

**ENVIRONMENTAL REPORT  
FOR THE CONSTRUCTION OF  
EVAPORATION POND # 3 (EP3)  
AND ASSOCIATED OPERATIONS  
BOUNDARY EXPANSION**

**January 30, 2007**

**License SUA-1470  
Docket No. 040-08903  
(TAC J00506)**

**U.S. Nuclear Regulatory Commission  
Office of Nuclear Material Safety and Safeguards  
Division of Fuel Cycle Safety and Safeguards  
Fuel Cycle Facilities Branch**

A report prepared for:

Homestake Mining Company of California, Grants Project

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FOR THE CONSTRUCTION OF  
EVAPORATION POND # 3 (EP3)  
AND ASSOCIATED OPERATIONS  
BOUNDARY EXPANSION**

File No.:16977.4ER

Prepared by:



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Louis J. Bridges, Ph.D  
Regional Environmental Planning and Permitting



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Jennifer Meyer, CIH, CHMM  
Regional Environmental Manager

Kleinfelder, Inc.  
8300 Jefferson NE, Suite B  
Albuquerque, New Mexico 87113  
(505) 344-7373

January 30, 2007

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## 1.0 INTRODUCTION

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### ***1.1 Relevant Actions***

The Homestake Mining Company (HMC) submitted a proposed tailings reclamation and mill-decommissioning plan for the Grants Mill to the US Nuclear Regulatory Commission (NRC) for review in January 1991 (NCR 1993). On December 8, 1992, HMC also submitted a supplement to their environmental report that had been prepared in 1982. The supplement describes the expected impacts associated with mill decommissioning and tailings reclamation, and evaluates alternatives for mitigating the impacts. Additional information regarding the site environment and environmental impacts of the proposed site closure plan was provided in letters dated January 11 and March 16, 1993. In a letter dated January 16, 1996, HMC requested that the large tailings compound be removed from the annual Technical Evaluation as the final stabilized configuration had been achieved. In a subsequent letter dated March 7, 1996, HMC submitted a Completion Report and notified the NRC that the Grants Mill decommissioning was completed, and requested the amending of License Number SUA-1471 to reduce monitoring requirements. The NRC responded in a letter dated July 31, 1996, which issued their determination that HMC's requests to reduce environmental monitoring and tailings impoundment monitoring requirements were acceptable and amended Source Material License SUA-1471 by modifying license requirements.

As part of Amendment 34 to the Grants Reclamation Project Radioactive Materials License –SUA-1471-Docket 40-8903 approved June 19, 2002, License Condition (LC) 42 was further amended to require submittal of a land use survey with the License annual report to NRC. Pursuant to (LC) 42, as amended, the annual survey has been filed with NRC as part of the annual Performance Review Report.

This Environmental Report (ER) is being prepared in accordance with NRC requirements in 10 CFR 51.21 and 51.30, and with the associated guidance in NRC report NUREG-1748, "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs." An EA is defined by the Council on Environmental Quality in 40 CFR 1508.9 as a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

## ***1.2 Previous Environmental Reports and Supporting Documents***

Documents evaluated in the preparation of this ER include:

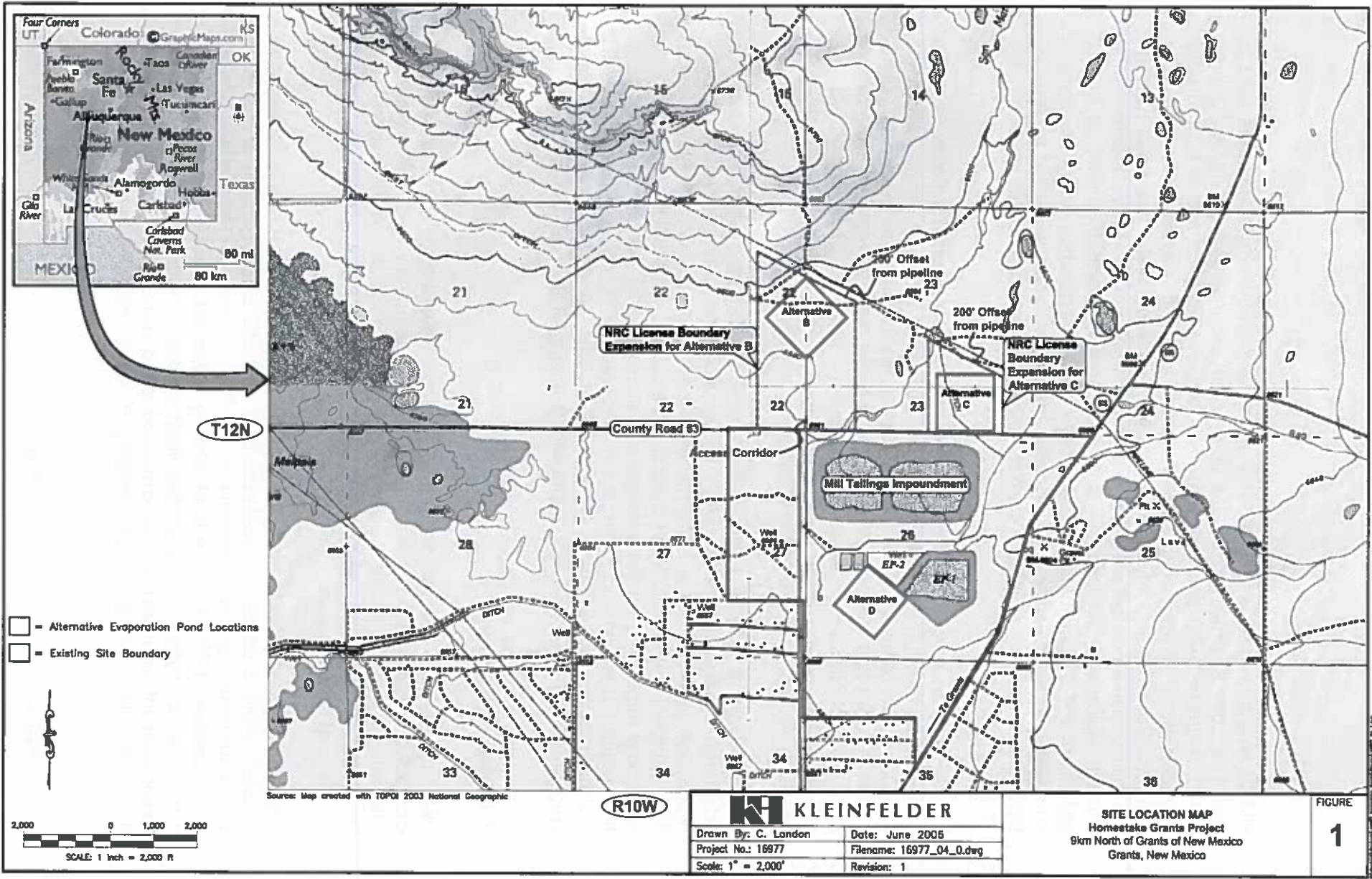
- "2005 Annual Monitoring Report/ Performance Review for Homestake's Grants Project, Pursuant to NRC License SUA-1471 and Discharge Plan DP-200"; March, 2006;
- "Environmental Assessment for the Decommissioning and Reclamation of the Grants Mill and Tailings Ponds," Docket No. 40-8903, May 1993;
- "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs," NUREG-1748, Final Report, U.S. Nuclear Regulatory Commission, August 2003;
- "Standard Review Plan of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978."
- NUREG-1620, Rev. 1, Final Report. U. S. Nuclear Regulatory Commission, June 2003.

Additional references may be found in Section 8.0 of this ER.

## ***1.3 Purpose and Need for the Proposed Action***

HMC has, through a variety of partnerships and joint venture associations operated a uranium milling operation in Cibola County, New Mexico north of the City of Grants in Section 26, Township 12 North, Range 10 West (Figure 1). Uranium milling began at the Site in 1958 and continued through 1990 under NRC License SUA-1471. A total of approximately 22 million tons of ore were milled at the site using a conventional alkaline leach process. From 1993 to 1995, the mill was decommissioned and demolished (EPA 2001). At that time, final surface reclamation commenced in accordance with the amended US NRC requirements (NCR 2006).

HMC currently manages a ground water restoration program as defined by NRC License SUA-1471, and New Mexico Environment Department (NMED) Discharge Plan, DP-200 and DP-725 (HMC, 2006). An amendment to the NRC Site License and an amendment of NMED DP-725 will be required to address the addition of Evaporation Pond #3 (EP3), and the attendant site boundary expansion depending on the selected site location for the proposed pond. The restoration program is a dynamic on-going strategy based on a ground water restoration plan, which began in 1977, and is scheduled for completion in 2017. Additional evaluation of the ground water restoration program recently has identified the need to extend the program by approximately four years to 2017 to finish cleanup objectives.



HMC's long-term goal is to restore the groundwater aquifer system in the area to levels as close as practicable to the up-gradient groundwater quality background levels. A groundwater collection area has been established and is hydraulically bounded by a down-gradient perimeter of injection and infiltration systems comprised of wells and infiltration lines. Alluvial groundwater that flows beneath the tailings pile areas enters this bounded collection area. All groundwater in the alluvial aquifer that is within the collection area is eventually captured by the collection well system. Once groundwater quality restoration within the zone is complete and approved by the agencies, the site is to be transferred to the U.S. Department of Energy (DOE), which will have the responsibility for long-term site care and maintenance.

The restoration program is designed to remove target contaminants from the groundwater through use of injection and collection systems, utilizing deep-well supplied fresh water or water produced from the reverse osmosis (R.O.) plant. The R.O. plant has operated at the site since late 1999 to augment groundwater clean-up activities. A series of collection wells is used to collect the contaminated water, which is pumped to the R.O. plant for treatment or, alternatively, reported to a series of evaporation ponds.

The purpose of HMC's request is to seek NRC approval to construct an additional evaporation pond (EP3) for assisting and enhancing groundwater restoration activities at the HMC mill site located north of Grants, New Mexico. This approval would include an associated expansion of the licensed operations boundary, depending on the selected site alternative for the proposed pond. In this regard, uranium mill tailings site reclamation is regulated by the NRC pursuant to the requirements of Part 40 of Title 10 of the Code of Federal Regulations (10 CFR Part 40), "Domestic Licensing of Source Material".

#### ***1.4 Proposed Action***

HMC proposes to expand the current license boundary to construct EP3 for groundwater reclamation at the HMC Project. Accordingly, HMC has requested that Source Material License SUA-1471 be amended to permit the expansion of the permitted operations boundary to construct EP3 for groundwater reclamation activities at HMC.

Currently, groundwater remediation is underway, and as part of this remediation program HMC proposes to construct EP3 on HMC property north of the large tailing impoundment at a location in Section 22 and 23 (Alternative Site B) approximately 1,800 feet north of County Road 63. A 50-foot wide access corridor will be constructed to access the proposed pond and to locate piping and associated infrastructure to the proposed pond area. The proposed area of impact for Alternative B is approximately 33 acres, including the service corridor



and earthen containment dike. The evaporative surface area of the proposed pond is approximately 26.5 acres. The pond will be constructed as an at-grade facility, with cut and fill designed to be in rough balance. Therefore, no significant quantities of soil will be imported or exported from the site. The pond will have a double High Density Polyethylene (HDPE) liner with a leak detection/collection system. After groundwater remediation is complete (in approximately ten years time), the pond will be removed and the area reclaimed.

The proposed site is located in the San Mateo Creek valley north of the San Mateo Creek 100 year floodplain. The San Mateo Creek channel is well defined in the upper portion of the watershed but loses definition within a few miles upstream of the HMC site. The valley floor runs in a south-southwesterly direction across HMC property with no visible channel.

The proposed location for EP3 is within the SE ¼ of and NE ¼ of Section 22, and within the SW ¼ of and NW ¼ of Section 23, generally lying between 107° 52' 10" and 107° 52' 30" longitude and 35° 14' 50" and 35° 15' 00" latitude (Figure 2).

The Environmental Report (ER) provided herein assesses the likely impacts to the environment from HMC's proposal to expand the current licensed boundary to construct EP3 for ground water reclamation at HMC. This document serves to provide information to satisfy the requirements under the National Environmental Policy Act of 1969 (NEPA) for both the NRC and NMED to consider the environmental affects of the proposed actions under their jurisdiction.

## ***1.5 Alternatives to the Proposed Action***

### **1.5.1 Alternatives Available to HMC**

There are three alternatives available to HMC to increase evaporation and storage capacities required for the groundwater reclamation. HMC is the property owner of lands associated with the evaporation pond citing alternatives discussed in this section (Figure 2). Construction details and evaporation pond designs are common throughout the Alternatives B-D including the preferred Alternative.

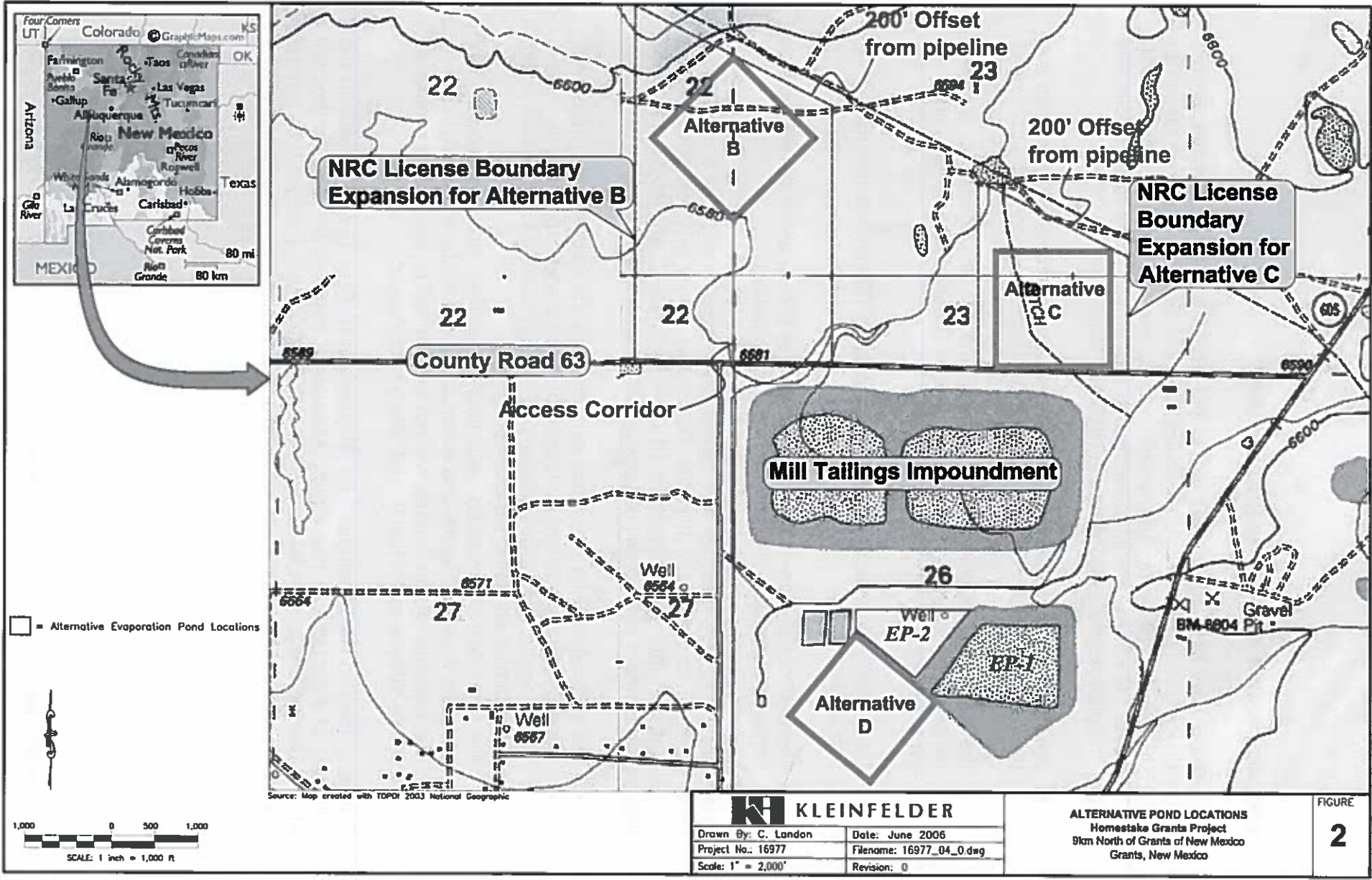
*Alternative A:* This is the No Action Alternative, which provides for the groundwater reclamation at the HMC facility under current capacities and at the direction of the NRC and NMED. No substantial changes to the reclamation plan would occur except for the likely need to extend the time period for completion of the reclamation. All current operations and maintenance programs would continue as planned according to the general provisions of the HMC Closure Plan dated May 12, 1993.

