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**Bureau of Land Management**

Environmental Assessment  
DOI-BLM-UT-Y010-2011-0162-EA

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**La Sal No. 2 Uranium Sampling Project**  
NW ¼ Section 34, NW ¼ Section 35, T.29N S., R.24 E.  
San Juan County, Utah

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**Location:** Lisbon Valley uranium district (also known as the Big Indian uranium district) approximately six air miles south of the community of La Sal in San Juan County, Utah

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## **La Sal No. 2 Uranium Sampling Project DOI-BLM-UT-Y010-2011-0162-EA**

### **1.0 PURPOSE & NEED**

#### **1.1 INTRODUCTION**

Laramide La Sal, Inc. (Laramide) is planning for underground uranium exploration activities south of the community of La Sal, San Juan County, Utah. Laramide has identified its exploration plan as the La Sal No. 2 Uranium Sampling Project. See *Figure 1: General Location Map*.

This Environmental Assessment (EA) documents the environmental analysis of the proposed underground exploration program and provides the BLM with information to make an informed decision on whether to approve the project or determine that there are significant impacts that require the preparation of an EIS (environmental impact statement). The EA process also provides a forum for public review and comment on the project and its associated relevant issues and environmental analysis. "Significance" is defined by NEPA and is found in regulation at 40 CFR 1508.27.

If, as a result of the EA analysis, the BLM decision maker determines that this project has "significant" impacts, then an EIS would be prepared for the project. If not, the BLM would issue a Decision Record (DR) and "Finding of No Significant Impact" (FONSI), approving the selected alternative, whether that is the proposed action or another action alternative.

This EA addresses mineral sampling and surface occupancy reasonable to exploration activities. If Laramide's underground exploration work proves successful in identifying an economically viable resource, the BLM would require Laramide to submit a plan of operations for mining and the BLM would undertake a separate NEPA action for that proposed activity.

#### **1.2 BACKGROUND**

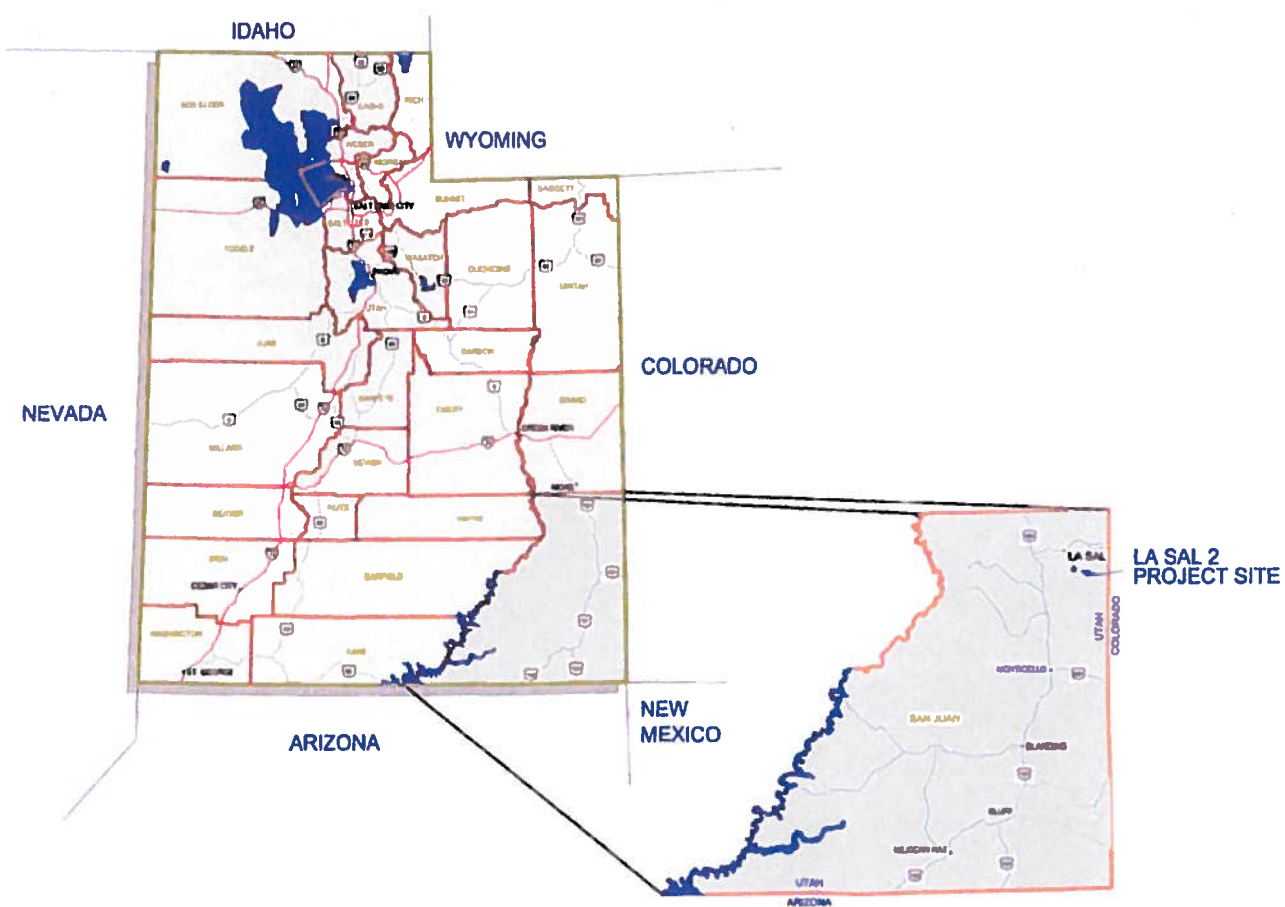
In December 2010, Laramide filed a *Plan of Operations* for its underground exploration program with the Moab Field Office of the Bureau of Land Management (BLM). The BLM determined the plan of operations to be administratively complete on April 15, 2011 and, because the exploration activity involves the removal of more than 1,000 tons of presumed ore, which is beyond *Notice* level work and requires a mining *Plan of Operations* as defined by the Federal Regulations at 43 CFR 3809.11 (b), this EA was prepared.

The La Sal No. 2 Project is planned for a site that has undergone past surface disturbance. Homestake Mining Company (Homestake) developed both a decline and a ventilation raise at the site in the early 1980s and delivered an estimated 46,610 tons of uranium ore to off-site mills. There was no on-site mill at the La Sal No.2 Project site. Declining and depressed uranium prices in the 1980s resulted in Homestake closing and reclaiming the site. Under the

proposed underground exploration project, Laramide would place surface facilities on lands previously disturbed by the Homestake operation.

The La Sal No. 2 Project is located in the Lisbon Valley Uranium District (also known as the Big Indian District) located approximately six air miles south of the community of La Sal in San Juan County, Utah. The planned Laramide portal facility would be accessed from County Road 306 (the road known locally as "Big Indian Road"). See *Figure 1: General Location Map*.

The proposed surface portal facilities are on BLM administered lands in the NW¼ of Section 35, T.29½ S., R.24 E. The mineralized zones are located in portions of Sections 26 and 34, T.29½ S., R.24 E., and Section 33, T.29 S., R.24 E. The ventilation/escape raise is located in Section 34, T.29½ S., R.24 E.

**Figure 1: General Location Map**

**La Sal No. 2 Uranium Sampling Project**  
**NW ¼ Section 34, NW ¼ Section 35, T.29 ½ S., R.24 E.**  
**San Juan County, Utah**

**(The total project area is approximately 5 acres; all of which is previously disturbed ground)**



The proposed project would include the rehabilitation of the existing decline and ventilation/escape raise, along with the placement of temporary surface support facilities such as an office trailer, a miner change trailer (dry), a maintenance facility, a fuel storage area, and stormwater management and explosive storage. Approximately 5 acres would be used for the portal area, raise, and site access road. Once underground in the designated mineralized zone, Laramide plans to conduct geologic mapping, longhole drilling with gamma probing, and bulk sample collection for metallurgical and mill compatibility studies. There would be no on-site mill or associated tailings facilities at the La Sal No. 2 Project site, and any geologic and bulk samples would be shipped off-site for testing and analytical work.

