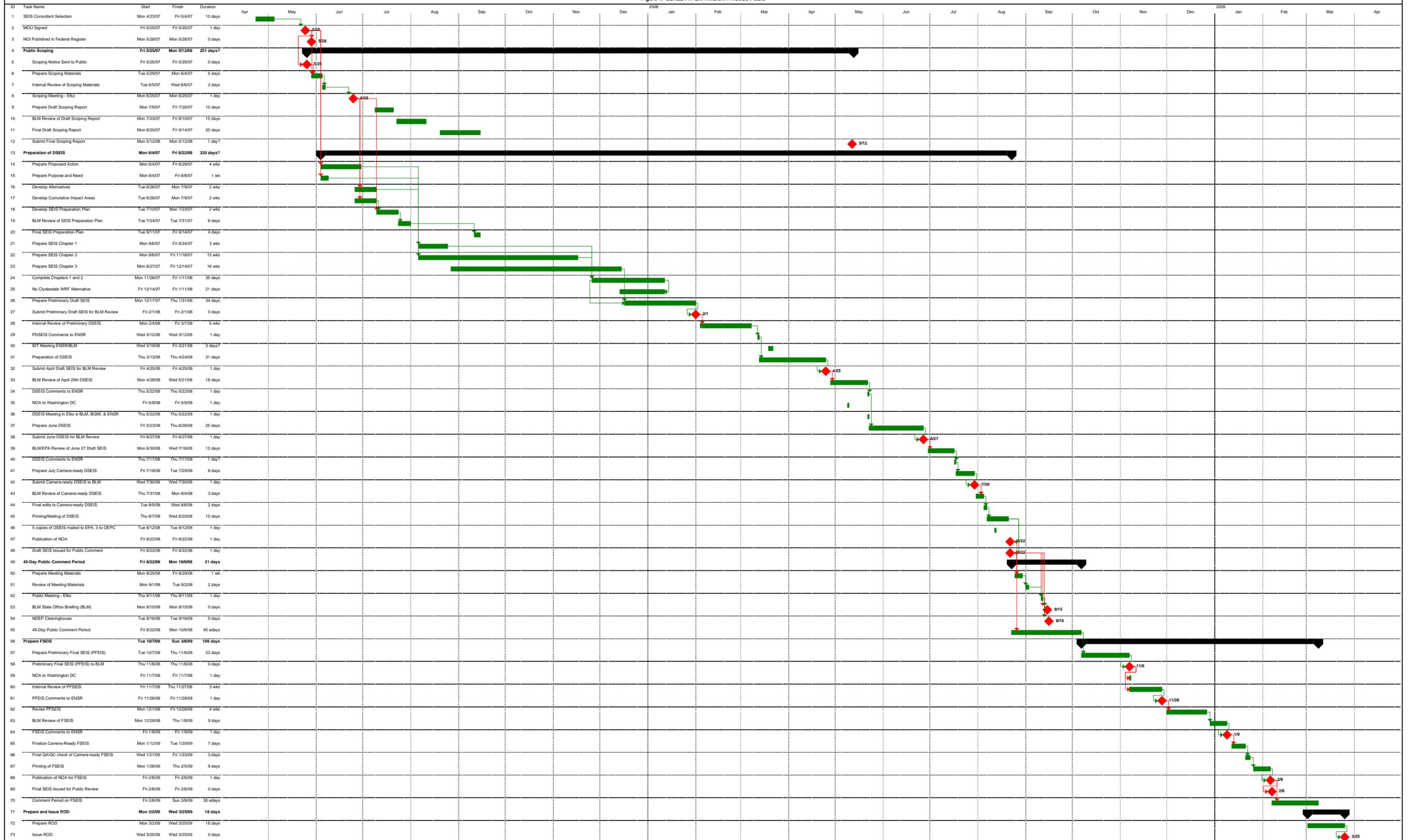
| Name | Responsibility |
|--------------------------------|---|
| Scott Duncan | Project Initiation Project Management SEIS Preparation Plan Draft SEIS Preparation Final SEIS Preparation |
| Valerie Randall | Senior NEPA Reviewer |
| Anne Doud | SEIS Preparation Plan NEPA Document Coordinator Draft SEIS Preparation Final SEIS Preparation |
| Peggy Roberts | Public Participation |
| Charles Johnson Matt Brekke | Wildlife (including special status species) |
| Rollin Daggett | Aquatic Resources (including special status species) |
| Allie Grow Anne Doud | Vegetation (including special status species) Invasive Nonnative Plant Species |
| Robert Berry | Groundwater Resources and Geochemistry |
| Terra Mascarenas | Soils Reclamation |
| Jim Burrell | Watersheds Surface Water |
| William Berg | Geology and Minerals, Hazardous Materials and Solid Wastes |
| Kim Munson | Cultural Resources / Native American Traditional Values |
| Vince Scheetz | Air Quality |
| Bernie Strom | Social and Economic Values |
| Merlyn Paulson | Visual Resources |

6.0 Project Schedule

The current schedule for the completion of the Betze Pit Expansion Project SEIS is presented in **Figure 6-1**. In developing the schedule, ENSR has and will continue to work closely with the BLM and BGMI to complete a quality document in a timely manner.

DRAFT

Figure 1. BETZE PIT EXPANSION PROJECT SEIS



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Appendix C - Groundwater Supplemental Information

Appendix D - Cultural Resources Inventories

Appendix E - Special Status Species

8.0 References

- Barrick Goldstrike Mines Inc. (BGMI) and SRK Consulting (SRK). 2007. Amendment to the Plan of Operations (NVN-70708) and Reclamation Permit (0026) for the Expansion of the Betze Pit, the Goldstrike No. 3 Tailings Facility and the Clydesdale Waste Rock Facility. Barrick Goldstrike Mines Inc. and SRK Consulting, June 2007.
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