*Alternative B:* This alternative involves expanding the current licensed boundary and constructing EP3 approximately 1,800 feet north of County Road 63. Access to proposed site will be via a 50-foot access corridor. The NRC licensed boundary would be expanded to encompass approximately 185 acres.

Although the construction of EP3 is a planned activity, the placement of the pond north of County Road 63 and the expansion of the licensed boundary has not been approved by NRC or NMED. The placement of EP3 north of County Road 63 will disturb approximately 33 acres of land and be square in shape. The 33-acre impact area includes the access corridor and earthen containment dike. The pond is designed to provide 26.5 acres of surface area for evaporation and water storage purposes. The pond will be constructed as an at-grade facility, with cut and fill designed to be in rough balance. Therefore, no significant quantities of soil will be imported or exported from the site. The pond will have a double HDPE liner with a leak detection/collection system. County Road 63 may be temporarily closed during the construction of EP3 to facilitate installation of piping systems necessary to connect the pond with water management pipe systems in the tailings site area south of the county road.

*Alternative C:* This alternative involves constructing EP3 within the SE<sup>1/4</sup> of Section 23 along County Road 63 and within 1,800 feet of NM 605. The NRC licensed boundary would be expanded to encompass approximately 68 acres. The pond shape is proposed to be square in shape and disturb approximately 30 acres of land including the access corridor and earthen containment dike. The pond is anticipated to provide 26.5 acres of surface area for the evaporation and water storage purposes. The pond will be constructed as an at-grade facility, with cut and fill designed to be in rough balance. Therefore, no significant quantities of soil will be imported or exported from the site. The pond will have a double HDPE liner with a leak detection/collection system. County Road 63 may be temporarily closed during the construction of EP3 to facilitate installation of piping systems necessary to connect the pond with water management pipe systems in the tailings site area south of the county road.

*Alternative D:* This alternative involves constructing EP3 on the southwest side of Evaporation Pond # 2 (EP2) located south of the large tailings pile impoundment in the SW ¼ of Section 26. Under this alternative EP3 will share the southwest dike wall of EP2 within the existing licensed boundary. This alternative would not require permitting an NRC license boundary expansion, as it would be within the bounds of the present NRC licensed area. Placement of EP3 south of the mill tailing impoundment would have the potential to contribute to the evaporative odors and noise, in the residential areas to the south of the site, that would be associated with the reclamation activities.



## 1.5.2 Alternatives Available to NRC and HMC

The action that NRC is considering is the HMC request to amend Source Material License SUA-1472 and the NMED DP- 725 permit. The amendment for this HMC project will permit the boundary expansion associated with locating EP3 north of the mill tailings impoundment and north of County Road 63. In this regard, the alternatives available to the NRC and NMED are:

- Approve HMC's licensed amendment request for boundary expansion and the construction of EP3 north of the mill tailings impoundment and north of County Road 63 at one of two alternate locations. Additionally, approve the license amendment request with any license conditions that are considered necessary to protect public health and safety and the environment.
- Deny HMC's boundary expansion and locate EP3 south of the mill tailings impoundment.
- Deny HMC's construction and placement of EP3 south of the mill tailings impoundment (essentially the No Action alternative).

The selection of any alternative is based on a consideration of a number of factors related to protection of public health and safety and the environment. Consistent with the requirements of 10 CFR Parts 40.32 and 40.45, the HMC license amendment request will be approved if, among other things:

- The application is for a purpose authorized by the Atomic Energy Act; and
- The applicant is qualified by reason of training and experience to reclaim mill tailings for the purpose requested in such manner as to protect health and minimize danger to life or property; and
- The applicant's proposed equipment, facilities and procedures are adequate to protect health and minimize danger to life or property; and
- The issuance of the license will not be inimical to the common defense and security or to the health and safety of the public.

Denial of the license amendment for Alternatives B, C or D would result in the selection of Alternative A (No Action Alternative) resulting in no environmental affects beyond the current levels, with the implication that it may further extend the period necessary to complete reclamation activities at the HMC Grants site.

## 2.0 DESCRIPTION OF ALTERNATIVES

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### **2.1 Introduction**

There are three alternatives available to HMC to increase evaporation and storage capacities required for the groundwater reclamation. HMC is the property owner of lands associated with the evaporation pond citing alternatives and their boundary expansion options are discussed in this section. Construction details and evaporation pond designs are common throughout the Alternatives B - D including the proposed Alternative.

### **2.2 Alternative A**

*No Action Alternative:* Alternative A is defined as the continuation of current management of the HMC's Grants Projects operation and project area conditions. No measures would be taken by HMC to increase reclamation processes, timelines, or improve conditions as they currently exist, except for future management actions that would occur regardless of the alternative selected.

Alternative A provides for the groundwater reclamation at the HMC facility under current capacities and at the direction of the NRC and NMED. All current operations and maintenance programs would continue as planned according to the general provisions of the HMC Closure Plan dated May 12, 1993.

### **2.3 Alternative B**

Alternative B involves expanding the current licensed boundary and constructing EP3 approximately 1,800 feet north of County Road 63, located in the NE  $\frac{1}{4}$  of Section 22 and in the NW  $\frac{1}{4}$  of Section 23. Access to proposed site will be via a 50-foot access corridor.

Although the construction of EP3 is a planned activity, the placement of the pond north of County Road 63 and the expansion of the licensed boundary has not been approved by NRC or NMED (Figure 3). The expanded license boundary would encompass approximately 185 acres. The placement of EP3 north of County Road 63 will disturb approximately 33 acres of land and be square in shape. The current land use is rangeland utilized for grazing.

The 33-acre impact area includes the access corridor that currently exists but will require improvements, construction of the pumping facilities and piping along with construction of an earthen containment dike. The access corridor will traverse the current 100-year floodplain. No dredge or fill is anticipated within the 100-year floodplain.

The pond is designed to provide 26.5 acres of surface area for evaporation and water storage purposes. The pond will be constructed as an at-grade facility, with cut and fill designed to be in rough balance. Therefore, no significant quantities of soil will be imported or exported from the site. The pond will have a double HDPE liner with a leak detection/collection system. County Road 63 may be temporarily closed during the construction of EP3 to facilitate the installation of piping systems necessary to connect the pond with water management piping systems in the tailings site area south of the county road.

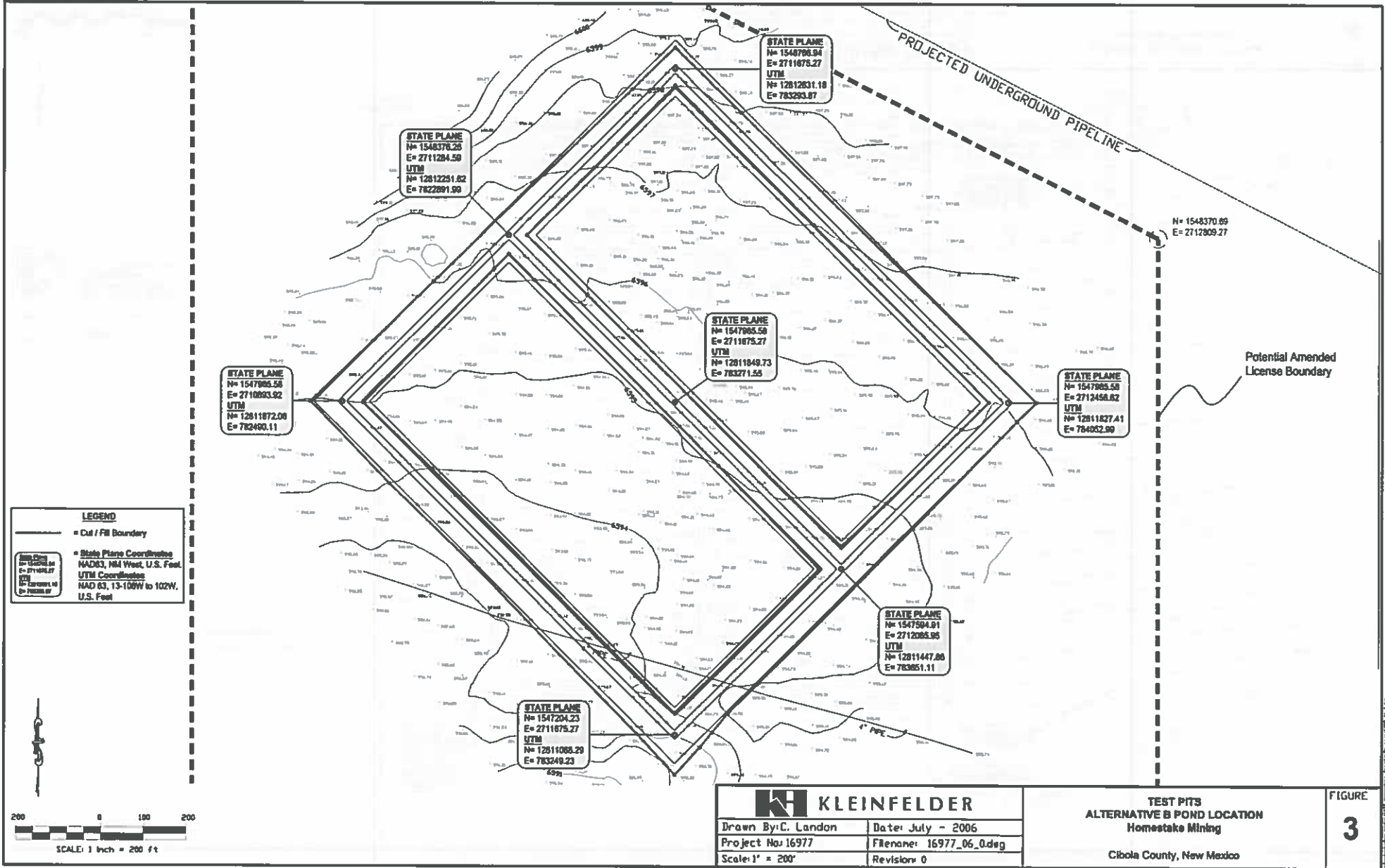
#### ***2.4 Alternative C***

Alternative C involves constructing EP3 within the SE 1/4 of Section 23 along County Road 63 and within 1,800 feet of state highway NM 605 (Figure 4). The pond shape is square in shape and would disturb approximately 30 acres of land including the access corridor and earthen containment dike. The area has been mechanically bladed to remove wind blown contaminants within the past ten years.

The pond is anticipated to provide 26.5 acres of surface area for the evaporation and water storage purposes. The pond will be constructed as an at-grade facility, with cut and fill designed to be in rough balance. The permitted license boundary expansion would encompass approximately 68 acres. Therefore, no significant quantities of soil will be imported or exported from the site. The pond will have a double HDPE liner with a leak detection/collection system. County Road 63 may be temporarily closed during the construction of EP3 to facilitate the installation of piping systems necessary to connect the pond with water management piping systems in the tailings site area south of the county road.

#### ***2.5 Alternative D***

Alternative D involves constructing EP3 on the southwest side of EP2 located south of the mill tailing impoundment (Figure 5). Under this alternative EP3 will share the southwest dike wall of EP2 within the existing licensed boundary. This alternative is fully contained within the existing license boundary and would not require permitting a boundary expansion. Placement of EP3 south of the mill tailing impoundment would have the potential to add to the evaporation odors occasionally observed in the residential areas south of the site that are associated with the reclamation activities.



STATE PLANE  
 N= 1548000.52  
 E= 2714814.86  
 UTM  
 N= 12810374.82  
 E= 786371.92

STATE PLANE  
 N= 1548000.52  
 E= 2715019.86  
 UTM  
 N= 12810343.25  
 E= 787477.05

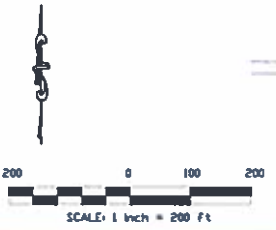
PROJECTED UNDERGROUND PIPELINE

N= 1546579.05  
 E= 2716305.27

Potential Amended License Boundary

County Road 63

**LEGEND**  
 - - - - - Cut / Fill Boundary  
 = State Plane Coordinates  
 NAD83, NM West, U.S. Feet  
 UTM Coordinates  
 NAD 83, 13-106W to 102W,  
 U.S. Feet



N= 1545252.20  
 E= 2714525.27

N= 1545252.20  
 E= 2716305.27

STATE PLANE  
 N= 1545495.52  
 E= 2714814.86  
 UTM  
 N= 12809209.70  
 E= 786340.36

STATE PLANE  
 N= 1545495.52  
 E= 2715019.86  
 UTM  
 N= 12809230.13  
 E= 787445.48

<b>KLEINFELDER</b>		<b>ALTERNATIVE C POND LOCATION Homestake Grants Project Cibola County, New Mexico</b>	<b>FIGURE 4</b>
Drawn By: C. Vallejo	Date: July - 2006		
Project No: 16977	Filename: 16977_06_0.dwg		
Scale: 1" = 200'	Revision: 0		





EVAPORATION  
POND NO. 2



TAILINGS  
FACILITY

State Highway  
605

STATE PLANE  
N= 1541084.66  
E= 2712382.15  
UTM  
N= 12804827.55  
E= 783791.39

STATE PLANE  
N= 1541696.67  
E= 2713141.39  
UTM  
N= 12805718.44  
E= 784563.91

STATE PLANE  
N= 1541147.83  
E= 2713963.59  
UTM  
N= 12804945.92  
E= 783354.81

STATE PLANE  
N= 1540335.44  
E= 2713204.35  
UTM  
N= 12804155.03  
E= 784582.29

**LEGEND**

— Cut / Fill Boundary

— State Plane Coordinates  
NAD83, NM West, U.S. Feet  
UTM Coordinates  
NAD 83, 13-100W to 102W,  
U.S. Feet

SCALE: 1 inch = 300 ft

**KH KLEINFELDER**

Drawn By: C. Vallejo	Date: July - 2006
Project No: 16977	Filename: 16977_06_0.dwg
Scale: 1" = 300'	Revisions: 0

**ALTERNATIVE D POND LOCATION**  
Homestake Grants Project  
Cibola County, New Mexico

FIGURE  
**5**

### 3.0 AFFECTED ENVIRONMENT

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Uranium milling operations at the Grants site began in 1958 and was terminated in February 1990. Two separate mills were originally located at the site. The smaller mill operated until January 1962, after which all milling activities were conducted in the larger facility. Both mills utilized alkaline leach circuits, with a nominal capacity for the two mills of 3,400 tons of ore per day.

Following extraction of the uranium, the tailings were discharged to a small or a large tailings impoundment. The small impoundment was constructed using an earth fill containment dike into which the tailings were discharged. The larger impoundment was also constructed using an earth fill containment dike. The larger impoundment was raised using the centerline construction method and tailings for the construction material. The impoundment out slopes and containment dikes were formed by hydraulic placement of the coarse fraction of the tailings, while the finer fraction of the tailings and the tailings liquid were discharged into the pond.

The small impoundment contained approximately 1.8 million tons of tailings, while the large impoundment contained approximately 21 million tons. The alkaline leach circuit employed at the Grants Mill required a finer grind of the material to be leached than does an acid leach circuit. As a result, up to 60 percent of the tailings solids are finer than a No. 200 sieve used by the Unified Soil Classification System to identify fine particles (NRC 1993). The finer materials are more susceptible to migration or transport through natural mechanisms such as wind and water erosion.

The Homestake site is underlain by alluvial material, which ranges from 40 to 120 feet (12 to 36 meters) thick at the site. The alluvium is underlain by about 850 feet (255 meters) of shales and siltstones, which comprise the Chinle formation.

The Chinle formation acts as an effective barrier between the aquifer-bearing portion of the alluvium and the underlying San Andres formation, which is the principal water-bearing formation in the vicinity of the mill. Milling activities at the site have resulted in impacts to the alluvial aquifer, which underlies the Grants Mill. A ground-water corrective action program has been implemented at the site since 1977. The corrective actions include the injection of fresh water from an underlying aquifer into the alluvial aquifer near the licensee's property boundary to form a hydraulic barrier to the seepage and reverse the local groundwater gradient so contaminated water can be retrieved by a series of collection wells located near the tailings impoundment. The captured water is currently treated through the R.O plant or reported to synthetically-lined evaporation ponds. The corrective action program appears to be successful in mitigating the negative impacts of seepage from the tailings ponds.

### **3.1 Site Location and Layout**

As shown on Figure 1, the Homestake Mill is located in Cibola County, about five and one-half miles (8.8 kilometers, km) north of the City of Grants and the Village of Milan, New Mexico. The site is situated in the San Mateo drainage at an elevation of 6,600 feet (1980 meters) above Mean Seal Level (MSL). The project area is surrounded by mesas ranging in elevation from 7,000 to 8,600 feet (2100 to 2580 meters) above MSL. The mesas define a roughly circular valley about ten miles (16 km) in diameter. The San Mateo drainage is an ephemeral arroyo, which drains an area of approximately 291 square miles (75,369 hectares) and connects with the Rio San Jose near the Village of Milan.