### **1.3 PURPOSE AND NEED FOR THE PROPOSED ACTION**

The Moab Field Office's Record of Decision and Resource Management Plan (RMP) of October 2008 specifies that the BLM will "Provide opportunities for environmentally responsible exploration and development of mineral and energy resources subject to appropriate BLM policies, laws, and regulations" (BLM 2008:73). The Federal Land Policy and Management Act of 1976 (FLPMA) and regulations at 43 CFR Subpart 3809 mandate that operations authorized by the mining laws are conducted in a manner that will prevent unnecessary or undue degradation of public lands. Accordingly, the BLM's primary purpose for considering the Proposed Action, as stated in the 2008 RMP, is to "...evaluate all operations authorized by the mining laws in the context of its requirement to prevent unnecessary and undue degradation of Federal lands and resources. Consistent with the rights afforded claimants under the mining laws, operations conducted after this RMP will be required to conform to the surface disturbing stipulations developed in this RMP" (Management Decision MIN-6; BLM 2008:74). To accomplish its primary purpose, BLM must ensure that operations meet the performance standards outlined at 43 CFR 3809.420. These include compliance with federal and state air quality and water quality standards, and measures to and cultural and wildlife resources.

As required by federal regulations at 43 CFR 3809.11, Laramide has filed a Mining Plan of Operations for exploration to bulk sample 20,000 tons of presumed uranium ore for testing. The underlying need for the Proposed Action is for Laramide to explore for and assess a potentially valuable deposit of uranium from unpatented mining claims under the authority of the Mining Law of 1872, as amended. These lands are not withdrawn from mineral entry and therefore, are subject to location under the mining laws of the United.

The BLM manages public lands for multiple uses, including the exploration and development of locatable minerals. The Energy Policy Act of 2005 emphasizes adding energy supplies from diverse sources including nuclear power. The Energy Independence and Security Act of 2007, was enacted, in part, to move the United States toward greater energy independence. The BLM recognizes that public lands are an important source of the nation's energy and mineral resources. The Proposed Action would provide a domestic source of uranium that may help fuel nuclear power plants in the United States, and therefore would help meet BLM's broad policy objectives.

#### **1.4 DECISION FRAMEWORK**

The BLM is responsible for completion of the analyses found in this EA. In accordance with regulations implementing NEPA (40 CFR 1500), the results of these analyses would form an important part of the BLM's decision on the proposed exploration project.

The BLM considered comments submitted by the public, organizations, and government agencies as part of the preparation of this EA and would issue a separate Decision Record for the project. The BLM may decide to:

- (1) Adopt the proposed exploration plan as submitted by Laramide;
- (2) Adopt the proposed Laramide plan with design changes or additional mitigation measures; or,
- (3) Determine that the proposed exploration activity has significant environmental impacts and decide to prepare an Environmental Impact Statement under the National Environmental Policy Act regulations.

The BLM regulates locatable mineral exploration and mining operations on its administered lands under 43 CFR Part 3809. The BLM recognizes that prospectors (and miners) have a statutory right, not a mere privilege, under the Mining Law of 1872 to enter BLM administered lands for the purposes of mineral exploration, development, and production. The BLM may not unreasonably restrict the exercise of that right; however, the BLM must protect the surface of its administered lands from needless surface resource damage.

#### **1.5 CONFORMANCE WITH BLM RESOURCE MANAGEMENT PLAN**

The Proposed Action conforms to the Moab Field Office RMP, signed October 31, 2008. It is located in an area that the BLM has identified as available for mineral entry. In addition, on page 73 of the RMP, the BLM's stated goal for this area is to "provide opportunities for environmentally responsible exploration and development of mineral and energy resources subject to appropriate BLM policies, laws and regulations."

#### **1.6 RELATIONSHIP TO STATUTES, REGULATIONS, OR OTHER PLANS**

Mining operations are subject to a wide range of federal, state, and local requirements. Many of these require permits, approvals or consultations before the mining operations commence, whereas others mandate the submission of various documents, or establish specific prohibitions or standards (EPA 1994).

In addition to BLM regulations, the La Sal No.2 Project complies with the San Juan County Master Plan, the State of Utah Division of Oil Gas and Mining (UDOGM) requirements for mineral exploration/development activities.

The project is subject the purposes and requirements of the major federal, state, and local statutes. The Proposed Action would be subject to following laws, regulations, and policies where applicable: Federal Land Management and Policy Act, Endangered Species Act, the

National Historic Preservation Act, the Clean Air Act, the Clean Water Act, the Federal Mine Safety and Health Act, and the Resource Conservation and Recovery Act, 27 CFR 555 Commerce in Explosives, 43 CFR 3809 Mining Claims Under the General Mining Laws, 43 CFR 3715 Use and Occupancy Under the General Mining Laws, Comprehensive Environmental Response, Compensation and Liability Act, 43 CFR 3715 Use and Occupancy Under the General Mining Laws, Comprehensive Environmental Response, Compensation and Liability Act, General Mining Law of 1872, Migratory Bird Treaty Act, and the National Environmental Policy Act (NEPA).

Other requirements that would be met include building permits from the San Juan County Building Department; submission to the Utah Division of Oil, Gas and Mining (UDOGM) of a Notice of Intent to Conduct Exploration and issuance of an Exploration Permit by the UDOGM.

### **1.7 IDENTIFICATION OF ISSUES**

Scoping is a process for identifying issues related to a proposed project. An issue is defined as a point of disagreement, debate, or dispute with a Proposed Action based on some anticipated environmental effect. Issues point to environmental effects and may lead to identification of design features incorporated into the Proposed Action, mitigation measures, or alternatives. For internal scoping, BLM resource specialists utilized the Interdisciplinary Team Checklist found in Appendix A. For a full summary of the public participation process see Chapter 5.

Public scoping for the project began on April 15, 2011, when the BLM posted the Proposed Action on the BLM Utah's Environmental Notification Bulletin Board. The mining plan of operations was posted on the Moab Field Office's website on April 15, 2011. A legal notice printed in the Moab "Times Independent" and Monticello's "San Juan Record" newspapers were published on May 4 and May 5, 2011 respectively. The scoping period ended on June 6, 2011.

During the scoping period, the BLM received only three comment letters on the Proposed Action and mine plan for exploration. These letters presented Air Quality (particularly Radon Emissions), Geology (potential to remove 100,000 tons of material), Noise, Water Quality and Wildlife as issues to be analyzed in the EA. Some of the comments expressed in the letters are outside the scope of this EA or are addressed through standard operating procedures because they are required by federal law, rule, policy or regulation. A table listing the public scoping comments and the BLM responses is presented in Appendix B.

The BLM solicited a public review of the EA in October 2011. Four comment letters were received. As a result of the public comments on the EA, noise was added as a separate issue. Before the EA went out for public comment, noise was only analyzed under Wildlife. A table listing the public comments on the EA and the BLM responses are listed in Appendix D.

NEPA requires that the discussion of issues and concerns are commensurate with the potential impacts. Federal Council on Environmental Quality (CEQ) Regulations (1500.5(c)) state —impacts shall be discussed in proportion to their significance. Other CEQ Regulations (1501.7 (3)) make it clear that discussion of all resources is not necessary, only those that are

significant. This allows the BLM to narrow the discussion of the issues in the EA to a brief presentation (e.g., Interdisciplinary Team Checklist in Appendix A) of why the Proposed Action would not have a significant effect, and focus the discussion on relevant resources that may be impacted. The national BLM NEPA handbook no longer requires a listing of the —Critical Elements of the Human Environment, however, the Utah NEPA Guidebook and direction from the Utah BLM State Office allows use of the Interdisciplinary Checklist found in Appendix A. Based on scoping, the BLM found 11 issues and seven issues that required detailed discussion in the EA.