The US Census estimated the total population of Cibola County for 1990 at 23,794, and the Northwest New Mexico Council of Governments estimated the County population to increase to 26,509 by 2010. The adjacent incorporated areas of Grants and Milan contain the largest population in the area. The Grants Chamber of Commerce estimated the population of the Grants-Milan community in 1990 to be about 11,400. There are several subdivisions located approximately one-half-mile (0.8 km) south and southwest of the site. Based on information compiled by HMC in 1989, the subdivisions consisted of 66 residences. There are currently nearby residences located to the south and west of the facility. The majority of the land in the vicinity of the current mill site is undeveloped rangeland. The ARCO Bluewater uranium mill site is located approximately five miles (8.05 km) west of the HMC site.

Residential areas were estimated to account for approximately three-percent of the area. The only surface water bodies in the vicinity of the site are several stock ponds and some small ephemeral ponds, which do not appear affected by site activities or the proposed EP3 construction. Drinking water for the Grants-Milan area is obtained from deep wells drilled into the San Andres aquifer. Domestic water for the subdivisions south and west of the site is also obtained primarily, but not exclusively, from the Grants-Milan system.

### **3.2 Land Use of Proposed Site and Surrounding Area**

#### **3.2.1 Land Use Planning**

The New Mexico State Legislature created the County of Cibola, the southernmost county in the northwest region of the state of New Mexico, in 1981. Cibola County spans over 4,000 square miles and its Board of Commissioner's has jurisdiction over the unincorporated county land areas that are not administered by the federal government.

### **3.2.2 On-Site Land Use – Homestake Properties**

HMC owns and controls a sizeable land area in and around the Grants Reclamation project. Over the years, additional lands have been acquired as opportunity has arisen and acquisition of such lands are deemed appropriate in relation to ongoing groundwater remediation and restoration activities and final reclamation / closure of the site.

HMC lands owned in the area that are not within the immediate proximity to the tailings pile complex have been, and are continuing to be, utilized for livestock grazing on a lessor/lessee tenant arrangement. Most of the current land area within the present Site Boundary has been excluded from livestock grazing and other land use, except those areas that are not directly related to the ongoing groundwater restoration activities. As such, livestock grazing is not currently allowed in the immediate tailings pile areas, evaporation pond areas, or the office/maintenance shop locations. These areas have been livestock fenced to exclude grazing. Certain small areas in the southern and western portions of land within the Site Boundary are, however, utilized for livestock grazing.

Several small lot / small acreage parcels (e.g. residential lots) held by HMC in the general area of the reclamation site are idle and are essentially not in use except in certain instances where fresh water injection and water collection is underway as part of the ongoing groundwater restoration program.

### **3.2.3 Off-Site Land Use – Pleasant Valley Estates, Murray Acres, Broadview Acres, Felice Acres and Valle Verde Residential Subdivisions**

Aside from the land uses on HMC land in the Grants Reclamation Project area described in the previous section above, the other major land use immediately proximal to the Site consists of residential development located in the Pleasant Valley Estates, Murray Acres, Broadview Acres, and Felice Acres residential subdivisions. HMC provided these subdivision areas with a potable water supply system as an extension of the Village of Milan water supply in the mid 1980's. The Village of Milan water supply extension to these areas was provided at that time to address a concern over the quality of groundwater used for domestic purposes in these nearby and adjacent subdivision areas. The Valle Verde subdivision and immediately adjacent area is supplied by the Village of Milan water system, however, some residents are on private well supplies.

An assessment of current land use in these residential subdivision areas was completed by Hydro-Engineering, LLC of Casper, Wyoming in late 2005 and early 2006 to provide an annual review of the present uses, occupancy and status for the various lots within these subdivisions. A review of land use for HMC properties and the residential subdivision areas to the immediate south and west of the Grants Reclamation Project site indicates that present land uses in

the area have not changed significantly over the past five years. Over the years, permanent residential homes, modular homes and mobile homes have been established in the subdivision areas, and immediate adjacent areas, as would typify a rural residential neighborhood. A number of lots remain vacant, or are utilized for uses such as horse barns, corrals, and/or equipment storage. In some cases, dwellings are present on several lots throughout the subdivisions, but are currently vacant or have been permanently abandoned.

Field review of the five subdivision areas, along with follow-up inquiries as required to confirm the status of water use at each property, indicates that at present all occupied residential sites in, or immediately adjacent to the Felice Acres, Broadview Acres, Murray Acres, and Pleasant Valley subdivisions are on metered water service with the Village of Milan. In the Valle Verde residential area and immediately adjacent to the subdivision, 12 residences were identified that are not on the Village of Milan water supply system and are therefore obtaining domestic-use water from private well supplies. One of these 12 is a residence on a private well supply about one-quarter mile west of the Valle Verde subdivision. Current information indicates that all other occupied residential lots in the Valle Verde area are on the Village of Milan water supply system.

Land use survey / reviews are completed on an annual basis to meet annual reporting requirements under the NRC License. This will help in assuring that land use activities in the immediate area surrounding the Grants project are regularly reviewed and assist in determining that those uses do not present a new concern with local groundwater usage until project groundwater restoration activities are completed.

### **3.3 Socioeconomics**

#### **3.3.1 Cibola County**

Cibola County was created by a division of Valencia County in 1981; therefore, population data for the new county before 1981 are estimated. In 1970, the county's population was 20,125, rising to 30,109 in 1980 and falling to 23,794 in 1990. These population changes were mainly related to uranium mining activity in the area.

The Cibola County population is currently estimated to be 25,595 (City-Data 2006a). The county encompasses a land area of 4,539 square miles.

Industries providing employment include: educational, health and social services (27.4-percent), Arts, entertainment, recreation, accommodation and food services (12.8-percent), Public administration (12.3-percent), and Retail trade (10.5-percent).

Types of workers within Cibola County include, private wage or salary - 58 percent, Government - 35 percent, Self-employed, not incorporated 6-percent, and unpaid family work-1-percent. Cibola County population by ethnic background includes: American Indian-41.8 percent, Hispanic-33.4 percent, White Non-Hispanic-24.7 percent, Other race-15.4 percent, two or more races 3.2 percent, and African American 1-percent. The total can be greater than 100-percent because some Hispanics could be counted as other races.

A mix of rural and industrial activities has characterized the Cibola County economy with uranium mining as the biggest factor in both the "boom" cycles of the 1950's, 60's and 70's and the "bust" cycle of the 1980's. The location of federal and state prisons in the county has helped buffer some of the consequences of the economic downturn, and the County is currently on a pronounced economic upswing, as evidenced by the recent location in Grants of a Wal-Mart Superstore and the construction of an inter-agency "gateway to the region" Visitor Center.

### 3.3.2 City of Grants

The City of Grants is the largest incorporated area near the proposed project site. The population of Grants in November of 2005 was estimated at 15,232. Between the year 2000 and 2005 the population of Grants has increased 2.7 percent (City-data.com 2006b). The City of Grants encompasses approximately 13.7 square miles. The next nearest city is Rio Rancho, located approximately 80 miles east of the HMC site, with a population of 51,765. The City of Albuquerque is located approximately 85 miles east with a population of 448,607.

**Table 1. Local Government and Payroll (City – Data 2006b)**

Local government employment and payroll (March 2002)					
Function	Full-time employees	Monthly full-time payroll	Average yearly full-time wage	Part-time employees	Monthly part-time payroll
Health	3	\$3,759	\$15,036	0	\$0
Parks and Recreation	16	\$24,518	\$18,388	11	\$2,814
Judicial and Legal	0	\$0		3	\$3,830
Housing and Community Development(Local)	2	\$4,016	\$24,096	0	\$0
Water Supply	6	\$13,443	\$26,886	0	\$0
Local Libraries	4	\$6,925	\$20,775	0	\$0
Welfare	12	\$14,962	\$14,962	0	\$0
Streets and Highways	14	\$23,772	\$20,376	0	\$0

Local government employment and payroll (March 2002)					
Function	Full-time employees	Monthly full-time payroll	Average yearly full-time wage	Part-time employees	Monthly part-time payroll
Fire - Other	1	\$1,820	\$21,840	0	\$0
Firefighters	10	\$22,315	\$26,778	0	\$0
Police - Other	10	\$14,885	\$17,862	0	\$0
Police Protection - Officers	19	\$65,818	\$41,569	0	\$0
Other Government Administration	9	\$20,513	\$27,350	0	\$0
Financial Administration	5	\$10,291	\$24,698	0	\$0
Other and Unallocable	1	\$1,311	\$15,732	0	\$0
Totals for Government	112	\$228,348	\$24,465	14	\$6,644

According to City – Data (2006b), in comparison to the State of New Mexico average, the City of Grants:

- Median house values are below state averages.
- Unemployed percentage is above the state unemployment average.
- Black race population percentage is significantly below the state average.
- Hispanic race population percentage is significantly above the state average.
- House age is below the state average.
- Institutionalized population percentage is above the state average.
- Percentage of population with a bachelor's degree or higher is below the state average.
- Population density is below the state average for cities.

### **3.4 Cultural Resources**

Taschek Environmental Consulting (TEC) personnel conducted an intensive (100-percent) cultural resource survey on approximately 350 acres in Sections 22 and 23 of Township 12 North, Range 10 West for the proposed project. The field survey was conducted on June 5 to June 8, and from June 12 to June 15, 2006. The New Mexico Cultural Resource Inventory System (NMCRIS) Project Activity Number for the survey is 100406.

Eleven new sites (LA 153549–LA 153559), one previously recorded site (LA 108856), and 53 isolated occurrences (IOs) were identified during the survey. Of the twelve documented archaeological sites, three sites (LA 153552, LA 153557,

and LA 108856) are recommended eligible for inclusion in the National Register of Historic Places (NRHP) under Criterion D for their information potential, based on the high probability of intact buried cultural deposits at these sites. An undetermined eligibility status is recommended for three sites (LA 153553, LA 153556, and LA 153559) pending a testing program that would determine the presence or absence of intact subsurface cultural deposits. The remaining six sites (LA 153549-153551, LA 153554, LA 153555, and LA 153558) are recommended ineligible for inclusion in the NRHP due to their lack of integrity (TEC 2006).

### ***3.5 Climate and Meteorology***

Climatology and meteorology data are based on data summaries acquired from the National Climatology Data Center (NCDC) and the New Mexico Climate Center (NMCC) within the proximity of the project location and include National Weather Service data from the City of Grants (approximately 5.5 miles southeast of the project area).

Monthly average temperatures in Grants New Mexico range from the low thirties (degrees Fahrenheit) during the winter, to the low seventies in the summer. Maximum summer temperatures reach into the low nineties while minimum winter temperatures fall in the low teens.

Precipitation received in the area averages approximately 12 inches per year with the maximum monthly totals received during the summer months, accounting for nearly half of the annual total. Summer precipitation is usually associated with thunderstorms, which form with the arrival of warm, moist air from the Gulf of Mexico. Winter precipitation is derived mainly from storms from the Pacific Ocean, although the amounts received are much less than during the summer months.

Relative humidity in the area averages near 60 percent with the highest monthly average in December and the lowest in May. Annual evaporation for the area, estimated using equations outlined by (D'Appolonia 1982), is approximately 78 to 94 percent of the annual precipitation, or 9 to 11 inches per year.

#### ***Meteorology***

##### **Wind Speed and Direction**

Surface winds in the project area are predominantly from the north-northwest (NMCC 2006). Average wind speeds vary from 3.6 miles per hour (mph) to over 10 mph.



### ***Atmospheric Stability***

Atmospheric stabilities are evaluated in terms of the Pasquill Stability Classes A – F. These classes represent the ability of the atmosphere to promote vertical movement of air and, therefore, mixing and diffusion of pollutants. Stability Class A represents the most unstable conditions, Class D represents neutral conditions, and Class F represents the most stable conditions. The remaining classes are intermediate gradations.

The concept of stability can be explained through the use of an imaginary parcel of air, which can be moved vertically in the atmosphere. During unstable conditions, if the parcel is moved upward, the parcel will continue to move upward once released. Under neutral conditions, the parcel will remain in the position at the time of the release. During stable conditions, the parcel will return to its original location after release.

Atmospheric stabilities in the project area are most frequently neutral, occurring over 40-percent of the time. Unstable and stable conditions occur approximately 20 and 35-percent of the time, respectively. Each stability class occurs more frequently during winds from the northwest through the north, reflecting the predominance of winds from these directions; however, the stable classes also exhibit a secondary increase during winds from the east-northeast to the southwest. These conditions are probably associated with early morning drainage winds from the Continental Divide. The atmosphere associated with these winds is stable and the light winds do not increase until the surface heating begins to mix the atmosphere and the surface winds become influenced by the upper level flows generally from the west and southwest (NMCC 2006).

### ***3.6 Air Quality***

Air quality status of the project area are considered to be unclassifiable or in attainment with the National Ambient Air Quality Standards (NAAQS) for the regulated criteria air pollutants including particulate matter less than 10 microns in diameter (PM-10), Nitrogen Dioxide (NO<sup>2</sup>), Sulfur Dioxide (SO<sup>2</sup>), Carbon Monoxide (CO) and Ozone. No known monitoring data for the HMC site area were found through a review of New Mexico ambient air monitoring data within the past five years (New Mexico Air Quality, October, 2002). The nearest monitoring sites are located in Albuquerque.

Total suspended particulate matter (TSP) is an additional regulated air pollutant in New Mexico. TSP refers to small, solid particles or liquid droplets suspended in the air and having diameters of 25 to 45 microns. The major industrial point source of TSP is the coal-fired Coronado Generating Station approximately 60 miles southwest of the project site.

Peabody Energy's Mustang project is a proposed 300-megawatt project to be located north of Grants, New Mexico, and using coal from the existing Lee Ranch Mine operated by Peabody. An air quality permit application has already been filed and accepted as complete. Peabody recently received approval for a Department of Energy grant. The permit application will likely be revised to reflect changes proposed in the grant application.

Local area TSP sources are wind-blown dust, vehicular traffic on unpaved roads, and wind-blown liquid droplets from the aeration activities in the HMC evaporation ponds Evaporation Pond #1 (EP1) and EP2.

### ***3.7 Noise***

The Site is located approximately one-half to three-quarters of a mile from the nearest subdivision. The operational noises generated at the HMC site, are related to reclamation activities. Reclamation activities include vehicle traffic, heavy equipment operation, pump operation and monitoring well drilling activities. No sensitive noise receptors are located near the site.

### ***3.8 Geology and Seismology***

The HMC Site is located on the northeast flank of the Zuni Uplift, a tectonic feature, which is characterized by Precambrian crystalline basement rocks overlain by Permian and Triassic sedimentary rocks. Major faults occur along the southwest flank of the Zuni Uplift, with only minor faults mapped in the region surrounding the site. Faults associated with the Zuni Uplift are generally northwest trending, steeply dipping reverse faults. However, the minor, steeply dipping normal and reverse faults in the vicinity of the site generally trend northeast. None of the local faults are considered to be active.

Slope gradients in the area generally range from zero to five percent in valleys and mesa tops, and from five to over 100 percent on the flanks of the mesas and on the nearby volcanic peaks. Where the gradient is steep in the northern San Mateo drainage, intersecting arroyos are commonly incised from 10 to 30 feet (three to nine meters). Where the gradient decreases, such as in the Site vicinity, incision is minimal and flow occurs in wide, shallow, poorly defined, or practically non-existent channels.

The majority of the project area contains soils of the Sparank-San Mateo complex (D'Appolonia 1982; TEC 2006). Sparank and San Mateo soils are well drained and moderately alkaline. Sparank soils are comprised of clay loam overlying silty clay loam; San Mateo soils are loams. Both soils are conducive to agriculture.

In general, the nature of the flat valley exposes it to high winds and shifting aeolian sands. Documentation of mechanical blading of one meter of accumulated Aeolian sediments, and the presence of sand sage (deep sand indicator species) suggest the presence of deep Aeolian overburden in the area, especially areas that have not been subjected to blading (TEC 2006).

The HMC site is located on the Colorado Plateau, a tectonically stable block characterized by a low level of seismicity (D'Appolonia 1982). A number of geologic faults pass near the site; however, they are considered to be inactive since they do not displace nearby lava flows of Quaternary age (less than 1.8 million years) or express youthful geomorphic features indicative of active faults (D'Appolonia 1982).

Earthquakes, which have occurred within 60 miles (96 km) of the site, have typically been of low intensity (D'Appolonia 1982). Based on an analysis conducted in 1981 of the number of earthquakes and their magnitudes, the maximum earthquake in the area is estimated to be a magnitude 4.9 (Richter Scale) during a 100-year period (D'Appolonia 1982). By comparison, the largest historical earthquake recorded in the region is a magnitude 4.1 (Richter Scale).

### **3.9 Hydrology**

The HMC Site is located east of the Continental Divide in the Rio Grande Drainage System of west-central New Mexico. The surface water regime surrounding the HMC Site is influenced by the arid to semiarid climate of the region, the relatively medium to high permeability of the soils, and the exposed bedrocks of the watersheds. The HMC Site is in the San Mateo drainage. In the immediate vicinity of the site, the saturated thickness of the San Mateo alluvium varies between 10 to 60 feet (3 to 20 meters) (D'Appolonia 1982). The Chinle Formation, which is comprised mainly of a massive shale interspersed with some sandstone (approximately 800 feet thick), exists below the alluvium (D'Appolonia 1982). North of the mill, the San Mateo is an ephemeral arroyo and flows in direct response to precipitation or snow melt events. There is no distinct channel near the HMC Site, although there may have been one in formerly more pluvial times. A very large precipitation event could result in flow from the San Mateo drainage entering the Rio San Jose drainage. The Rio San Jose is itself ephemeral and flows only in direct response to local rainstorms or snow melt. The Rio San Jose discharges to the Rio Puerco drainage, which is a tributary of the Rio Grande River.

The San Mateo drainage basin above the HMC Site has a drainage area of approximately 291 square miles. Its shape is roughly circular and it contains a dendritic (tree-branch style) drainage pattern (D'Appolonia 1982). Maximum relief is 4,724 feet with elevations ranging from 6,576 feet above MSL at the

outlet to 11,300 feet above MSL at Mount Taylor. San Mateo Creek reaches from the northeast to the southwest through the HMC property.

The following Lakes and Streams also occur in Cibola County (City–Data 2006a):

- Lakes and reservoirs: Bonita, Dry Lake, Encina, Mason, Laguna, Cactus Lakes, Dough Mountain Lake, Agua Media, and Long Lake.
- Streams, rivers, and creeks: Lorenzo Arroyo, Colorado; Arroyo, Bell Rock Arroyo, Petocho Wash, Piedra Lumbre, San Mateo Creek, Willow Wash, Puertecita, Arroyo, and Zia Arroyo.

Other surface water bodies in the general vicinity of the HMC Site include several stock ponds, some small ephemeral ponds, and an undetermined number of springs on the flanks of Mount Taylor.

Water collected from the alluvial and Chinle aquifers, where there are relatively low levels of selenium and uranium, will continue to be collected and used for re-injection in the initial phase of restoration of some areas. This re-injection will occur in the alluvium where concentrations are greater than those of the injected water until such time as injection with San Andres fresh water or R.O. product water will better complete the restoration.

Irrigation with water from Township 12 north, Range 10 west, Sections 3, 27, 28, 32, 33 and 35 is planned for the entire growing season in 2006. Fresh-water well injection lines in Section 28 will continue to be utilized in 2006 to restore these areas of low level aquifer contamination. Fresh-water injection will be continued in Sections 35 and 3 in 2006 to complement the use of water for irrigation and assist in final aquifer restoration in this area.

### ***3.10 Ecology***

The Northwestern New Mexico region provides a wide variety of habitats that support diverse populations of wildlife, including over 30 species of mammals, more than 60 species of birds for at least part of the year, and many species of reptiles, amphibians and invertebrates (NMGFD 2004). The diversity of slope and terrain, vegetation, and rock formations in the area provides important wildlife habitats.

#### **3.10.1 Vegetation**

Vegetation in the vicinity of the site consists primarily of Desert Grassland of the Colorado Plateau (TEC 2006). The project area is semi-arid grassland characterized by shrubs and mixed grama-galleta steppe grasses. A large area in west-central New Mexico is classified as Desert Grassland and is thought to be a new succession-disturbance desert grassland characterized by galleta and

blue grama grasses consisting of high shrub and forb densities, with low grass densities (TEC 2006).

Common plants found, include four-wing saltbrush, greasewood, sand sage, and broom snakeweed (*Gutierrezia Sarothrae*). Grasses include blue grama (*Bouteloua gracilis*), sand dropseed (*Sporobolus cryptandrus*), Indian ricegrass (*Achnatherum hymenoides*), and bunch grass species. Some narrowleaf yucca (*Yucca angustissima*) was also observed. Salt cedar (*Tamarix spp.*), an invasive species, is beginning to establish itself in isolated areas along the shallow San Mateo Creek.

Earthen stock tanks within the project area are supporting wetland plants such as Cattail (*Typha latifolia*). The establishment of wet areas provides water and food for a variety of wildlife including red-winged black birds and coyotes.

Most of the area located around the Site was bladed in 1995 and re-seeded with shrubs, forbs, and grasses. Groundcover varies from 79 percent to 99 percent. No plant species currently listed as rare, endangered, or threatened by the USFWS or the State of New Mexico were observed within the project area (TEC 2006).

### **3.10.2 Wildlife**

Wildlife in the area is generally limited to small mammals and bird species. Characteristic species include mule deer, coyote, rattlesnakes, and many species of birds, small rodents, lizards, and raptors. During the Cultural Resource inventory survey in June 2006, cottontail rabbits and black tailed jackrabbits, ravens, rattlesnakes, horned lizards, blackbirds, and prairie dogs were observed (TEC 2006).

### 3.11 Rare, Threatened and Endangered Species

The following Federal species of concern are known to occur in Cibola County, New Mexico according to the New Mexico Game and Fish (NMGF 2006).

**Table 2 Federal Rare, Threatened and Endangered Species**

Common Name	Scientific Name	Status
Zuni Bluehead Sucker	<i>Catostomus discobolus yarrowi</i>	Candidate
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened
Northern Goshawk	<i>Accipiter gentilis</i>	Species of Concern
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	Species of Concern
Mountain Plover	<i>Charadrius montanus</i>	Species of Concern
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Candidate
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	Threatened
Burrowing Owl	<i>Athene cunicularia</i>	Species of Concern
Southwest Willow Flycatcher	<i>Empidonax trailii extimus</i>	Endangered
Cebolleta Pocket Gopher	<i>Thomomys bottae paguatae</i>	Species of Concern
Mtn Silverspot Butterfly	<i>Speyeria nokomis nitocris</i>	Species of Concern
Pecos sunflower	<i>Helianthus paradoxus</i>	Threatened
Zuni fleabane	<i>Erigeron rhizomatus</i>	Threatened
Acoma fleabane	<i>Erigeron acomanus</i>	Species of Concern
Cinder phacelia	<i>Phacelia serrata</i>	Species of Concern
Gypsum phacelia	<i>Phacelia sp. nov</i>	Species of Concern

It is unlikely that rare, endangered or threatened plant species occur within the project area due to the surface being significantly altered by blading that had occurred in 1995 as part of HMC's windblown contamination clean-up project.

In 1995 the windblown tailings clean up project began, and involved blading and the removal of tailings imported by wind for placement within the sites tailings pile area. During the 35 years of milling and processing operations at the site, windblown tailings were deposited over approximately 1200 acres immediately surrounding the tailings pile. Deposition of windblown tailing deposits over the HMC property occurred during high wind conditions.

Heavy machinery was utilized in removing the contaminated deposits, which sometimes reached a depth of over three feet (one meter). After removal of the contaminated deposits, seed and mulch was spread on the remaining soils to assist in revegetation efforts.

### **3.12 Transportation**

Interstate-40 (I-40) and State Highway (NM) 605 are the principal highway access routes near the project area. Public highways or railroads do not cross the owner-controlled area of the HMC property. County Road 63, does bisect the proposed boundary expansion to the north. Normal access to the HMC site is from the south via NM 605 then traveling west on County Road 63. The owner-controlled area is fenced and posted by HMC. Currently County Road 63 is not within the current NRC site boundary.

Commercial air traffic into and out of Cibola County is primarily through the Albuquerque International Airport, approximately 87 miles east of the Site. Turbo-prop airplanes which seats fewer than 42 people, and have a gross weight of less than 30,000 pounds access the municipal airport located in Grants, New Mexico. The municipal airport located near Grants is approximately five miles southwest of the HMC site.

Airports certified for carrier operations nearest to Grants:

- ALBUQUERQUE INTL SUNPORT (approximately 87 miles; ALBUQUERQUE, NM; ID: ABQ)
- FOUR CORNERS REGIONAL (approximately 112 miles; FARMINGTON, NM; ID: FMN)
- DURANGO-LA PLATA COUNTY (approximately 138 miles; DURANGO, CO; ID: DRO)

Other public-use airports nearest to Grants:

- GRANTS-MILAN MUNI (approximately five miles; GRANTS, NM; ID: GNT)
- CROWNPOINT (approximately 46 miles; CROWNPOINT, NM; ID: 0E8)
- ALAMO NAVAJO (approximately 61 miles; ALAMO, NM; ID: 3N9).

### **3.13 Visual Resources**

Visual resources and recreational areas found within Cibola County include: El Malpais National Monument, El Morro National Monument, El Morro National Monument Inscription Rock Historical Marker, Old Fort Wingate-Zuni Wagon Road Historic Site, Pueblo Revolt Tricentennial Historical Marker, Petaca Plata Wilderness Study Area, Long Park, San Rafael Historical Marker, and Pueblo of Acoma Historical Marker.

Facility buildings and mill tailings impoundments associated with the Grants site are visible from state highway NM 605 and surrounding residential areas to the south and west of the property boundary. The HMC site can be seen from the following residential areas: Pleasant Valley Estates, Murray Acres, Broadview Acres, Felice Acres and Valle Verde Subdivisions.

### **3.14 Public and Occupational Health**

#### **3.14.1 Air Particulate Monitoring**

HMC continuously samples suspended particulate at six locations around the reclamation site (HMC 2005, HMC 2006b). Three sites are down wind from the reclamation activities. Two sites are proximal to the nearest residence and one site is located up wind from the reclamation site. The up wind site is used for background sampling. Energy Laboratories, Inc., analyzes the collected samples quarterly for Natural Uranium (Unat), Radium-226, and Thorium-230.

#### **3.14.2 Radon Gas Monitoring**

Radon gas is monitored on a continuous basis at eight locations, with one location located northwest of the site to record background levels. Semi-annually Homestake personnel place new track-etch passive radon monitors (PRMs) at the monitoring locations and the exposed detectors are retrieved and returned to Landauer Corporation for analysis (HMC 2006b).

#### **3.14.3 Direct Radiation**

Gamma exposure rates are continuously monitored through the use of optically stimulated luminescence (OSL) dosimeter badges at each of seven locations. One location is considered the background location for direct radiation. The OSL's are exchanged semi-annually and analyzed by an approved independent laboratory (currently Landauer). The levels of direct environmental radiation are recorded for each of the seven locations (HMC 2006b).

#### **3.14.4 Surface Contamination**

The aspects of the Occupational Monitoring Program related to contamination are described below.

##### **3.14.4.1 Personnel Skin and Clothing**

The monitoring of personnel for alpha contamination is required as part of all radiation work permits using standard operating procedures. No releases of personnel or clothing above administrative limits were reported during the January – June 2006 period (HMC 2006b). Previous project Semi-Annual Environmental Monitoring Reports filed with NRC pursuant to requirements of the project Radioactive Materials License also document non-release of contaminated materials.



#### **3.14.4.2 Survey of Equipment Prior to Release for Unrestricted Use**

Equipment Surveys are required for all equipment that is to be removed from contaminated areas as specified in radiation work permits. Standard Operating Procedures are used for these surveys. No releases of contaminated material above NRC release criteria were reported during the January – June 2006 period (HMC 2006b). Previous project Semi-Annual Environmental Monitoring Reports filed with NRC pursuant to requirements of the project Radioactive Materials License also document non-release of contaminated materials.

## 4.0 ENVIRONMENTAL IMPACTS

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### 4.1 Issues

Issues that are related to the proposed project are summarized under three general categories: natural resource issues, cultural resource issues, and human environment.

#### 4.1.1 Natural Resource Issues.

This category includes issues that would relate to soils, geology, natural soundscapes, vegetation, wildlife, threatened and endangered species, water resources, and wildlife habitats.

- **Soils.** Soils disturbed by excavation and construction could be vulnerable to wind and water erosion.
- **Natural Soundscape.** Changes in sound in the vicinity of the HMC facility may cause noise impacts to the natural soundscape. Construction activity may temporarily affect natural soundscapes.
- **Vegetation.** Land disturbance associated with some construction activities could remove or modify native vegetation and leave unvegetated disturbed areas. Disturbed areas are vulnerable to invasive, non-native plant species that potentially would hinder reestablishment of native species. The placement of EP3 will temporarily disturb approximately 33 acres of soils for a 10-year period.
- **Water Resources.** Changes in storm water runoff and deposition of hydrocarbons on access roads, parking lots, and other surfaces may increase pollution of surface waters and affect water quality. The addition of a third evaporation pond could potentially increase odors released during the evaporation process. Additionally, a third evaporation pond increases the potential chances of contaminating the San Mateo Creek should the liner fail and result in a release of pond water.
- **Wildlife and Habitats.** The proposed alternatives could cause the loss of some wildlife or could change habitat distribution or species diversity. Effects could include disrupted behavior, temporary or permanent displacement of wildlife.

#### **4.1.2 Cultural Resource Issues.**

Cultural resources were divided into historic buildings and structures, and museum collections; archeological resources (prehistoric and historic); cultural landscapes; and ethnographic and traditional cultural properties, which includes Native American concerns and ethnographic landscapes.

TEC recommends that the proposed project avoid six sites with eligible or undetermined eligibility status (LA 153552, LA 153553, LA 153556, LA 153557, LA 153559 and LA 108856). Construction activities should remain at least 50 feet from the boundaries of these sites.

The six ineligible archaeological sites (LA 153549-153551, LA 153554, LA 153555, and LA 153558) and the 53 IOs are unlikely to provide additional important information beyond what has already been recorded (TEC 2006). No further investigations or management considerations are recommended for the ineligible sites or the IOs.

According to Figure 1, the proposed pond location will avoid all eligible and undetermined archaeological sites. A small portion of LA 153551 extends into Alternative C in the eastern survey block; however, this site is recommended ineligible for inclusion in the NRHP.

- **Historic Buildings and Structures, and Museum Collections.** There are no historic structures, buildings, or museum collections within the HMC project area. Therefore, this topic will not be discussed further in this document. See the section entitled "Rationales for Dismissing Impact Topics" for a more detailed explanation of why this was dismissed.
- **Archeological Resources.** During the construction of EP3, there would be the potential for known archeological resources to be affected or for new sites to be uncovered.
- **Cultural Landscapes.** The HMC facility has not been determined to be a cultural landscape, thus this topic will not be discussed further in this document.
- **Ethnographic and Traditional Cultural Properties.** No ethnographic and traditional cultural properties or landscapes have been formally identified within or adjacent to the project area. Therefore this topic has been dismissed from further analysis. See the section entitled "Impact Topics not Warranting Detailed Evaluation."

### **4.1.3 Human Environment Issues.**

This category includes issues that involve land use plans, policies, or controls; economics and socioeconomics; public health and safety. Summaries of the issues that were identified during the consultation process are provided below.

- Land use plans, policies, or controls. How would the temporary closure of County Road 63 be handled during construction?
- Economics and socioeconomics. Would the construction of EP3 devalue the properties adjacent to the HMC facility?
- Public Health and Safety. The odor that is currently associated with the EP1 and EP2 would increase if EP3 were constructed.

### ***4.2 Impact Topics Not Warranting Detailed Evaluation***

The guidelines for National Environmental Policy Act compliance include 13 impact topics that must be considered in all environmental evaluations. Other impact topics were identified from sources described in the preceding paragraph. However, NRC guidance recognizes that not all of the candidate impact topics warrant a detailed evaluation. Based on site-specific conditions, several of the impact topics were dismissed from further consideration, including those whose impacts, based on preliminary analysis, were projected to be no greater than negligible for all of the alternatives. The rationales for dismissal of impact topics are provided in the text below.

### ***4.3 Rationales For Dismissing Impact Topics***

#### **Land Use**

There are no current or long-term restrictions on land use resulting from the construction of EP3. Most of the current land area within the present Site Boundary has been excluded from livestock grazing and other land use.

#### **Socioeconomics**

There are no project-induced changes to community, social, political or economic systems.

#### **Air Quality**

There would only be temporary, inconsequential impacts on air quality during construction of EP3. Best management practices would be used to minimize

fugitive dust and emissions from construction equipment. In the long term, air quality would not be degraded because there would not be any appreciable change in emissions sources, nor would there be a change in the airshed classification.