#### **1.7.1 Air Quality**

##### **Issue 1 - Ventilation/escape raise rehabilitation**

Would the reopening of the old Homestake ventilation/escape raise cause an unsafe release of radon, radon progeny, and other radioactive particulates into the atmosphere?

##### **Issue 2- Vented material**

Would the Laramide operations cause a venting of radon gas, radioactive particulates, dust, and other potentially deleterious materials that could adversely impact workers, nearby residents, human activities, livestock, wildlife, vegetation and soils?

#### **1.7.2 Noise**

##### **Issue 1- Nearest residence as noise receptor**

How will noise generated by the generators and the ventilation shaft affect the nearest residence?

#### **1.7.3 Soils Resources**

##### **Issue 1 – Soils impacts**

What are the effects to the soils from installing the exploration facilities?

#### **1.7.4 Water Quality**

##### **Issue 1 – Water quality**

What is the potential to impact groundwater in the workings or downstream drainages?

##### **Issue 2**

What are the effects from using an offsite water source on existing hydrologic systems at the site?

#### **1.7.5 Socioeconomics**

##### **Issue 1 - Jobs**

How many local jobs would be created for residents of Grand and San Juan counties?

##### **Issue 2 – Other local economic benefits**

What would be the economic benefit from the project to Grand and San Juan counties?

#### **1.7.6 Wildlife**

##### **Issue 1 – Disturbance**

**Would the project cause impacts to wildlife, including migratory birds and raptors?**

#### **1.7.7 Geology / Mineral Resources / Energy Production**

##### **Issue 1- Mineral quantities**

**How much uranium material was previously mined by Homestake from the La Sal No. 2 site and would planned bulk sampling exceed 100,000 tons?**

##### **Issue 2 – Future mine possibilities**

**Does the proposed exploration activity mean a mine would be developed?**

#### **1.8 ISSUES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS**

Resource issues that were considered but eliminated from further analysis are identified in ID Team Checklist presented in Appendix A. None of the issues raised by the public were eliminated from analysis in this EA. Appendix B contains a list of responses to public scoping comments.

#### **1.9 SUMMARY**

This chapter has presented the purpose and need of the proposed project, as well as the relevant issues, i.e., those elements of the human environment that could be affected by the implementation of the proposed project. In order to meet the purpose and need of the proposed project in a way that resolves the issues, the BLM has considered and/or developed a range of action alternatives. These alternatives are presented in Chapter 2. The potential environmental impacts or consequences resulting from the implementation of each alternative considered in detail are analyzed in Chapter 4 for each of the identified issues.

## **2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION**

### **2.1 INTRODUCTION**

This chapter describes three alternatives: (A) No Action; (B) Proposed Action; and (C) Proposed Action with Line Electric Power. In addition, this chapter discusses several other alternatives that were considered for the project but eliminated from detailed analysis.

Alternative A, the No Action Alternative A, is required by the CEQ regulations (40 CFR 1502.14) and provides important baseline information. Alternative B is the Proposed Action and consists of Laramide's proposal. Alternative C was developed to address the issue of noise. It includes all the elements of Alternative B, but the diesel generators used as the sole source for electric power at the site would be replaced with electric service provided by line power. Alternative C was an alternative raised by the public during public scoping.

This chapter also includes the environmental management and mitigation measures, including reclamation, that have been proposed by Laramide, which include additional design criteria that the BLM would require for the project.

### **2.2 ALTERNATIVE A – NO ACTION**

This alternative serves as a baseline to compare the effects of the action alternatives. Under the no action alternative, underground exploration activities and support facilities would not be authorized; if the proposed exploration activities were determined by the BLM to cause unnecessary or undue degradation of public lands. If the uranium exploration project is not approved, sampling for uranium and associated surface disturbances would not occur in the present location and other uses such as livestock grazing would continue.

### **2.3 ALTERNATIVE B – PROPOSED ACTION**

Laramide proposes to conduct underground exploration assessment work of the past Homestake operation that was closed in the 1980s. Under the Proposed Action, Laramide would assess the integrity of the past workings and conduct necessary rehabilitation. The underground exploration work would include geologic mapping, underground drilling and perform gamma probing, geotechnical investigative work, test mining procedures, and collection of bulk samples for metallurgical and mill compatibility studies. Details about the planned exploration activities are set forth in *Exploration Plan of Operations, La Sal No. 2 Project, San Juan County, Utah, revised February 2011* that was received by the BLM on March 1, 2011.

Laramide plans to retain contractors for the underground rehabilitation and exploration work. The contracted firm(s) would be responsible for mobilization and demobilization of the necessary temporary infrastructure and equipment. To facilitate the underground rehabilitation and exploration work, Laramide would install temporary surface infrastructure as shown on *Figure 2: Portal Site Plan Layout*, and as listed in the following:

- Office trailer for management, engineering and administrative personnel
- Miner's change trailer
- Shop with concrete pad for routine equipment maintenance
- Water storage tank (10,000 gallon capacity), with water hauled to site
- Portable diesel generators for electric power
- Diesel fuel storage (4,000 gallon capacity)
- Ventilation fans at both escape raise and at portal
- Compressor facility near adit in side pole barn to reduce noise
- Buried concrete vaults (2 vaults at 5,000 gallon capacity each) for sanitary waste; no leach field – waste hauled offsite by licensed contractor
- Communication infrastructure – telephone and internet lines buried in access road or on surface
- Surface magazines for explosive storage (locked and fenced) with main explosive storage moved underground as space is available

An estimated 5 acres would be re-disturbed by this plan of operations, as shown on *Figure 3: Site Overview with Portal and Raise Locations* and segregated as follows:

- |                                   |           |
|-----------------------------------|-----------|
| • Main Access Road                | 0.6 acre  |
| • Access to Water Tank & Pad Area | 0.1 acre  |
| • Portal Area                     | 4.1 acres |
| • Ventilation/Escapes Raise       | 0.1 acre  |

No uranium processing would occur at the site. Uranium bulk samples removed from underground would be stockpiled on a flattened, clay or synthetic-lined surface next to the adit, and then re-loaded onto highway trucks for haulage to the designated mill for test work. The stockpile area would have capacity to store an estimated 5,000 tons of uranium mineralized material with maneuvering and loading room for a front-end loader and trucks.

Over the course of the underground exploration program, Laramide estimates that 10,000 to 20,000 tons of uranium bulk samples would be hauled to the designated mill at a shipment rate that would approximate 200 tons per day. Using contracted trucks with a capacity of 30 tons, an estimated 6 or 7 round trips would be made per day for a period of 50 to 100 days for the program. Laramide would retain a contractor to haul uranium bulk samples in "campaigns" (e.g., trucks hauling solidly for a week). This would be a more efficient method of haulage for Laramide. In addition, such haulage can be scheduled to account for adverse weather, thereby promoting highway and truck driver safety.

Transport of presumed ore would be to the south down the Big Indian Valley Road to Highway 191. Laramide and their contractors would follow the U.S. Department of Transportation requirements of Title 49 CFR 171 through 49 CFR 178 that requires that no leakage of uranium ore from the truck trailer can occur and also stipulates dust and contamination control measures such as "tarpaulin covers and tailgate closer requirements".

Also, in accordance with the Utah Department of Environmental Quality (DEQ) Division of Radiation Control, ore trucks would be covered with tarps and checked for radiation levels before leaving the mine site, and prior to returning to the mine from the processing facility. If gamma readings are found to exceed the standards of Title 49 CFR 173, (that the external dose rate may not exceed an external radiation level of 1,000 millirems per hour [mrem/hr] at 3 meters from the unshielded material), the ore truck would be washed using a power wash (with captured water) or other approved method to meet appropriate radiation standards. This measure would be enforced by the Utah Division of Radiation Control (DEQ 2009).