### **Noise**

The present site is located approximately one-half to three-quarters of a mile from the nearest residential community. The operational noises generated at the HMC site, are related to the construction of EP3, and other reclamation activities. Reclamation activities include vehicle traffic, heavy equipment operation, pump operation and monitoring well drilling activities. There is no sensitive noise receptors located near the site (i.e. schools, hospitals, etc.). Noise to affected areas would be temporary and short term thus resulting in negligible increase in noise during the construction phase.

### **Geology**

EP3 is considered part of the HMC's developed area where previous disturbance of geological resources has occurred. The pond will be constructed as an at-grade facility, with cut and fill designed to be in rough balance. No significant quantities of soil will be imported or exported from the site. Soils disturbed by excavation and construction could be vulnerable to wind and water erosion; however, sound engineering designs and best management practices would be used to avoid problems associated with expansive soils or erosion during construction.

### **Hydrology**

The only surface water bodies in the general vicinity of the HMC site are several stock ponds, some small ephemeral ponds, and an undetermined number of springs. Sound engineering designs and best management practices would be used to minimize contamination of surface water due to construction activities.

Ground water quality restoration is an ongoing process involving a combination of fresh-water and R.O. water collection, near the tailings piles. A larger collection rate and use of the very good quality R.O. product water for injection will continue to enhance the progress in restoration.

### **Vegetation**

No plant species currently listed as rare, endangered or threatened by the USFWS, or the State of New Mexico were observed within the project area. The affected area is temporary and limited to activities associated with the construction of EP3. Further, these disturbances will be mitigated when the site is reclaimed, and affected areas are returned to their pre-milling condition.

## **Cultural Landscapes**

No cultural landscapes have been determined to exist within the area of potential impact and the proposed action would have no effects on cultural landscapes.

Subject to comment by the New Mexico State Historic Preservation Officer (SHPO), the proposed undertaking will have *no effect* on any resources that are eligible or potentially eligible for inclusion in the NRHP.

## **Ethnographic and Traditional Cultural Properties, including Native American concerns, and Ethnographic Landscapes**

To date, no ethnographic concerns or traditional cultural properties within the proposed project area have been identified. A survey to identify these concerns on the property area was conducted 5 June 2006. To date no ethnographic landscapes have been designated; therefore this topic was dismissed.

## **Historic Structures and Museum Collections**

There are no historic structures or museum collections within the project area; therefore this topic was dismissed.

## **Ecologically critical areas**

The HMC property area does not contain any designated ecologically critical areas, wild and scenic rivers, or other unique natural resources, as referenced in 40 Code of Federal Regulations 1508.27. Therefore the project would have no affect on these resources.

## **Endangered or Threatened Species and Critical Habitats**

There are no rare, endangered or threatened species known to occur in the project area, thus there would be no potential to directly affect any listed species. Based on HMC's existing and planned water conservation measures and the more efficient use of water associated with the action alternatives, there would be no increase in water consumption, and no affect on listed species downstream of the San Mateo Creek tributary.

### **4.3.1 Threatened and Endangered Species**

#### **Zuni Bluehead Sucker, *Catostomus discobolus yarrowi* (Candidate)**

Zuni bluehead sucker historically inhabited headwater streams of the Little Colorado River in east central Arizona and west-central New Mexico (NMGFD 2003). The species most frequently occurs in streams with

cobble and bedrock substrates with slow to moderate velocity water (NMGFD 2004). Currently, the species is limited to the upper reaches of the Río Nutria drainage, a headwater tributary of the Zuni River in New Mexico (NMGFD 2004).

No change in listing status is recommended. A Zuni Bluehead Sucker Conservation and Recovery Plan, per guidelines of New Mexico Wildlife Conservation Act, is being developed with participation of various stakeholders (e.g., Pueblo of Zuni, U.S. Forest Service, The Nature Conservancy, and private landowners).

Based upon the lack of suitable habitat and known locations, this species or its habitat will not be affected by the proposed project.

**Bald Eagle, *Haliaeetus leucocephalus* (Threatened)**

The bald eagle species is widespread in North America, occurring from Alaska and Newfoundland south to northern Mexico and the Gulf Coast. The bald eagle migrates and winters in suitable habitat throughout New Mexico (NMGFD 2003). Beginning in the late 1980s, bald eagles have nested at four sites in two counties: three sites in Colfax County New Mexico, and one site in Sierra County New Mexico (NMGFD 2004). The bald eagle's preferred habitat is lakes, rivers, marshes, and seacoasts. The bald eagle winters along coasts and large rivers in much of United States.

Mid-winter surveys conducted annually by the Department show that the number of bald eagles wintering in New Mexico has steadily increased since the late 1970s, from an annual average of 220 birds then to 450 by the mid-1990s (NMGFD 2004). With the abandonment of the Sierra County territory in 1999, however, only three pairs of bald eagles nested in the state each year during 1999-2003, and these and their habitats warrant the protection of continued state listing as threatened.

Based upon the lack of suitable habitat and known locations, this species or its habitat will not be affected by the proposed project.

**Northern Goshawk, *Accipiter gentiles* (Species of Concern)**

This species occurs from Alaska east through Mackenzie Canada and northern Quebec and from Newfoundland, south to New Mexico. The goshawk is known to occur from the Great Lakes to New England and southward towards the northern Appalachians. This species is known to winter south to Virginia and Southwest. The northern goshawk nests in coniferous forests and winters in farmlands, woodland edges, and open country throughout its range. This big raptor is mainly a resident of

mountainside coniferous forests. It has recently begun extending its range to the south and now breeds in small numbers in deciduous forests (NMGFD 2004).

Based upon the lack of suitable habitat and known locations, this species or its habitat will not be affected by the proposed project.

**Peregrine Falcon, *Falco peregrinus anatum* (Species of Concern)**

This species occurs almost worldwide (NMGFD 2004). In New Mexico, the American subspecies *F. p. anatum* breeds locally in mountains and river canyons and migrates essentially statewide (NMGFD 2004). Its habitat also consists of open country, especially along rivers; also near lakes, along coasts, and in cities.

The *anatum* subspecies was federally delisted in 1999; based on available data, the Department of the Interior (DOI) argued that down listing from endangered to threatened was warranted but that delisting was not. The DOI was encouraged by the gradually increasing occupancy of breeding sites observed after 1980, and in recognition of that, the DOI down listed the species from endangered to threatened status in 1996. However, occupancy has changed little since 1997 and has not yet achieved the level of a healthy, self-sustaining population, which generally is recognized as 85% occupancy of known sites (NMGFD 2004).

In New Mexico, occupancy rates by any peregrine averaged 81% during 2001-2003; occupancy by pairs averaged 78% during the same period (NMGFD 2003). Of even greater concern, however, has been a long-term decline in productivity by the species in New Mexico and elsewhere in the southwestern United States. New Mexico data demonstrates that although productivity recovered from historic lows by the early 1980s, it began trending lower after 1984 and has yet to stabilize; through 2003, productivity remained 39% below its 1960-64 level and 19% below its 1984-88 average (NMGFD 2004).

Based upon the lack of suitable habitat and known locations, this species or its habitat will not be affected by the proposed project.

**Mountain Plover, *Charadrius montanus* (Species of Concern)**

This species occurs in Montana, Wyoming, Colorado, New Mexico, and from the Texas Panhandle east to Nebraska. The mountain plover winters from central California and southern Arizona southward into Mexico. Its preferred habitat is arid plains, short-grass prairies, and fields. With its range centered on the short-grass prairie, a region subject to heavy grazing and cultivation, the Mountain Plover has been drastically reduced



in number. It feeds singly or in small flocks, mostly on insects (NMGFD 2003).

Based upon the lack of suitable habitat and known locations, this species or its habitat will not be affected by the proposed project.

**Yellow-billed Cuckoo, *Coccyzus americanus* (Candidate)**

In the West, cuckoos are closely associated with broadleaf riparian (i.e. streamside) forests. Logging, cattle grazing, dams, water diversions, and water pumping have decimated the West's rivers and riparian forests.

The Yellow-billed cuckoo is also called the Raincrow or Stormcrow because its call heralds the coming of summer rains. This habit, combined with its beauty and ability to eat enormous quantities of defoliating caterpillars, has made the Yellow-billed cuckoo a popular bird in North America. Unlike European cuckoos, it rarely lays its eggs in the nests of other birds. It is a neo-tropical migrant, which winters in South America. Before its precipitous decline, it summered and bred in most of the United States, southernmost Canada, and northern Mexico (NMGFD 2004).

Based upon the lack of suitable habitat and known locations, this species or its habitat will not be affected by the proposed project.

**Mexican Spotted Owl, *Strix occidentalis lucida* (Threatened)**

The Mexican spotted owl occurs from southern Utah and Colorado south through the mountains of Arizona, New Mexico, and west Texas into the mountains of central Mexico (NMGFD 2004). Gaps remain in the distributional pattern of the Mexican spotted owl within this range. In the northern part of the range, including southern Utah, southern Colorado, and far northern Arizona and New Mexico, owls occur primarily in rocky canyons (NMGFD 2004). The Mexican spotted owl inhabits diverse forest types scattered across an even more physically diverse landscape.

Spotted owls nest and roost primarily in closed-canopy forests or rocky canyons. They nest in these areas on cliff ledges, in stick nests built by other birds, on debris platforms in trees, and in tree cavities. In southern Utah, Colorado, and some portions of northern New Mexico, most nests are in caves or on cliff ledges in rocky canyons. Elsewhere, they also use caves and cliffs, but the majority of nests appear to be in trees. Forests used for roosting and nesting often contain mature or old-growth stands with complex structure, are typically uneven-aged, multistoried, and have high canopy closure. A wider variety of trees are used for roosting, but Douglas Fir is the most commonly used by this species.

Based upon the lack of suitable habitat and known locations, this species or its habitat will not be affected by the proposed project.

**Burrowing Owl, *Anthene cunicularia* (Species of Concern)**

Burrowing Owls feed on a wide variety of prey, changing food habits as location and time of year determine availability. Large arthropods, mainly beetles and grasshoppers, comprise a large portion of their diet. Small mammals, especially mice, rats, gophers, and ground squirrels, are also important food items. Other prey animals include: reptiles and amphibians, scorpions, young cottontail rabbits, bats, and birds, such as sparrows and horned larks. These owls are quite versatile in the ways they capture prey. They chase down grasshoppers and beetles on the ground, use their talons to catch large insects in the air, or hover in mid-air before swooping down on unsuspecting prey. They also watch from perches, and then glide silently toward their target. Burrowing Owls are primarily active at dusk and dawn, but will hunt throughout a 24-hour period, especially when they have young to feed. Unlike other Owls, they also eat fruits and seeds, especially the fruit of *Tesajilla* and prickly pear cactus.

Burrowing owls are generally active at dusk and dawn, but sometimes at night also. They are highly terrestrial, and are often seen perched on a mound of dirt, telegraph or fence post - frequently on one foot. They bob up and down when excited. Flight is with irregular, jerky wingbeats and they will frequently make long glides, interspersed with rapid wingbeats. They hover during hunting and courtship, and may flap their wings asynchronously (not up and down together) (NMGFD 2004).

Based upon the soil composition of windblown sand deposits of up to three feet in depth, no suitable habitat occurs within the area of potential impact. Additionally, previous windblown tailings material blading and cleanup limits suitable habitat within the area of potential impact.

**Southwestern Willow Flycatcher, *Empidonax traillii extimus* (Endangered)**

The Southwestern Willow Flycatcher breeds in dense riparian habitats along rivers, streams, or other wetlands. The vegetation can be dominated by dense growths of willows (*Salix* sp.), seepwillow (*Baccharis* sp.), or other shrubs and medium-sized trees. There may be an overstory of cottonwood (*Populus* sp.), tamarisk (*Tamarix* sp.), or other large trees, but this is not always the case. In some areas, the flycatcher will nest in habitats dominated by tamarisk and Russian olive (*Eleagnus angustifolia*). One of the most important characteristics of the habitat appears to be the presence of dense vegetation, usually throughout all vegetation layers present.

Almost all Southwestern Willow Flycatcher breeding habitats are within close proximity (less than 20 yards) of water or very saturated soil. This water may be in the form of large rivers, smaller streams, springs, or marshes. At some sites, surface water is present early in the nesting season, but gradually dries up as the season progresses. Ultimately, the breeding site must have a water table high enough to support riparian vegetation (NMGFD 2004).

Based upon the lack of suitable habitat and known locations, this species or its habitat will not be affected by the proposed project.

**Cebolleta Southern Pocket Gopher, *Thomomys umbrinus paguatae* (Species of Concern)**

The distribution of the Southern pocket gopher is restricted to the Animas Mountains in New Mexico (NMGFD 2003). In New Mexico, the species is found mostly at elevations above 7,200 feet above MSL in the Animas Mountains as well as Indian Creek, Upper Deer Creek, and Lower Deer Creek reaches (NMGFD 2003). The New Mexico Department of Game and Fish listed the southern pocket gopher as endangered in 1975 (NMGFD 2003). The primary reasons for listing the species were endemism and its restricted distribution in New Mexico. There are no population estimates for this species. No change in listing status of the southern pocket gopher is recommended. Population surveys should be conducted to determine population status in New Mexico.

Based upon the lack of suitable habitat and known locations, this species or its habitat will not be affected by the proposed project.

**New Mexico Silver Spot Butterfly, *Speveria Nokomis nitocris* (Species of Concern)**

Some taxonomists consider this subspecies to be a narrowly endemic subspecies found only at a few locations in Colorado and eastern Utah. Other taxonomists consider it a more broadly distributed taxon found in Colorado, Arizona, Utah, New Mexico and perhaps even Nevada (AZGF 2006).

For the species *Speveria nokomis* the caterpillar host plant is a violet (*Viola ephrophylla*). The adults feed on flower nectar including that from thistles. The preferred habitat for this species is streamside meadows and open seepage areas with an abundance of violets in generally desert landscapes. The colonies are often isolated (AZGF 2006).

Based upon the lack of suitable habitat and known locations, this species or its habitat will not likely be affected by the proposed project. If any effects were to occur within the project area, these effects would be minimal.

**Pecos Sunflower, *Helianthus paradoxus* (Species of Concern)**

The Pecos sunflower (*Helianthus paradoxus*) is an annual that looks much like the common sunflower seen along roadsides and other disturbed areas throughout North America. This plant is also called the puzzle sunflower or paradox sunflower. It flowers from July to October, generally later in the year than the common sunflower.

Pecos sunflower is the only sunflower in the Southwest that requires permanent wetlands for its survival. It grows around the outflow of springs, in marshes, or sometimes at the edges of lakes or streams in soils that are usually somewhat saline. The abundance of plants at each location depends on the availability of water; the sunflowers will disappear if a site dries out.

The Pecos sunflower is found at 25 sites within five areas in New Mexico and Texas. In New Mexico, it grows near the town of Grants, along the Rio San Jose, in and around the town of Santa Rosa, and near the Pecos River from just north of Roswell to just north of Dexter. In Texas, it is found just north of Fort Stockton and in Balmorhea. Most sites contain only a few acres of wetland habitat, but several are more extensive. The number of plants at each site varies from only a few to many thousands (NMGFD 2004).

Based upon the lack of suitable habitat and known locations, this species or its habitat will not be affected by the proposed project.

**Zuni Fleabane, *Erigeron rhizomatus* (Threatened)**

Zuni fleabane grows in selenium-rich red or gray detrital clay soils derived from the Chinle and Baca formations. Plants are found at elevations from 7,300-8,000 feet above MSL in pinyon-juniper woodland. Zuni fleabane prefers slopes of up to 40 degrees, usually with a north-facing aspect. Although the overall vegetative cover is usually high, there are few other competing plants on the steep easily erodible slopes that are Zuni fleabane's primary habitat.

Zuni fleabane is found only in areas of suitable soils. These soils occur most extensively in the Sawtooth Mountains and in the northwestern part of the Datil Mountains in Catron County, New Mexico (NMGFD 2004).

Based upon the lack of suitable habitat and known locations, this species or its habitat will not be affected by the proposed project.

**Acoma fleabane, *Erigeron acomanus* (Species of Concern)**

Acoma fleabane habitat exhibits sandy slopes and benches beneath sandstone cliffs of the Entrada Sandstone Formation in piñon-juniper woodland at elevations of 6,900-7,100 feet above MSL. A Cibola County population is known to occur at Bluewater Canyon. This plant is a very narrow endemic plant, but current land uses do not significantly threaten its habitats. May occasionally be impacted by mining operations (NMGFD 2004).

Based upon the lack of suitable habitat and known locations, this species or its habitat will not be affected by the proposed project.