During the proposed underground exploration work, Laramide does not plan to transport any underground waste rock material to the surface. Rather, given the limited nature of the proposed underground exploration program, it should be possible for Laramide to place or backfill any waste rock encountered during bulk sample extraction into existing underground openings left by Homestake from the previous underground operations. Should waste rock need to be stored on the surface, Laramide would submit a modification to the exploration mine plan.

The underground and surface equipment to be used at the La Sal No. 2 Project site are listed in *Table 1: Projected Mobile Equipment List*.

**Table 1: Projected Mobile Equipment List**

<b>UNDERGROUND EQUIPMENT</b>	<b>SURFACE EQUIPMENT</b>
Loader (4-5 cubic yard bucket capacity)	Backhoe
Truck (10-15 ton capacity)	Dozer*
Drill Jumbo	Motor Grader*
Underground Grader	Fork Lift
Personnel Tractors	Front End Loader* (7-8 cubic yards)
Rock Bolter	Water Truck* (8 - 10,000 Gallon)
Jackleg Drill (hand-held pneumatic drills)	Supply Truck (flatbed truck)
Longhole Drills	Light Use Vehicles (pickups)
Supply, Lube and Powder Trucks	
Note : * These vehicles would be contracted and used on an as-needed basis	

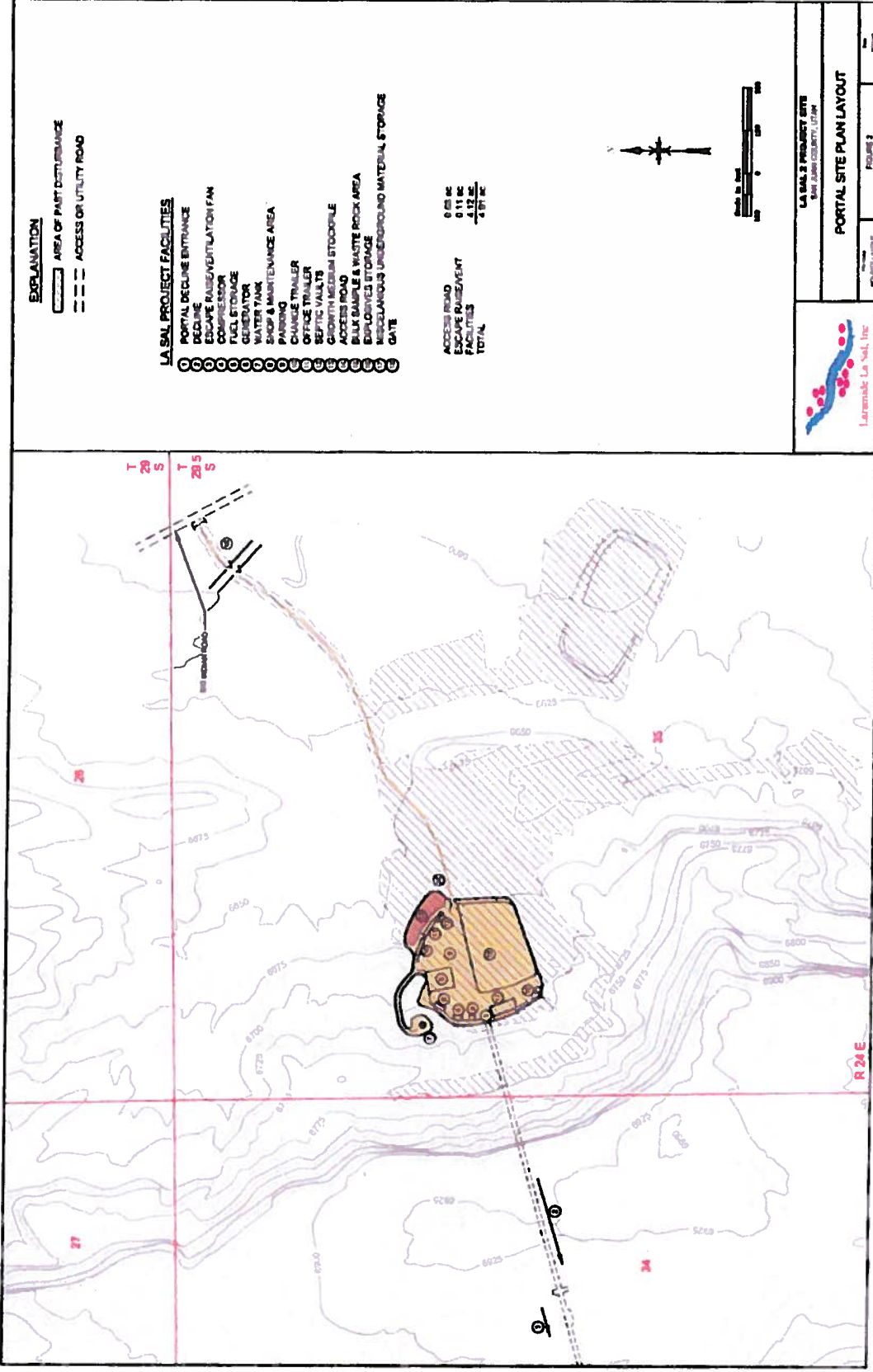
Surface water and shallow ground water are scarce at the La Sal No. 2 Project site. The historic underground mine was dry. Given the short duration of underground exploration activities, Laramide plans to purchase water from a private off-site source and would contract for water haulage to the site.

The water would be stored in a storage tank located above the portal area and would be distributed to the portal area via a buried pipeline that is located within the bed of the proposed access road to the water tank. Water would be used underground for drilling to control dust, remove drill cuttings, and cool drill bits. On the surface, water would be necessary for showers and sanitary use in the change facility trailer. A small amount of water may be used in the office trailer and the shop facility. It is expected that the water would not be acceptable for drinking purposes; therefore, "Do Not Drink the Water" warning signs would be posted at

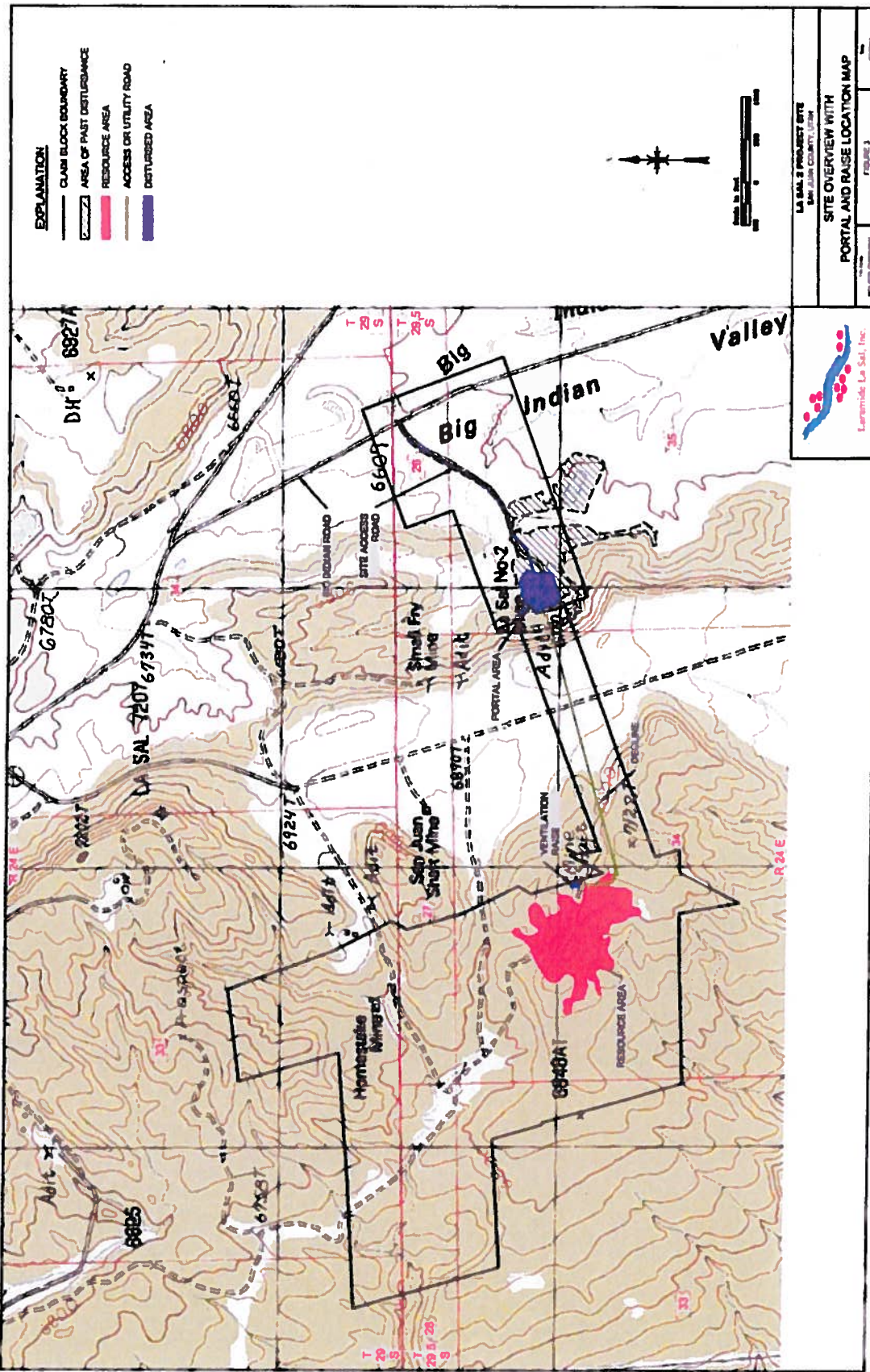


the site, and either bottled water would be provided for drinking purposes, or a reverse osmosis treatment unit could be constructed to meet Utah drinking water standards.

Figure 2: Portal Site Plan Layout



### Figure 3: Site Overview with Portal and Raise Locations



The La Sal No. 2 Project site was previously disturbed and reclaimed. The proposed project would be contained within the boundaries of that previous disturbance. Past reclamation practices have shown that the site can be successfully reclaimed.

The emphasis of Laramide's proposed reclamation would be to close and seal the mine portal (and the ventilation raise), remove surface facilities and infrastructure, reclaim the main access road from County Road 306 to the portal pad, and establish a vegetative community on the disturbed surface areas.

Reclamation would begin within one year of the completion of the bulk sampling project, unless a plan of operations amendment is filed to continue sampling, or to begin mining because sampling identified a marketable deposit. Laramide would be required to submit a mining plan of operations for mining amendment to the BLM, which would undergo an environmental analysis under a separate action. The general steps to be used in reclaiming disturbed areas at the La Sal No. 2 Project upon permanent cessation of project activities would be as follows:

- Removal of structures and facilities;
- Closure of the portal and ventilation/escape raise;
- Re-contouring regrading;
- Growth medium replacement; and
- Fertilizing, mulching and seeding.

#### **2.4 PROPONENT-COMMITTED MANAGEMENT AND MITIGATION MEASURES**

Laramide would implement and maintain numerous environmental management and mitigation measures to minimize environmental effects and to ensure productive multiple uses both during and following exploration and reclamation. Some of these measures are standard practices or the result of BLM or other government agencies' regulations and policies.

##### **2.4.1 Technology and Practices**

Laramide would undertake accepted and standard underground technology and practices in the re-opening, rehabilitation and exploration work at the La Sal No. 2 Project.

##### **2.4.2 Reclamation and Post-Exploration Land Use**

Laramide would undertake reclamation action once activities have ceased and it is determined that no future commercial operations would occur. Laramide would restore a post-exploration (post-mining) land use of wildlife habitat, which is the current land use at the site.

##### **2.4.3 Compliance with Other Laws**

Laramide would comply with other federal and state laws pertinent to the operations at the La Sal No. 2 Project, and obtain all required permits, including exploration and reclamation requirements of the Utah Division of Oil, Gas and Mining (UDOGM).

#### 2.4.4 Access Routes

Laramide plans to use the past access road into the portal site of the La Sal No. 2 Project; the basic integrity of this road remains intact so that minimal grading would be necessary to re-establish this road. This access road is currently a designated route in the Moab Field Office's Travel Management Plan. Access to the ventilation/escape raise would be on an existing County road that would become a designated road and would remain open for public access after completion of the proposed project. Some minor maintenance including blading to re-establish drainage along the roads to eliminate erosion and rutting would be required. Access routes planned for use are currently designated on the BLM travel management plan, and would remain open after completion of the proposed project.

#### 2.4.5 Air Quality

Laramide would comply with all applicable federal and Utah air quality standards. Periodic watering (and/or chemical treatment) would be used as appropriate to control fugitive dust generation at the portal area and on the site access road. A water truck would be used in the dryer months, wetting the road to minimize dust. The access road would be periodically maintained by a motor grader to remove any rock, silt or other debris.

Diesel generators used on site would be operated under air quality limitations required by Utah air quality rules and regulations. Mobile generators would be maintained on a regular basis to ensure proper operation and to minimize emissions.

#### 2.4.6 Water Quality

Laramide would comply with applicable federal and Utah water quality standards, although the mine is expected to be "dry underground".

A surface water diversion structure previously constructed by Homestake Mining is still functional. This diversion channel is located above the portal and routes precipitation runoff away from the portal and the facilities at the portal site. Wattles and sediment fencing would be used to control erosion at the portal and ventilation/escape raise site, as necessary.

Travel across drainages would be restricted to designated roads that access the ventilation shaft and the portal pad. Laramide plans to maintain a compact operation, and, upon permanent site closure, the site would be reclaimed. No new culverts are proposed for access roads. There is one existing culvert located beneath the main access road, which would be sufficient for proposed activities.

#### 2.4.7 Solid Wastes

Laramide would comply with applicable federal and Utah standards for the disposal and treatment of solid wastes. Laramide would not dispose of any solid waste on site. Waste bins would be provided for trash and refuse. A disposal company would periodically pick up the bins for transport and off-site disposal at a certified landfill. There would be no open burning of garbage and refuse at the site. Petroleum waste products would be stored in approved



containers separate from other trash products and transported off site for recycling or disposal in an approved waste facility. Vault toilets would be constructed. The solid and liquid wastes would be hauled off site by a licensed contractor.

#### 2.4.8 Wildlife

Laramide would minimize disturbance to wildlife habitat by maintaining a compact operation. Vegetation would be cleared only in those areas necessary for project activities. Trash and other miscellaneous inert (non-hazardous) garbage would be contained in on-site containers, and then hauled to an off-site landfill for disposal. Special care would be taken with used oils, grease and antifreeze; these chemicals would be handled separately from normal trash and garbage.

#### 2.4.9 Invasive Plant Species

Laramide would minimize disturbance by maintaining a compact operation and keeping surface facilities to areas that have been previously disturbed by past mining activities. Vegetation would be cleared only in those areas necessary for surface facilities. At the permanent conclusion of activities at the site, disturbed areas would be stabilized, stockpiled growth medium would be redistributed over disturbed areas, and the project area would be seeded in accordance with the BLM-approved reclamation plan.

Laramide would control undesirable and noxious weeds within disturbed areas. Hand pulling, digging, mechanical methods, and/or application of appropriate (BLM-approved) herbicides would be used for weed control. Certified noxious weed-free mulch and seed mixtures would be used to reclaim disturbed sites and control noxious weeds.

#### 2.4.10 Cultural and Paleontological Resources

If any cultural or paleontological resources are unearthed or otherwise encountered during the construction work at the La Sal No. 2 portal site, such construction activities would cease in the area of the discovery, and Laramide would notify the BLM so that cultural or paleontological resources could be identified and appropriate resource protection measures developed and implemented per the BLM and the Utah State Historic Preservation Office.