**Cinder phacelia, *Phacelia serrata* (Species of Concern)**

This plant is endemic to volcanic cinders in only two disjunct regions, approximately 260 miles apart, in Arizona and New Mexico (El Malpais NM). In New Mexico, this taxon can be found in the Zuni-Bandera Volcanic Field south of the Zuni Mountains in Cibola County, while in Arizona, it grows in the San Francisco Volcanic Field, Coconino County.

Its habitat is primarily in volcanic cinder areas associated with volcanic cones, but also roadcuts and abandoned quarries in open, exposed sunny locations. In Arizona, this species also colonizes large "cinder lakes." These flat areas have no underlying clay and are approximately 50 acres in size. It occupies an elevation range from 5,000 - 7,200 feet above MSL on generally open slopes of 0-15 degrees (NMGFD 2004).

Based upon the lack of suitable habitat and known locations, this species or its habitat will not be affected by the proposed project.

**Gypsum phacelia, *Phacelia sp. nov* (Species of Concern)**

Habitat requirements include weathered gypsum outcrops and gypsiferous and pure gypsum soils in the Great Basin region. It is associated with conifer woodland at elevations of 5,500-7,500 feet above MSL, in the Great Basin desert scrub. Species is highly habitat specific (NMGFD 2004).

Based upon the lack of suitable habitat and known locations, this species or its habitat will not be affected by the proposed project.

## **Prime and Unique Farmland**

Prime farmland has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Unique agricultural land is land other than prime farmland that is used for production of specific high-value food and fiber crops. Both categories require that the land is available for farming uses. Lands within HMC are not available for farming and, therefore, do not meet the definitions.

## **Wetlands and Floodplains**

The project area occurs within significantly disturbed arid lands. However, "Waters of the United States" (WUS), wetlands pursuant to the Clean Water Act (CWA) of 1977, and floodplains exist within the project area. According to Section 404 of the CWA, work in navigable waters and the placement of fill or dredge material into WUS, including intermittent streams and wetlands, requires authorization by the US Army Corps of Engineers (USACE). The type of authorization (e.g., individual permit, nationwide permit, regional permit, or letter of permission) depends on the location, volume, and purpose of the fill or dredge. The USACE requires that discharged dredged or fill material into WUS be minimized or avoided to the maximum extent practicable. The USACE also requires consideration of feasible alternatives to avoid or minimize potential impacts to WUS. If impacts can be avoided, under the guidance of Best Management Practices (BMPs), then no formal action or permitting is required. The Nationwide Permit (NWP) program streamlines the permitting process, usually affording a significant reduction in time and cost. If the proposed project activities cannot feasibly meet the conditions for an NWP, the project will require an Individual Permit from the USACE to authorize the project.

Based upon preliminary construction plans and consultation with USACE (2006), the proposed project does not have the potential to impact natural, USACE jurisdictional wetlands or floodplains within the project site boundaries. Furthermore, proper BMPs will be used throughout the project area to prevent WUS and floodplains from being impacted. A brief discussion of proposed BMPs for the proposed development activities is presented below.

## **Wilderness**

The HMC does not contain, nor is it adjacent to any designated or proposed wilderness areas.

## **Conflicts with Land Use Plans, Policies, or Controls**

This project would not conflict with the Cibola County Comprehensive Plan policy statement on multiple uses. None of the alternatives would conflict with the planning goals for federal lands in Cibola County.

## **Environmental Justice**

None of the alternatives would have disproportionate health or environmental effects on minorities or low-income populations as defined in the Environmental Protection Agency's (1996) Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analysis.

## **Indian Trust Resources**

Indian trust assets are owned by Native Americans but held in trust by the United States. According to HMC personnel and tribal consultation completed in July 2006, there are no Indian trust resources within the permitted boundary or the proposed expansion boundary.

## **Public and Occupational Health**

The HMC effluent monitoring program for January – June 2006, submitted to NRC on August 30, 2006 indicates that data collected in the HMC's effluent monitoring programs did not exceed the 10 CFR 20 values for Air Particulate, Radon Gas, Direct Radiation and Surface Contamination (HMC 2006b). See also previous Semi-Annual Environmental Monitoring Reports for the Grants site filed with NRC pursuant to the project Radioactive Materials License.

### ***4.4 Impact Topics as they relate to Alternatives A-D***

#### **Commonalities with Alternatives B-D:**

- Disturbance area associated with the Evaporation Pond (30-33 acres). The 30 - 33 acres includes the evaporation pond (26.5 surface acres) and +/- nine acres for related impoundments and pumping facilities.
- Construction timelines for EP3 are similar.
- Leak detection and HDPE liners are similar.
- Construction of EP3 will allow HMC to meet current reclamation timelines.
- Reclamation of the HMC property is scheduled for completion by 2015.
- No Rare, Threatened or Endangered species would be affected with construction of EP3.

#### **Commonalities with Alternative B and C**

- Both Alternatives B and C require the expansion of the operations boundary.
- Alternative B requests the operations boundary be expanded 185 acres.
- Alternative C requests a boundary expansion of 68 acres.

#### Commonalities with Alternative A and D

- Alternative A or D does not require a change to the existing operations boundary.

#### 4.4.1 Impacted Resources

##### Soils

Under the No Action Alternative (Alternative A) no soil disturbing activities would occur. Soils disturbed by excavation and construction in Alternatives B-D could be vulnerable to wind and water erosion. The impact to soils would be limited to the time and duration of the excavation and construction of EP3.

Under Alternative B, impacts to soils would be minimal. The proposed access corridor is to be constructed as a 50-foot wide access corridor approximately 1800 feet in length. Excavation and trenching would occur for the placement of piping and utilities. Additionally, under this alternative blading did not occur during the 1995 windblown tailings clean up activity in this area. Therefore, disturbances to unbladed soils would be increased.

Under Alternative C, the construction of EP3 along County Road 63 and in close proximity to state highway NM 605, (Alternative C), would have less of an impact on undisturbed soils.

Under Alternative D, the construction of EP3 adjacent to existing ponds (EP1 and EP2) would have minimal impact on undisturbed soils.

##### Natural Soundscape

Changes in sound in the vicinity of the HMC facility may cause noise impacts to the natural soundscape. The impact on the natural soundscapes will be temporary. The increase will be related to equipment operation and other activities associated with the construction of EP3.

Alternative A (No Action Alternative) would not contribute to increases in noise.

Alternative B, C, and D will temporarily disturb natural soundscapes in the vicinity of the construction. Although the disturbance would be minimal and temporary, Alternative D would contribute to the disturbance more than Alternative B or C.

Alternative D would contribute more to the noise disturbance due to its location south of the tailing impoundment and proximity to the residential subdivisions that border the HMC property.



Alternative B and C are located north of the tailings impoundment and furthest from the residential subdivisions that border the HMC property. Additionally, the tailing impoundment being located between Alternatives B and C and the residential subdivisions would provide a sound barrier.

### **Vegetation**

Land disturbance associated with some construction activities would remove or modify native vegetation and leave unvegetated disturbed areas. Disturbed areas are vulnerable to invasive, non-native plant species that potentially would hinder reestablishment of native species. The placement of EP3 will temporarily disturb approximately 33 acres of soils for a 10-year period.

Under Alternative A (No Action Alternative), no new ground disturbing activities would occur.

Under Alternative B, the construction of a 50-foot wide access corridor, as well as excavation in an undisturbed section of the HMC facility site, this alternative would have the greatest disturbance on existing vegetation. Existing vegetation would be permanently lost.

Under Alternative C, the construction of EP3 along County Road 63 and in close proximity to state highway NM 605, (Alternative C), would have less of an impact on vegetation. Existing established vegetation is successional and the area was bladed in 1995 for windblown tailings cleanup and then reseeded.

Under Alternative D, being that it is located in an already disturbed section of the HMC facility, adjacent to the existing EP1 and EP2, only a minimal amount of native vegetation would be disturbed.

### **Water Resources**

Under Alternative A (No Action Alternative) no new water sources would be required and no increases to storm water runoff or deposition are anticipated.

Under Alternative B, during the construction phase, storm water runoff could lead to the deposition of hydrocarbons on highways, access roads and other surface areas, increasing the potential for surface water contamination from vehicular traffic and construction equipment. Continued use of the access corridor for operation and maintenance purposes will contribute to negligible increases in deposition of hydrocarbons related to vehicular traffic.

Under Alternative C, the construction of EP3 along County Road 63 and in close proximity to state highway NM605, is likely to contribute to negligible hydrocarbon deposition from vehicular traffic and related storm water runoff.

Under Alternative D, placement of EP3 adjacent to existing ponds EP1 and EP2 is least likely to affect water resources. Current operations and maintenance of EP1 and EP2 will continue to contribute to the deposition of hydrocarbons from vehicular traffic.

### **Wildlife and Habitats**

Under Alternative A (No Action Alternative) no new disturbances are anticipated.

Under Alternative B, 33 acres of wildlife habitat would be lost. Some species would be disrupted and others displaced with the construction of EP3. The construction of EP3 would disrupt animal behavior and temporarily or permanently displace wildlife. Disruptions to wildlife habitat would be negligible and temporary.

Under Alternative C, 30 acres of wildlife habitat would be lost. Some species would be disrupted and others displaced with the construction of EP3. The construction of EP3 would disrupt animal behavior and temporarily or permanently displace wildlife. The quality of wildlife habitat in Alternative C is lower than Alternative B due to surface blading that occurred in 1995. Therefore, the loss of wildlife habitat under this alternative is less than Alternative B.

Under Alternative D, 30 acres of wildlife habitat would be lost. However, under this alternative the 30 acres is located in a highly disturbed area, which does not support wildlife.

## **Air Quality**

During the construction of EP3, air quality in the vicinity EP3 will be temporarily affected. Dust particles and fossil fuel emissions released into the air from machinery, and other construction activities, could cause a temporary increase in airborne pollutants. Best management practices related to fugitive dust will be employed to reduce dust emissions.

Under Alternative A (No Action Alternative), no affect on the air quality in the neighboring towns, and residential communities above current levels is anticipated.

Under Alternative B, EP3 being located the furthest away in a northerly direction from neighboring towns, and residential communities, the affect from air borne pollutants and air quality would be minimal. Additionally, odors released during the evaporation process will disperse more readily due to the predominant wind direction and the air dispersal properties associated with the tailings impoundment being located between the proposed pond location and the neighboring communities.

Under Alternative C, EP3 being located the furthest away in a northeast direction from neighboring towns, and residential communities, the affect from air borne pollutants and air quality would be minimal. Additionally, odors released during the evaporation process will disperse more readily due to the predominant wind direction and the air dispersal properties associated with the tailings impoundment being located between the proposed pond location and the neighboring communities. Additionally, during high wind events surface spray could potentially cross NM 605.

Under Alternative D, locating EP3 next to the already existing ponds EP1 and EP2 would contribute to the existing odors released from the evaporation process and contribute minimally to the existing odor released. Therefore, air quality could decline during certain metrological and air movement conditions.

## **4.5 Adverse Impacts**

Section 102(2) (C) of NEPA requires consideration of potentially unavoidable adverse impacts should the proposed action be implemented. Based upon the above listed resource areas that could be affected by constructing EP3, no significant unavoidable adverse impacts are anticipated in the short term or long term. Beneficial impacts are anticipated in the long term by increasing evaporation capacities thus allowing HMC to meet reclamation clean up timelines. No increases are anticipated in radiological or non-radiological sources.

The construction of EP3 in Alternative B – D is anticipated to be temporary. Reclamation of the HMC property is anticipated to be complete in 2015 with the evaporation ponds being reclaimed to generally pre-existing conditions.

#### **4.6 Cumulative Impacts**

Cumulative impacts are defined as; environmental affects due to past, present and foreseeable future activities associated with the project site.

An evaluation of the impacts from the proposed HMC Project in terms of other past, present, and foreseeable future actions to the environment has been conducted. Past and present actions at and around the project site, have dealt with the mining and milling operations, and the subsequent reclamation of the affected site. Reclamation of the former site, which is ongoing, will have a beneficial impact on the environment. The affect to the environment from the construction of EP3 will be temporary. These disturbances will be corrected when the site is reclaimed, and affected areas are returned to their pre-disturbance condition.

#### **4.7 Mitigation Measures**

##### **4.7.1 Construction Best Managements Practices (BMPs)**

Inspections of the BMPs and storm water control practices shall take place before and after storm events to ensure that each BMP or control is functioning properly. Project BMPs shall be constructed such that sediment and other pollutants are contained within the project site.

1. Install and maintain silt fences, sediment traps, or straw bale dikes around all areas with disturbed or exposed soil. A silt fence sediment barrier is required at a distance of 30 feet around the perimeter of all jurisdictional wetlands, in order to create an impact buffer zone. Hay bales may be used where continuous relocation of the silt fence would otherwise be necessary.
2. Store construction equipment at the off-site staging areas at the end of each work period. Divert concentrated runoff around equipment, vehicle, and materials storage areas. Diversion of concentrated runoff shall be accomplished through shallow earthen swales and methods described in BMP #1 above.
3. Minimize the amount of construction materials stored on-site.
4. Designate areas of the site for the delivery and removal of construction materials. Construction materials shall not be stored beyond the silt fence.

5. Store materials in a manner that limits exposure to precipitation and controls storm-water runoff.
6. Handle construction materials (e.g., concrete) in a manner that minimizes direct discharges into jurisdictional wetlands and drainage channels. The discharge or creation of potential discharge of any soil material including concrete, cement, silts, clay, sand, or any other materials to the Waters of the United States is prohibited.
7. Provide pallets or secondary containment areas for chemicals, drums, or bagged materials. Should material spills occur, materials and/or contaminants should be cleaned from the project site and recycled or disposed to the satisfaction of the NMED.
8. Cover waste dumpsters with plastic sheeting at the end of each workday and during storm events. All sheeting shall be carefully secured to withstand weather conditions.
9. Train/instruct on-site personnel in spill prevention practices, and provide spill containment materials near all storage areas. All contractors are responsible for familiarizing their personnel with the information contained in the Storm Water Pollution Prevention Plan (SWPPP).
10. Separate wastes and recycle or dispose of wastes in compliance with regulations.
11. Sprinkle water on earth fill and disturbed ground surfaces as necessary to minimize wind-blown dust.

#### **4.7.2 Cultural Resources**

Cultural resources have been identified within the project area according to the survey completed by TEC in June 2006.

No significant impacts will be associated with on-site cultural resources. The sites that were addressed from the TEC survey should be monitored to confirm that these sites are not being impacted. Furthermore, if any additional cultural resources are uncovered during excavation activities, the New Mexico Historical Society should be notified immediately to evaluate and initiate appropriate mitigation measures.

#### **4.7.3 Wildlife**

No significant impacts will be associated with on-site wildlife populations. General on-site activities will slightly disturb and displace certain species of

wildlife. However, after on-site activities are completed it is likely that displaced wildlife populations will return to their historic ranges.

Mitigation measures would be implemented if it is determined that wildlife or migratory bird mortality is occurring.

EP1 began operating in 1990, with EP2 operating since 1994. Although migratory birds and waterfowl visit the ponds frequently (especially during migration seasons), no mortality has been observed in or around EP1 or EP2.

Site operation crews are onsite during the day, and pond operations are among their primary duties. Site personnel observe these ponds throughout the day looking for operational problems or abnormalities. To date, no mortality of wildlife has been reported by site personnel.

Water chemistry varies over time and as the crews move water around between ponds, operate different wells, and run or shut off the R.O. plant. The absence of bird mortality in or around the ponds over the years indicates that the water in the evaporation ponds do not contain contaminants at levels toxic to birds.

The proposed EP3 will be operated like EP1 and EP2 and will receive the same water; no measures to prevent birds from landing on the EP3 are anticipated.

### **Threatened and Endangered Species**

Based upon information collected from current scientific literature, no threatened or endangered species or their habitat is present within the project area. Therefore, no mitigation measures are required at this time in order to prevent impacts to threatened and endangered species. However, if threatened or endangered species or their habitat is identified within the project area during on-site activities then the New Mexico Fish and Game and Kleinfelder, Inc. must be notified immediately to initiate and evaluate mitigation measures.

### **Wetland and Floodplains**

Inspections of the BMPs and storm water control practices shall take place before and after storm events to ensure that each BMP or control is functioning properly. Project BMPs shall be constructed such that sediment and other pollutants are contained within the project site.

1. Install and maintain silt fences, sediment traps, or straw bale dikes around all areas with disturbed or exposed soil. A silt fence sediment barrier is required at a distance of 30 feet around the perimeter of all jurisdictional wetlands, in order to create an impact buffer zone. Hay bales may be used where continuous relocation of the silt fence would otherwise be necessary.