#### 2.4.11 Fire

Laramide would comply with applicable federal and Utah fire law and regulations and would take all reasonable measures to prevent and suppress fires in the area of operations.

#### 2.4.12 Maintenance, Health and Safety.

Laramide would maintain structures, equipment and site facilities in a safe and orderly manner. Gates would be installed to prevent access to portal facilities, and the vent raise would be fenced to prevent access and potential injury to the public.

Any activity related to an underground operation with associated surface facilities would require that the health and safety aspects be considered as an integral part of the planning

aspects and operation at the site. The La Sal No.2 Project would conform to all health and safety rules and regulations of the Mine Safety and Health Administration (MSHA). Such MSHA regulations require worker safety training and the maintenance of a ground control plan for underground activities.

## **2.5 ALTERNATIVE C – LINE ELECTRIC POWER**

Alternative C encompasses all of Alternative B's features and activities, but the diesel generators used as the sole source for electric power at the site would be replaced with electric service provided by line power.

When Homestake operated the La Sal No. 2 mine, there was a powerline that supplied the mine with electricity. Under Alternative C, Laramide would contract with Empire Electric to re-establish this electrical service. The main transmission line parallels San Juan County Road D-2980 and the electrical distribution line would follow the old powerline location. The distribution line would be 0.6 miles (3,168 feet) and about 8 feet wide. Total acreage for the powerline is about 0.6 acres. This Alternative would generate about 5.6 acres of surface disturbance all within previously disturbed areas. An on-site transformer would reduce the transmission voltage for distribution to the Laramide surface facilities and underground workings. Electric service would serve the portal facilities and the vent raise.

Once electric service is installed, Laramide would maintain on-site diesel generators as backup electric power during times of interrupted or reduced power supply.

## **2.6 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS**

The BLM considered several other alternatives for the La Sal No. 2 Project, but they were eliminated from consideration because they did not meet the purpose and need for the project, did not address identified issues, or were impractical or unreasonable. The following subsections address alternatives that were raised during the initial BLM ID Team meetings. These alternatives were considered by the BLM but eliminated from detailed evaluation because they did not meet the purpose and need of the Proposed Action.

### **2.6.1 Other Locations for Exploration**

No feasible location options exist for the exploration activities at the La Sal No. 2 Project. The location of mineralized zones necessarily controls the location and extent of the exploration work, and the use of the old Homestake workings provides the most feasible way to obtain bulk samples. The purpose and need for this EA is to respond to Laramide's exploration plan of operations, which is to assess the old Homestake workings and obtain a bulk sample from these workings.

### **2.6.2 Surface Drilling**

Laramide requires a bulk sample of 20,000 tons. Exploration through surface drilling would not provide this level of sample removal. Also, Laramide needs to assess the conditions and

integrity of the old mine workings left by Homestake. Because surface drilling would not meet the purpose and need for the project, it was eliminated from detailed consideration in this EA.

#### **2.6.3 Surface Extraction to Obtain Bulk Samples**

Given the depth of the mineralized zones (nearly 600-700 feet from the surface), it would not be practical to obtain bulk samples via surface excavations, i.e. Test Pits. There would be extraordinary amounts of waste rock (uneconomic) material to be removed, and the large amounts of surface disturbance that would require extensive reclamation. Given these reasons, this alternative was eliminated from further consideration in this EA.

#### **2.6.4 Alternative Energy Sources**

Possible alternative energy sources for the project would be solar or wind. Wind generated power would require a study to assess the appropriate tower height and blade length needed to generate the power needed to run the operation. Solar power would be expensive to install. The sampling project would only take 18 months. Long term installation of wind or solar generated power would be more feasible to use for a mining operation.

### **2.7 SUMMARY COMPARISON OF ALTERNATIVES**

This section summarizes the effects of each alternative. Environmental consequences of each alternative are addressed in Chapter 3, Environmental Analysis. *Table 2: Summary Comparison of Alternatives for Each Issue* compares the issues by alternative. Issues are discussed in Section 1.7, Identification of Issues, in Chapter 1, Purpose and Need for Action.



**Table 2: Summary Comparison of Alternatives for Each Issue**

Issue	Alternative A No Action	Alternative B Proposed Action	Alternative C Proposed Action with hard wire electric service
<b>Air Quality</b>			
<p>Would the reopening of the old Homestake ventilation/escape raise cause an unsafe release of radon, radon progeny, and other radioactive particulates into the atmosphere?</p> <p>Effects of radon, radon progeny, and other radioactive, dust, and other potentially deleterious materials that could adversely impact workers, nearby residents, human activities, livestock, wildlife, vegetation and soils.</p>	<p>None, the portal and vent raise would not be opened</p>	<p>Accumulated radon would be released upon opening of the portal and vent shaft; this is not expected to have lasting environmental effects as the radon would dissipate quickly in the atmosphere and is not expected to deposit residual radioactive particulates to soil, water and vegetation where livestock and wildlife would be affected. Proper MSHA ventilation would minimize effects.</p> <p>The SW prevailing winds in the area would dissipate any radon prior to reaching the nearest residents, 1.5 miles NE of the project area. The radon is expected to be well below the 10 mrem annual dose limit.</p> <p>Minor and localized dust abatement mitigation is built into the Proposed Action.</p> <p>The processing of the La Sal #2 ore samples at the White Mesa Mill would have negligible indirect impacts to workers, nearby residents, human activities, livestock wildlife, vegetation and soils from radon, radon progeny and other potentially deleterious materials.</p>	<p>Same as Alternative B</p>
<b>Noise</b>			
<p>How will noise generated by the generators and the ventilation shaft affect the nearest residence?</p>	<p>No added noise</p>	<p>80 – 90 decibels at 50 feet; dissipating to background levels with vegetation; terrain</p>	<p>Less than alternative B, as diesel generators are replaced by electric lines to portal and raise</p>

Issue	Alternative A No Action	Alternative B Proposed Action	Alternative C Proposed Action with hard wire electric service
<b>Soils</b>			
What are the effects to the soils from installing the exploration facilities?	None, no further disturbance	Approximately 5 acres of disturbance including soil compaction, erosion potential increase, decreased infiltration and reduced soil productivity	Same as Alternative B with added about 0.6 acres of disturbance to set the power pole line along the previously disturbed line.
<b>Water Quality</b>			
What is the potential to impact groundwater in the workings or downstream drainages?	None	<p>Negligible, as mine workings would be dry and only minimal amounts of water would be used for drilling &amp; dust control. The off-site water used for the operation meets the State Water Standards for Livestock use. Drinking water would be brought in from a commercial source.</p> <p>The indirect impacts to water quality from ore milling would be negligible and would not degrade water quality in vicinity of the mill below State of Utah numeric criteria pursuant to Utah Administrative Code R317-2.</p>	Same as Alternative B except some reduced potential of diesel fuel spill with use of "line" electric power versus on-site diesel generators.
What are the effects from using an offsite water source on existing hydrologic systems at the site?	None	Negligible	Same as Alternative B
<b>Socioeconomics</b>			
How many local jobs would be created for residents of Grand and San Juan counties?	None	13-14	Same as Alternative B
What would be the economic benefit from the project to Grand and San Juan counties?	\$ 0	\$3,544,545	Same as Alternative B

Issue	Alternative A No Action	Alternative B Proposed Action	Alternative C Proposed Action with hard wire electric service
<b>Wildlife</b>			
Would the project cause impacts to wildlife, including migratory birds and raptors?	None	Minimal – given small amount of disturbance which is 5 acres.	Some reduced noise with use of “line” electric power versus on-site diesel generator, and reduced chance of diesel fuel spill: avian powerline interaction potential, mitigated through line design. Total acreage is 5.6.
<b>Geology / Minerals Resources / Energy Production</b>			
How much uranium material was previously mined by Homestake from the La Sal No. 2 site and would planned bulk sampling exceed 100,000 tons?	None	The proposal is to remove 20,000 tons. Homestake removed 46,610 tons in late 70s early 80s. So total ore produces would be 66,610 tons.	Same as Alternative B
Does the proposed exploration activity mean a mine would be developed?	None	Unknown. If sampling identifies an economic deposit of uranium, then a Mining Plan of Operations would have to be submitted for mining that would undergo environmental analysis before approval.	Same as Alternative B

### 3.0 AFFECTED ENVIRONMENT

#### 3.1 INTRODUCTION

This chapter presents the potentially affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the impact area as identified in *Appendix A: Interdisciplinary Team Checklist* and presented in Chapter 1 of this assessment. This chapter provides the baseline for comparison of impacts/consequences described in Chapter 4.