2. Store materials in a manner that limits exposure to precipitation and controls storm-water runoff.
3. Handle construction materials (e.g., concrete) in a manner that minimizes direct discharges into jurisdictional wetlands and drainage channels. The discharge or creation of potential discharge of any soil material including concrete, cement, silts, clay, sand, or any other materials to the Waters of the United States is prohibited.
4. Train/instruct on-site personnel in spill prevention practices, and provide spill containment materials near all storage areas. All contractors are responsible for familiarizing their personnel with the information contained in the Storm Water Pollution Prevention Plan (SWPPP).
5. Sprinkle water on earth fill and disturbed ground surfaces as necessary to minimize wind-blown dust.
6. Maintain and inspect regularly all construction equipment and vehicles to prevent oil or fluid leaks, and use drip pans or other secondary containment measures as necessary beneath vehicles during storage
7. Place wastes (e.g., grease, oil or oil filters, antifreeze, cleaning solutions, batteries, and hydraulic or transmission fluid) in proper containers, store the containers in designated storage areas, and ultimately recycle the materials.
8. Fuel and wash vehicles and equipment at an off-site location.
9. Equipment used to make and pour concrete shall be washed at an off-site location. Concrete fine material or aggregate shall not be allowed to wash into the jurisdictional wetlands or other associated drainage channels. Concrete application equipment must be parked over drip pans or absorbent material at all times. Any bare ground created by materials storage shall be restored following construction.

#### **4.7.4 Soils**

No significant impacts will be associated with on-site soils. The only measurable impact to soils will be from excavation activities within the project area. If soil contamination is identified in on-site soils then proper cleanup standards must be followed. These cleanup standards would be in accordance with the Environmental Protection Agency (EPA) and the NMED.

#### **4.7.5 Security**

Security mitigation measures need to be implemented around the ponds in order to prevent unwanted access. This security fence can also be part of a fencing system that will be used to deter wildlife from entering the ponds.

#### **4.8 Monitoring**

During ground disturbing activities monitoring for archaeological artifacts should be completed in the unbladed portions of Alternative B. In 1995, mechanical blading of up to three feet (one meter) of aeolian sediments exposed a number of new archaeological sites in the immediate area. The unbladed portions of Alternative B contain older aeolian sediments that appear to be stabilized by increased vegetative cover. Given the high density of sites in the bladed portion of the survey area, and the lack of sites in the non-bladed portion (save LA 153557), it is likely that aeolian deposits are covering intact subsurface archaeological remains in the unbladed portions of the survey area. Therefore, the design and implementation of an archaeological monitoring plan is recommended if the proposed pond is to be located in Alternative B. If buried cultural deposits are encountered at any point during construction activities, work should cease immediately and the New Mexico SHPO should be contacted.

A groundwater-monitoring program associated with the EP3 site, should be implemented. Groundwater monitoring wells shall be installed down gradient of EP3. Baseline water quality will be established from samples collected prior to completion of construction. The collected samples will be analyzed for the parameters listed in HMC's current groundwater protection standards. The system of monitoring wells will provide the capability to help detect pond liner failure resulting in the contamination of local groundwater. The activities involved in the reclamation and decommissioning effort will include well plugging and abandonment in accordance with state and county regulations.

HMC's monitoring and surveillance program for radioactive effluent releases have been designed to ensure the project compliance with 10 CFR 40, Part 20 U.S. NRC Standards for Protection Against Radiation and closely approximates programs as described in NRC's Regulatory Guide 4.14 Radiological Effluent and Environmental Monitoring at Uranium Mills (HMC 2006b). Some effluent monitoring activities differ from those presented in Regulatory Guide 4.14 as specified and required by HMC's Radioactive Materials License (SUA-1471).

HMC groundwater monitoring program, as outlined in License Condition No. 35 (LC-35) continues. The requirements set forth in LC-35 include reporting of both radiological and non-radiological water quality parameters for specified wells. LC-35 also requires the documentation of water injection and collection volumes of the groundwater cleanup system.



#### **4.9 EP3 Reclamation and Decommissioning**

Upon completion of reclamation and groundwater cleanup activities at the project requiring the use of EP3, the pond will be decommissioned and the pond site area reclaimed to the standards required, to return the land to present unrestricted use. At present, the proposed EP3 pond site area is utilized for livestock grazing.

All evaporation concentrates remaining within the EP3 pond liner at the end of the EP3 use period, will be removed and relocated to EP1 for final incorporation with final reclamation of EP1 and the small tailings pile. The pond liner, piping and other related infrastructure associated with EP3 will also be relocated to EP1, incorporated with other project demolition and decommissioning waste, and final reclamation completed as part of the process of final reclamation of the small tailings pile that presently underlies EP1 pond.

The area occupied by EP3 along with the access corridor, piping and utility corridors will be seeded and revegetated. The security fencing will be removed to allow agricultural grazing land use. Upon completion of the reclamation and decommissioning, the permitted license boundary associated with the EP3 pond location will be adjusted back to the present project site boundary.

## 5.0 CONCLUSION

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This ER has been prepared to evaluate the environmental impacts associated with expanding the operations boundary and the construction of EP3 under three Alternatives (B, C and D) including the No Action Alternative (A). The outcome of the ER is that Alternative B is the preferred alternative.

Based upon the foregoing evaluation it has been determined that the proposed action will not have a significant impact on the environment. Accordingly, it is recommended that NRC issue a Finding of No Significant Impact (FONSI). This determination is supported by the following evaluation findings:

- The evaporation pond constructed for the temporary storage of process waste streams will be provided with both primary and secondary liners and leakage detection and collection capabilities.
- The proposed groundwater-monitoring program is sufficient to detect both horizontal and vertical contamination.
- There will be no significant adverse impact to the regional surface water or groundwater.
- As a primary goal, groundwater impacted by uranium recovery operations will be restored to background water quality conditions.
- The expansion of the operation boundary and construction of EP3 will aid in expediting the groundwater reclamation processes.
- The Grants site Semi-Annual Environmental Monitoring Reports for 2005 and 2006, as well as previous semi-annual reports on file with NRC, document that the HMC monitoring programs at the Grants site for Public and Occupational Health effluents have not shown exceedances to the 10 CFR 20.1301 values that would indicate potential risk to the human environment.

## **6.0 CONSULTATION AND COORDINATION**

---

This ER evaluates the environmental impacts associated with the HMC proposal. The environmental effects that were considered include anticipated impacts related to HMC construction, operation, decommissioning, and reclamation of EP3. In developing this ER, communications or consultation was held with the following agencies or persons:

### **Tribal Resources**

Leigh Kuwanwisiwma  
Director of Hopi Cultural Preservation Office  
The Hopi Tribe  
P.O. Box 123  
Kykotsmovi, Arizona 86039

President Joe Shirley, Jr.  
The Navajo Nation  
P.O. Box 9000  
Window Rock, Arizona 86515

Governor Robert Benevides  
Pueblo of Isleta  
P.O. Box 1270  
Isleta, New Mexico 87022

Chairman Dallas Massey, Sr.  
White Mountain Apache Tribe  
P.O. Box 700  
White River, Arizona 85941

Governor Jason Johnson  
Pueblo of Acoma  
P.O. Box 309  
Acoma, New Mexico 87034

President Mark Chino  
Mescalero Apache Tribe  
P.O. Box 227  
Mescalero, New Mexico 88340

Governor Arlen P. Quetawki, Sr.  
Pueblo of Zuni  
P.O. Box 339  
Zuni, New Mexico 87327

**Nuclear Regulatory Commission**

Ron Linton  
Uranium Processing Section  
Fuel Cycle Facilities Branch  
Division of Fuel Cycle Safety and Safeguards  
Office of Nuclear Material Safety and Safeguards  
11545 Rockville Pike  
Two White Flint North  
Rockville, Maryland 20852-2738

Bill Von Till

C/o Document Control Desk, Chief of Fuel  
Cycle Facilities (Mailstop T8-A33)  
US Nuclear Regulatory Commission  
Office of Nuclear Materials Safety & Safeguards  
11545 Rockville Pike  
Two White Flint North  
Rockville, Maryland 20852-2738

**Environmental Protection Agency**

Sai Appaji  
US EPA, Region VI  
Superfund Division  
Suite 1200, 6SF-LP  
1445 Ross Ave.  
Dallas, Texas 75202-2733

**US Fish and Wildlife Service**

Eric Mein  
New Mexico Ecological Field Office  
NMESFO  
2105 Osuna Rd.  
Albuquerque, New Mexico 87113

**US Army Corps of Engineers**

James Wood  
RE: Action No. 2006-0029  
4101 Jefferson Plaza N.E.  
Albuquerque, New Mexico 87109-3435

**New Mexico Environmental Department**

Jerry Schoeppner  
Groundwater Quality Bureau  
P O Box 26110  
Santa Fe, New Mexico 87502

Dana Bahar  
Superfund Oversight Section  
NMED  
Suite N2300  
1190 St. Francis Dr.  
Santa Fe, New Mexico 87505

Glen Saums  
New Mexico Environmental Department  
P O Box 26110  
Santa Fe, New Mexico 87502

**New Mexico State Engineer**  
John D' Antonio  
New Mexico Office of the Engineer  
P O Box 75102  
Santa Fe, New Mexico 87504-5102

**Cibola County**  
RE: Action No. 2006-00209  
Floodplain Management Office  
515 West High Street  
Grants, New Mexico 87020-2526

**New Mexico Game and Fish Department**  
Brian Gleadle  
New Mexico Game & Fish Department  
3841 Midway Place N.E.  
Albuquerque, New Mexico 87101

## **6.1 Comments Received**

Cibola County Commission

Bennie Cohoe, Chairman  
Elmer Chavez, 1<sup>st</sup> Vice Chair  
Jane Pitts, 2<sup>nd</sup> Vice Chair  
W. Frank Emerson, Commissioner  
Fred J. Scott, Commissioner

# Cibola County

515 West High Street  
Grants, New Mexico 87020  
Phone (505) 287-9431 - Fax (505) 285-5434



David Ulibarri  
County Manager

---

September 13, 2006

Kleinfelder Inc.  
c/o Dr. Louis Bridges  
25493 North Road  
Hotchkiss, CO 81419

Re: Homestake Mining Co. Evaporation Pond #3 and Site Boundary Expansion

Dear Mr. Bridges,

We recently received your letter regarding the above pond and expansion. The only comment we would have is that Cibola County would require you to give public notice prior to start of construction. You would also need to disclose the anticipated dates of closure of County Road C-63.

If you have any further questions, please give me a call at (505)287-9431.

Sincerely,

A handwritten signature in cursive script, appearing to read "David Ulibarri".  
David Ulibarri  
County Manager



RECEIVED SEP 07 2006

Ivan L. Sidney  
 CHAIRMAN  
 Todd Honyoorn, Sr.  
 VICE CHAIRMAN

August 22, 2006

Dan Kump, Senior Project Manager  
 Homestake Mining Company of California  
 Highway 605, P.O. Box 98  
 Grants, New Mexico 87020

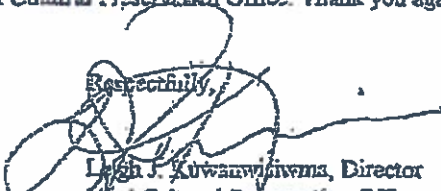
Dear Mr. Kump,

Thank you for your August 17, 2006, response, on behalf of the Nuclear Regulatory Commission, to our July 17<sup>th</sup> letter, regarding a proposal to build an evaporation pond on a 33-acre site north of Grants in Cibola County, New Mexico. As you know from our letter, the Hopi Tribe claims ancestral and cultural affiliation to prehistoric cultural groups in New Mexico, and therefore we appreciate your continuing solicitation of our input and your efforts to address our concerns.

As you also know from our letter, the Hopi Cultural Preservation Office supports the identification and avoidance of archaeological sites and Traditional Cultural Properties. We have reviewed the enclosed copy of the cultural resources survey of the project area by Taschek Environmental Consulting that identifies twelve prehistoric sites, three of which are recommended as National Register eligible, and three of which are recommended as potentially eligible. We understand the six eligible or potentially eligible sites will be avoided by project activities.

However, we support the survey report recommendation that archaeological monitoring be conducted during all construction activities in the unbladed portions of Alternative B. If this recommendation is implemented, we concur that this project should result in no effect to prehistoric National Register eligible properties.

If the proposed pond is to be located in Alternative B, please provide us with a copy of the draft monitoring report for review and comment. Should you have any questions or need additional information, please contact Terry Morgart at the Hopi Cultural Preservation Office. Thank you again for your consideration.

Respectfully,  
  
 Leigh J. Kuwanwisiwma, Director  
 Hopi Cultural Preservation Office

New Mexico State Historic Preservation Office



GOVERNOR  
Bill Richardson



DIRECTOR AND SECRETARY  
TO THE COMMISSION

Bruce C. Thompson, Ph.D.

Tod Stevenson, Deputy Director

STATE OF NEW MEXICO  
DEPARTMENT OF GAME & FISH

One Wildlife Way  
Post Office Box 25112  
Santa Fe, NM 87504  
Phone: (505) 476-8008  
Fax: (505) 476-8124

Visit our website at [www.wildlife.state.nm.us](http://www.wildlife.state.nm.us)  
For basic information or to order free publications: 1-800-462-9310

STATE GAME COMMISSION

Leo V. Sims, II, Chairman  
Hobbs, NM

Dr. Tom Arvas, Vice-Chairman  
Albuquerque, NM

David Henderson, Commissioner  
Santa Fe, NM

Alfredo Montoya, Commissioner  
Alcalde, NM

Peter Pino, Commissioner  
Zia Pueblo, NM

Terry Z. Riley, Ph.D., Commissioner  
Tijeras, NM

M. H. "Dutch" Salmon, Commissioner  
Silver City, NM

August 7, 2006

Kleinfelder Inc.  
c/o Dr. Louis Bridges  
25493 North Road  
Hotchkiss, CO 81419

Re: Homestake Mining Company of California, Construction of Evaporation Pond #3 and Site Boundary Expansion; NMGF Project No. 10949

Dear Dr. Bridges:

In response to your letter dated June 26, 2006, (received at this office July 24) the New Mexico Department of Game & Fish (NMGF) has developed the following recommendations for issues to be included in the Environmental Assessment (EA) for this project. Homestake Mining Company of California (HMCo) operated a uranium mill at the site from the 1950's to 1990's. The current restoration program is designed to remove target contaminants from the ground water by flushing the alluvial aquifer beneath the tailings pile with deep-well or reverse osmosis treated fresh water. Contaminated water is either treated in the reverse osmosis system or reported to a series of evaporation ponds. HMCo proposes to construct an additional evaporation pond to expand and enhance water evaporation capacity. Four alternatives are proposed: Alternative A is the no-action alternative, Alternatives B and C comprise alternative locations for the new pond, each of which would involve expansion of the current licensed site boundary, and Alternative D would be construction of the pond within the existing licensed boundary. Each of the action alternatives would impact approximately 33 acres, including the pond, access corridor and earthen containment dike.

Please find enclosed a copy of the NMGF trenching guidelines, for use when installing pipe. The guidelines should be included in the EA as a mitigation measure, and transmitted to the construction contractor in the plan of work. Please also find enclosed a list of state and federal wildlife species of concern for Cibola County. For more information on listed and other species of concern, contact the following sources:

1. BISON-M Species Accounts, Searches, and County lists (use "Database Query" option):  
<http://www.bison-m.org>
2. Habitat Handbook Project Guidelines:  
[http://wildlife.state.nm.us/conservation/habitat\\_handbook/index.htm](http://wildlife.state.nm.us/conservation/habitat_handbook/index.htm)

Dr. Bridges

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8/9/2006

3. For custom, site-specific database searches on plants and wildlife. Go to Data then to Free On-Line Data and follow the directions go to: <http://nmmlip.unm.edu>
4. New Mexico State Forestry Division (505-827-5830) or <http://nmrareplants.unm.edu/index.html> for state-listed plants
5. For the most current listing of federally listed species always check the U.S. Fish and Wildlife Service at (505-346-2525) or <http://www.fws.gov/lfw2es/NewMexico/index.cfm>

The letter we received did not include information regarding the identity and concentration of contaminants expected to be present in the proposed evaporation pond. Any open water in an arid environment will attract wildlife of all kinds. Wildlife need to be protected from contacting and ingesting harmful liquids. Where ponds, pits or open-top tanks contain potentially hazardous liquids, they should be netted to protect flying animals (birds and bats), fenced or otherwise protected. The US Fish & Wildlife Service provides technical guidance on protective netting on the internet at <http://www.r6.fws.gov/contaminants/contaminants1c.html>. Wildlife exclusion fencing may be appropriate for some situations. Exclusion fences must be a minimum eight feet in height, constructed of chain link or woven or welded wire mesh. They should be secured at the ground or preferably buried to prevent animals digging under, and should be wrapped around the base with a durable finer mesh material to deter small mammals and reptiles and amphibians. Fences which are intended to exclude only livestock should be designed to minimize potential for causing injury or death to large wildlife attempting to cross over or under.

Non-toxic liquid filled ponds, pits and trenches may also present a trapping hazard for wildlife, if they are steep-sided and/or lined with smooth-surfaced material. Textured liner material is available which can be attached to create escape ramps. Depending on the configuration of the trapping hazard, earthen ramps, floating rafts and ladders may also be appropriate solutions. NMGF can provide consultation and design specifications on the appropriate technology. If the evaporation pond can be rendered neither chemically nor physically hazardous, it may provide a valuable drinking water source for local wildlife populations.

The letter we received did not include information on current and historic use of the site by wildlife, vegetative cover type or other habitat variables. Without further information and/or a site visit we are unable to distinguish the potential effects of the various design alternatives. In general, it is preferable to minimize the area of surface disturbance.

Thank you for the opportunity to comment on this project. If there are any questions please contact Rachel Jankowitz at (505) 476-8159 or [rjankowitz@state.nm.us](mailto:rjankowitz@state.nm.us).

Sincerely,



Lisa Kirkpatrick, Chief  
Conservation Services Division

cc: Wally Murphy, Ecological Services Field Supervisor, USFWS  
Brian Gleadle, NW Area Supervisor, NMGF  
Mark Olson, NW Area Habitat Specialist, NMGF

## TRENCHING GUIDELINES

### NEW MEXICO DEPARTMENT OF GAME AND FISH

September 2003

Open trenches and ditches can trap small mammals, amphibians and reptiles and can cause injury to large mammals. Periods of highest activity for many of these species include nighttime, summer months and wet weather. Implementing the following recommendations can minimize loss of wildlife.

- Keep trenching and back-filling crews close together, to minimize the amount of open trenches at any given time.
- Trench during the cooler months (October – March). However, there may be exceptions (e.g., critical wintering areas) that need to be assessed on a site-specific basis.
- Avoid leaving trenches open overnight. Where trenches cannot be back-filled immediately, escape ramps should be constructed at least every 90 meters. Escape ramps can be short lateral trenches or wooden planks sloping to the surface. The slope should be less than 45 degrees (1:1). Trenches that have been left open overnight should be inspected and animals removed prior to backfilling, especially where endangered species occur.

On a statewide basis there are numerous threatened, endangered or sensitive species potentially at risk by trenching operations. Project initiators should seek county species list to evaluate potential impact of projects. Risk to these species depends upon a wide variety of conditions at the trenching site, such as trench depth, side slope, soil characteristics, season, and precipitation events.



Alan D. Cox  
Project Manager - Grants

24 July 2006

State of New Mexico  
Department of Cultural Affairs  
Historic Preservation Division  
Bataan Memorial Building  
407 Galisteo Street, Suite 236  
Santa Fe, NM 875501

Attn: Ms. Katherine Slick, State Historic Preservation Officer

RE: **Homestake Mining Company of California  
Grants Reclamation Project**  
– Archaeological / Cultural Resources Inventory for Proposed Alternative Siting  
Locations associated with Pond Construction Project

Dear Ms Slick,

Homestake Mining Company of California (HMCo) is in the early planning and design engineering / siting process to construct an additional evaporation pond at the Grants Reclamation Project north-northeast of Milan, NM to assist in final project reclamation and closure at a uranium milling complex that was operated by HMCo and others from the late 1950's through the early 1990's. As part of the process, HMCo is required to submit design plans and other documentation to the Nuclear Regulatory Commission (NRC) to facilitate the review and approval process for the pond as required under our federal NRC Radioactive Materials License. Due to the fact that the review process involves a federal action pursuant to the National Environmental Policy Act (NEPA), the NRC must follow the requirements of the Act during review and evaluation of the proposal. As part of that process, NRC will be required to enter into a formal consultation process with other agencies and entities that have interest in the proposed project.

Enclosed please find the following documents that are intended to facilitate the NRC NEPA review and consultation process that will include formal consultation and communications with your office:

1. "Cultural Resources Inventory of 350 Acres for the Homestake Mining Company in Cibola County, New Mexico" – July 2006; and
2. **Attachments** for the above document that includes: a) NMCRIS Investigation Abstract Form; b) Laboratory of Anthropology Site Forms; and c) Archival Photographs

I look forward receiving your input through the consultation process with NRC to assure that any required or necessary measures are taken during the construction project to protect archaeological or cultural resources of importance. We trust that our "early-on" communication activities, and provision of these documents at this time, will assist your office in working with NRC during that process.

Thank you for your time and attention on this matter. If you or any staff members in the SHPO office have any questions, please contact me at the Grants site (505) 287-4456 ext. 25 or via cell phone at (505) 400-2794.

Sincerely yours,



HOMESTAKE MINING COMPANY OF CALIFORNIA  
Alan D. Cox  
Project Manager  
- Grants Reclamation Project

Cc: R. Linton - U.S. Nuclear Regulatory Commission - Rockville, MD (w/o enclosure)

- A. Kuhn - Kleinfelder, Inc., Albuquerque (w/o enclosure)
- L. Bridges - Kleinfelder, Inc., Hotchkiss, CO (w/o enclosure)
- R. Chase - SLC (w/o enclosure)
- D. Deisley - SLC (w/o enclosure)
- B. Ferdinand - SLC (w/o enclosure)

RECEIVED  
JUL 26 2006



Alan D. Cox  
Project Manager - Grants

24 July 2006

U.S. Nuclear Regulatory Commission  
Office of Nuclear Materials Safety and Safeguards  
Division of Fuel Cycle Safety and Safeguards  
Chief of Fuel Cycle Facilities Branch (Mailstop T8-A33)  
C/o Document Control Desk  
11545 Rockville Pike  
Two White Flint North  
Rockville, MD 20852-2738

Attn: Mr. Ron Linton, Project Site Manager

RE: Homestake Mining Company – License SUA-1471  
Docket 40-8903

***Grants Reclamation Project – Archaeological / Cultural Survey for Proposed  
Evaporation Pond #3 Alternatives***

Dear Mr. Linton:

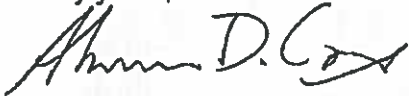
Enclosed please find one (1) hard copy of the above referenced survey pertaining to the proposed Evaporation Pond #3 alternative site locations. As you are aware from our previous discussions, Homestake Mining Company of California (HMCo) plans to transmit an engineering design and plan package to you in the very near future for review and approval with the Nuclear Regulatory Commission (NRC) pursuant to requirements of our Radioactive Materials License held by the agency.

We are transmitting a copy of this document to the New Mexico State Historic Preservation Office as well and we are hopeful that this will assist in streamlining the formal consultation process that your office will initiate with other agencies and entities during review of the project pond proposal. HMCo has sent a preliminary notice letter to several Native American Tribes and Pueblos advising them of our plans; those contacted are tribal entities that have indicated interest in being apprised of development / disturbance activities that are situated in Cibola County, NM. To date, we have received one (1) response from the Hopi Tribe in AZ; they have asked for a copy of the survey which will be provided to them. We will provide you a copy of their letter to assist in your communications process with the Hopi Tribe

I look forward to working with you on the review and approval process and trust that our "early-on" communication activities will assist your office in working through the NEPA review.

Thank you for your time and attention on this matter. If you or any members of the NRC staff have any questions, please contact me at the Grants site (505) 287-4456 ext 25 or via cell phone at (505) 400-2794.

Sincerely yours,



HOMESTAKE MINING COMPANY OF CALIFORNIA  
Alan D. Cox  
Project Manager  
- Grants Reclamation Project

Cc: K. Slick, Director - New Mexico SHPO (w/o enclosure)

A. Kuhn - Kleinfelder, Inc., Albuquerque (w/o enclosure)  
L. Bridges - Kleinfelder, Inc., CO (w/o enclosure)

R. Chase - SLC (w/o enclosure)  
D. Deisley - SLC (w/o enclosure)  
B. Ferdinand - SLC (w/o enclosure)

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JUL 26 2006



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Delivered to J. D. J. J. J.  
JUL 11 2006

Alan D. Cox  
Project Manager - Grants

7 July 2006

Governor Arlen P. Quetawki, Sr.  
Pueblo of Zuni  
P.O. Box 339  
Zuni, NM 87327

The Zuni Heritage and Historic Preservation Office has no comments on any possible historic properties affected by this undertaking.



for *[Signature]*  
Director, Zuni Heritage and Historic Preservation Office, Pueblo of Zuni  
P.O. Box 1149, Zuni NM 87327

Dear Governor Quetawki, Sr.:

The Homestake Mining Company of California (HMCo) is proposing to build an evaporation pond on a 33-acre site in Cibola County, New Mexico, as part of long-term groundwater restoration efforts at the facility. Proposed locations for the pond are on private land near the HMCo facility, located north of the City of Grants, in Section 26, T12N, R10W (Figure 1). HMCo currently manages a ground water restoration program subject to United States Nuclear Regulatory Commission (NRC) License SUA-1471, and New Mexico Environment Department (NMED) Discharge Plans, DP-200 and DP 725. An amendment to the NRC Site License and an amendment of NMED DP 725 will be sought to add the new evaporation pond and expand the site boundary. Kleinfelder Inc. will be preparing the environmental document in support of the amendment requests.

Consistent with the requirements of Section 106 of the National Historic Preservation Act, Taschek Environmental Consulting was contracted by Kleinfelder Inc. to conduct a cultural resource survey and documentation for the proposed pond locations. As part of the Section 106 process, the NRC is required to consult with the Pueblo of Zuni to aid in identifying any areas of traditional religious or cultural importance that may be within the project's area of potential effect. HMCo anticipates that the NRC will initiate formal agency-to-agency consultation with the Pueblo of Zuni upon receiving the environmental document from HMCo.

In this preliminary phase of the project, HMCo is sharing proposed project plans with you in order to identify any areas that may be of concern to the Pueblo of Zuni. In particular, HMCo would appreciate any information that you can provide with respect to any traditional religious or cultural sites, or other historic or archaeological sites, of importance to the Pueblo of Zuni that may be within the proposed project area. If such sites exist, HMCo would like to work with the Pueblo of Zuni to avoid and protect the identified location(s) without disclosing any specific information as to the site locations or the nature of the religious activities.

This letter is a good-faith effort on the part of HMCo and does not initiate formal consultation, which is the responsibility of the NRC as the lead federal agency for this project. If the Pueblo of Zuni has concerns regarding any traditional religious or cultural areas, or other historic or

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**NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND  
REQUEST FOR APPEAL**

<b>Applicant:</b> Homestake Mining Company	<b>File Number:</b> 200600209	<b>Date:</b> 4/21/06
<b>Attached is:</b>		<b>See Section below</b>
INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)		A
PROFFERED PERMIT (Standard Permit or Letter of permission)		B
PERMIT DENIAL		C
<input checked="" type="checkbox"/> APPROVED JURISDICTIONAL DETERMINATION		D
PRELIMINARY JURISDICTIONAL DETERMINATION		E

**SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at <http://usace.army.mil/inet/functions/cw/cecwo/reg> or Corps regulations at 33 CFR Part 331.**

**A: INITIAL PROFFERED PERMIT:** You may accept or object to the permit.

**ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the DISTRICT ENGINEER for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

**OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the DISTRICT ENGINEER within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the DISTRICT ENGINEER will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the DISTRICT ENGINEER will send you a proffered permit for your reconsideration, as indicated in Section B below.

**B: PROFFERED PERMIT:** You may accept or appeal the permit.

**ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the DISTRICT ENGINEER for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

**APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the DIVISION (not district) ENGINEER (address on reverse). This form must be received by the DIVISION ENGINEER within 60 days of the date of this notice.

**C: PERMIT DENIAL:** You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the DIVISION (not district) ENGINEER. This form must be received by the DIVISION (not district) ENGINEER within 60 days of the date of this notice.

**D: APPROVED JURISDICTIONAL DETERMINATION:** You may accept or appeal the approved JD or provide new information.

**ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

**APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the DIVISION (not district) ENGINEER (address on reverse). This form must be received by the DIVISION ENGINEER within 60 days of the date of this notice. Exception: JD appeals based on new information must be submitted to the DISTRICT ENGINEER within 60 days of the date of this notice.

**EXCEPTION:** Appeals of Approved Jurisdictional Determinations based on new information must be submitted to the District engineer within 60 days of the date of this notice.

**E: PRELIMINARY JURISDICTIONAL DETERMINATION:** You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

**SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT**

**REASONS FOR APPEAL OR OBJECTIONS:** (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record )

**ADDITIONAL INFORMATION:** The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record Neither the appellant nor the Corps may add new information or analyses to the record However, you may provide additional information to clarify the location of information that is already in the administrative record.

**POINT OF CONTACT FOR QUESTIONS OR INFORMATION:**

If you have questions regarding this decision and/or the appeal process you may contact:

**DISTRICT ENGINEER**  
Albuquerque District, Corps of Engineers  
Attn: CESP-OD-R, Regulatory Branch  
4101 Jefferson Plaza NE  
Albuquerque, New Mexico 87109-3435  
(505) 342-3283

If you only have questions regarding the appeal process you may also contact:

**DIVISION ENGINEER**  
Army Engineer Division, South Pacific, CESP-DM-O  
Attn: Doug Pomeroy, Administrative Appeal Review Officer  
333 Market Street, San Francisco, CA 94105 (415-977-8035)  
(Use this address for submittals to the DIVISION ENGINEER)

**RIGHT OF ENTRY:** Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent \_\_\_\_\_ Date: \_\_\_\_\_ Telephone number: \_\_\_\_\_

15724 2006



DEPARTMENT OF THE ARMY  
ALBUQUERQUE DISTRICT, CORPS OF ENGINEERS  
4101 JEFFERSON PLAZA NE  
ALBUQUERQUE NM 87109-3435

April 21, 2006

Operations Division  
Regulatory Branch

Mr. Alan Kuhn  
Senior Principal Consultant  
Kleinfelder  
8300 Jefferson NE, Suite B  
Albuquerque, New Mexico 87113

Dear Mr. Kuhn:

This replies to your April 12, 2006, e-mail correspondence regarding the proposed construction of an evaporation pond at the old Homestake Mine area near Grants, Cibola County, New Mexico. We have assigned Action No. 2006 00209 to this activity. I also discussed this work with you by telephone on April 19, 2006.

We have evaluated the information you provided and studied the project description and the other records and documents available to us. The initial site of the evaporation pond shown in your e-mail was located within San Mateo Creek. However, during our telephone conversation, you agreed to move the pond to a site that does not contain any waters of the United States. Provided the evaporation pond is located in uplands and will not involve the placement of any dredged or fill material into waters of the United States, the construction of the pond will not require authorization under Section 404 of the Clean Water Act.

Our disclaimer of jurisdiction is only for Section 404 of the Federal Clean Water Act. Other Federal, state and local laws may apply to the proposed work. Therefore, you should also contact other Federal, state and local regulatory authorities to determine whether the construction of the proposed evaporation pond may require other authorizations or permits.

This letter contains an approved jurisdictional determination for the proposed project. If you object to this determination, you may request an administrative appeal under Corps' regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this determination, you must submit a completed RFA form to the South Pacific Division Office at the following address:

Mr. Douglas R. Pomeroy  
Division Review Office  
(ph (415)977-8035, fax (415)977-8047)  
South Pacific Division  
333 Market Street  
San Francisco, CA 94105

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by June 20, 2006.

It is not necessary to submit an RFA form to the Division office if you do not object to the determination in this letter.

This determination will be valid for 2 years from the date of this letter unless new information warrants revision of the determination within that time. Please be aware that this determination was made based on submitted information without a site visit.

If you have any questions regarding this determination, please feel free to contact me at (505) 342-3280 or e-mail me at james.a.wood@usace.army.mil. For more information about the regulatory program, please see our web site at [www.spa.usace.army.mil/reg](http://www.spa.usace.army.mil/reg).

Sincerely,



James A. Wood  
Regulatory Project Manager

Enclosure

Copy furnished:

Cibola County  
Floodplain Management Office  
515 West High Street  
Grants, NM 87020-2526

## 7.0 LIST OF PREPARERS

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### Homestake Mining Company of California (HMC) Staff

Mr. Alan Cox, Project Manager  
Mr. Dan Kump, Senior Project Engineer

### Kleinfelder Inc.,

Dr. Alan Kuhn, Principal Engineer  
Dr. Louis J. Bridges, Senior Project Manager  
Mr. Richard Sykes, Project Manager  
Mr. Steve Baur, Staff Professional II  
Mr. Cody Landon, CADD  
Ms. Courteny Vellejo, Staff Professional II

## 8.0 LIST OF REFERENCES

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