#### 3.2 GENERAL SETTING

The average elevation ranges from 6600 to 7080 feet above sea level. The mean precipitation is just below 13 inches per year (Western Regional Climate Center, 2000).

The project area has a semi-arid climate with dry air, sunny days, clear nights, low precipitation, high evaporation, and large diurnal temperature changes. The average minimum temperature at La Sal, Utah, is about 33°F (F), but cold conditions are frequent in the winter, and nighttime temperatures often plunge below 0°F. Conversely, summertime temperatures can climb above 100°F, with the average maximum temperature at La Sal, Utah, being approximately 59°F (Western Regional Climate Center, 2000).

Annual precipitation averages around 13 inches at La Sal and 9 inches at Moab (Western Regional Climate Center, 2000). These include average annual snowfalls of nearly 45 inches at La Sal but less than 10 inches at Moab (Western Regional Climate Center, 2000).

Historic and modern land use practices in the project area have altered the natural vegetation regime. The modern vegetation matrix includes heavily chained areas, now mostly overgrown with tall sagebrush communities, as well as reclaimed mine areas consisting of rabbitbrush, four-winged saltbush, mountain mahogany, Utah serviceberry, single-leaf ash, and various bunch grasses. Remnants of pinyon-juniper stands predominantly occupy the slopes of the ridges and knolls. See *Figures 4 and 5* for photos of typical vegetation on the site.

**Figure 4: Typical Vegetation of Reclaimed Ventilation Raise**



**Figure 5: Typical Vegetation of Reclaimed Portal Site**



### **3.3 RESOURCES/ISSUES BROUGHT FORWARD FOR ANALYSIS**

#### **3.3.1 Air Quality**

##### **Issue 1 - Ventilation/escape raises rehabilitation**

Would reopening of the old Homestake ventilation/escape raise cause an unsafe release of radon, radon progeny, and other radioactive particulates into the atmosphere?

##### **Issue 2 - Vented material**

Would the Laramide operations cause a venting of radon gas, radioactive particulates, dust, and other potentially deleterious materials that could adversely impact workers, nearby residents, human activities, livestock, wildlife, vegetation and soils?

Rocks and soils in the vicinity of the La Sal No. 2 Sampling project contain naturally occurring radioactive material (U.S. Department of Energy [DOE] 2007). Most of the natural radioactivity is derived from the uranium-238 and uranium-235 decay chains. One of the products in the uranium-238 decay chain is radium-226 (Ra-226), which is the principal radionuclide of concern for characterizing the distribution of radioactivity in the environment. Ra-226 decays to radon.

Radon is a heavy, noble gas that does not react with other elements to create compounds. However, it is in the radioactive decay chain of uranium and, itself, is radioactive. Radon-222 has a half-life of 3.8 days, so does not stay long in the environment. Because radon-222 is heavier than air it tends to sink and disperses quickly in the atmosphere (Diaz, personal communication, 2012).

Radon is present at the site because it is a naturally occurring element and results in the degassing of the geologic materials and soils found in the Big Indian Valley area. The current levels of radon are low, and are described from the field work which is currently on-going and would continue should operations be authorized. Landauer Model DRNF (environmental) track-etch detectors have been deployed at nine locations at and near the La Sal Mine Site to monitor for pre-operation ambient radon concentrations in air. For quality control purposes a duplicate detector is placed at location 2 during each sampling quarter, approximately three months. Upon completion of each quarter each detector is exchanged with a replacement and returned to Landauer for high sensitivity analysis. The results for the first two quarters of data are shown below in *Table 3: Radon Track-Etch Detection Results*.

**Table 3: Radon Track-Etch Detection Results**

Location	Coordinates <sup>(1)</sup>		Comments	2011 Q3 Radon Concentration (pCi/L)	2011 Q4 Radon Concentration (pCi/L)	Average Radon Concentration (pCi/L)
	Northing	Easting				
1	10,417,876	2,282,480	Mine portal.	0.8	0.9	0.9
2	10,417,199	2,283,646	Near catch basin.	1.1	0.9	1.0
2 Dup.	10,417,199	2,283,646	Duplicate near stormwater catch basin.	0.9	1.0	1.0
3	10,419,581	2,284,501	Entrance to site.	0.7	0.9	0.8
4	10,418,708	2,282,005	Up drainage towards Small Fry Mine.	1.0	1.2	1.1
5	10,417,496	2,281,395	Above mine portal on Homestake Rd.	0.6	0.3	0.5
6	10,416,535	2,283,914	South of site.	0.6	0.6	0.6
7	10,414,075	2,286,545	South of site on Big Indian Rd.	0.9	1.0	1.0
8	10,423,560	2,279,972	North of site on Homestake Rd.	0.7	0.6	0.7
9	10,417,462	2,279,235	Vent Raise	0.6	0.5	0.6

Federal law regulates radon emissions from uranium mines. Particularly relevant are National Emission Standards for Hazardous Air Pollutants (NESHAP) Part A and NESHAP Subpart B, National Emission Standards for Radon Emissions from Underground Uranium Mines (40 CFR 61.20 contain the relevant sections). Mine operators are responsible for identifying and meeting the regulations that apply specifically to their operations and activities.

The NESHAP's Subpart B regulations, —National Emission Standards for Radon Emissions from Underground Uranium Mines, apply to an underground uranium mine that —(a) Has mined, will mine or is designed to mine over 100,000 tons of ore during the life of the mine; or (b) Has had or will have an annual ore production rate greater than 10,000 tons, unless it can be demonstrated ... that the mine will not exceed total ore production of 100,000 tons during the life of the mine. For any mine meeting this definition, the mine operator must comply with the emission standard for radon-222 as required at 40 CFR 61.22 and is subject to the annual NESHAP Subpart B reporting requirements as outlined at 40 CFR 61.24. —Emissions of radon-222 to the ambient air from an underground uranium mine shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/y (40 CFR 61.22). The proposed La Sal No. 2 sampling project would produce 20,000 tons of ore during the 18-month life of the project so ambient air radon tests and annual radon reporting is not required per 40 CFR Part 61 subpart B.



Another radioactive component present at this site is gamma radiation. The NCRP Report No. 160 (2009) indicates that natural background external gamma exposure in the Colorado Plateau area is on the order of 5 to 8  $\mu\text{R}/\text{h}$  (microroentgen/hour, roentgen is interchangeable with rem which stands for roentgen equivalent man). A GPS-based gamma survey was performed at the proposed exploration project site in May 2011. The instrument used for the gamma survey was a Ludlum Model 44-10 that measures radioactivity in counts per minute (cpm). Because specific knowledge of the radioactive isotopes being measured and other necessary parameters, converting radioactivity (cpm) to dose equivalent ( $\mu\text{rem}/\text{hr}$ ) is very difficult. A general "rule of thumb" equation was applied to the measurements to report the exposure, so there may be a small degree of error.

The exposure rates reported are a little higher than the general background exposure rate for the Colorado Plateau. However, the proposed project is in a once active uranium mining district and would be located at a former active uranium mine. Gamma measurements on-site and in the background for the project are expected to be on average higher. Table 4 lists the gamma survey data converted to dose in microrem/hour ( $\mu\text{rem}/\text{hr}$ ).

**Table 4: Basic Statistics of Gamma Survey Data as Converted to Dose Rates in MicroRem/Hr**

Survey Data	Number of Readings	Average Exposure Rate ( $\mu\text{rem}/\text{hr}$ )	Maximum Exposure Rate ( $\mu\text{rem}/\text{hr}$ )	Minimum Exposure Rate ( $\mu\text{rem}/\text{hr}$ )	Standard Deviation ( $\mu\text{rem}/\text{hr}$ )
Entire Survey Data Set <sup>(1)</sup>	66383	15.8	347.3	4.6	11.2
Survey Boundary	59420	16.0	347.3	7.1	11.4
Mine Site Disturbed Area	28669	18.3	347.3	7.2	13.8
Mine Site Undisturbed Area	31760	13.7	117.5	7.1	7.8
Vent Raise	1129	6.1	10.4	4.6	0.9

Note: Exposure rates are calculated by rule of thumb that for mid-range gamma emitters 1000 cpm, as measured using a 2-inch by 2-inch NaI detector (Ludlum Model 44-10), is conservative conversions into exposure rates.

Note (1): Includes data outside of mine site survey boundary.

The La Sal No. 2 project area is located in an attainment area that is federally designated as PSD (Prevention of Significant Deterioration) Class II, indicating that air quality in the region is acceptable. There are no designated PSD Class I areas within or in the immediate vicinity of the project area.

Site-specific air quality monitoring data are not available for the region; however, the background concentrations for the regulated criteria pollutants are expected to be consistent with a rural area having low levels of industrial development. San Juan County is attainment or unclassified for all NAAQS (Environmental Protection Agency (EPA) National Ambient Air Quality Standards); which includes particulate matter, or dust. The county occasionally approaches the NAAQS for ozone in the summer.



### 3.3.2 Noise

#### Issue 1- Nearest residence as noise receptor

How much noise would be generated by the project and the fan in the ventilation shaft?

Currently the sounds heard in the proposed project area are either natural or human-generated. The human generated sounds come from traffic travelling on the Big Indian Road, potash and oil and gas drilling activities, limestone quarry operations, and activities associated with a residence located about 1.73 driving miles northwest of the proposed mine portal location.

A decibel (dB) is the unit used to indicate the intensity of a sound wave. Sound (noise) is often measured in decibels using an A-weighted scale (dBA) because this method approximates the way humans hear sound. Table 5 lists typical sound levels at distances measured from the sound's (Center for Environmental Excellence by AASHTO website

[http://www.environment.transportation.org/environmental\\_issues/noise/#bookmarkBackground](http://www.environment.transportation.org/environmental_issues/noise/#bookmarkBackground)).

**Table 5: Typical Sound Levels**

Sound Type	Sound Level (dBA)
Rock Band at 16 feet	110
Jet over-flight at 1,000 feet	105
Inside a New York subway train	100
Gas Lawn Mower at 3 feet	95
Food Blender at 3 feet	90
Diesel Truck at 50 feet	85
Garbage Disposal at 3 feet	80
Shouting at 3 feet	75
Vacuum Cleaner at 10 feet	70
Normal Speech	65
Quiet Conversation	55
Empty Theater or Library	40
Rustling Leaves	20
Threshold of hearing	0

Sounds in the environment typically vary with time making it awkward to describe them using a single number. One method used to describe variable sounds is the equivalent noise level, which is derived from a large number of moment-to-moment A-weighted noise level measurements.

The equivalent noise level (Leq) is the constant sound level that in a given period has the same sound energy level as the actual time-varying sound pressure level. Leq provides a methodology for combining noise from individual events and steady state sources into a measure of cumulative noise exposure. It is used by local jurisdictions, the Federal Highway

Administration (FHWA), and state departments of transportation (including Utah Department of Transportation (UDOT)) to evaluate noise effects. The day-night average noise level (Ldn) represents the 24-hour energy average noise level with a 10-dBA penalty (addition) applied to noise levels between 10 p.m. and 7 a.m. The Ldn is a useful metric of community noise impact because people in their homes are much more sensitive to noise at night than during the day.

Daytime and nighttime Leq noise levels can be estimated based on the day-night average noise levels (Ldn) identified in the EPA publication "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety" (1974). According to this document, typically, there is a 10-dBA change in noise levels between the daytime and nighttime. Table 6 presents a summary of the ambient noise levels associated with various land uses.

**Table 6: Average Ambient Noise Levels for Various Land Uses**

Land Use Description	Day-Night Average, Ldn (dBA)	Daytime Average, Leq (dBA)	Nighttime Average, Leq (dBA)
Wilderness	35	35	25
Rural Residential	40	40	30
Quiet Suburban Residential	50	50	40
Normal Suburban Residential	55	55	45
Urban Residential	60	60	50
Noisy Urban Residential	65	65	55
Very Noisy Urban Residential	70	70	60

Source: US EPA, 1974

Several factors affect the propagation of noise from these sources. The factors potentially applicable to the La Sal No. 2 project area are:

- Distance
- Atmospheric effects
- Ground type – pavement vs. vegetative ground cover
- Topography

Generally, noise is most audible when traveling along a direct line-of-sight; noise levels from a point source will attenuate at a rate of approximately 6 decibels for each doubling of distance over hard surfaces. Barriers, such as walls, berms, or rows of buildings that break the line-of sight between the source and the receptor can greatly reduce noise levels from the source because the barriers block sound. Solid, uninterrupted walls and berms may reduce noise levels by 10 dBA (Federal Highway Administration, 2011).

Based on the La Sal West and Sandstone Draw USGS 7.5-minute quadrangle topographic maps, the approximate elevation of the residence is 6,840 feet above mean sea level (MSL); the

proposed mine portal's elevation is about 6,700 feet MSL, and the approximate elevation at the proposed vent raise is 7,000 MSL. The proposed portal is 1.32 miles from point to point as drawn on the 7.5 minute quadrangle maps and is located in a cove-like area. It is not in line of site of the residence. The ground surface between the two areas is composed of sand and exposed bedrock covered with sparse vegetation in the form grass, sagebrush, pinion and juniper trees. A ridge is situated between the proposed portal location and the residence. The proposed vent shaft the proposed vent raise location is about 1.44 miles from point to point as drawn on the 7.5 minute quadrangle map and would be located on a high point east of the proposed portal. The vent raise location is not in line of site of the residence as there is a ridge situated between the two areas. The ground conditions are the same as those between the proposed portal location and the residence.

### 3.3.3 Soils

#### Issue 1 – Soils impacts

What are the likely effects to the soils from installing the exploration facilities?

Soils in the project area are classified as Upland Shallow Loam. According to the soil survey, the only soil unit in the project area is #74: Rock Outcrop- Rizno complex. These soils are found on 3 - 15% slopes, "on the rim of benches and cuesta escarpments and on the dip slopes of hogbacks" (National Resources Conservation Service 1980). This soil complex consists mainly of rock outcrop (70%) and Rizno fine sandy loam on 3-15% slopes (20%) which are intricately intermingled.

Soils are shallow and scattered, well drained with moderate permeability and 1-3% organic matter content. Effective rooting depth ranges from 4" to 20". "The hazard of soil blowing is high. Suitability for rangeland seeding is very poor. The main limitations are the shallow depth to bedrock and very low available water capacity (National Resources Conservation Service 1980).

In the 1980s the proposed project area was disturbed by Homestake to mine uranium from the La Sal No. 2 mine. The soil types were likely mixed during the construction of the site. When mining ceased the project area was reclaimed. The reclamation was successful as the site has revegetated with rabbit brush, sagebrush and crested wheat grass as the dominate species.

### 3.3.4 Water Quality

#### Issue 1 - Water source

Where would the water used for the underground operations and surface activities of the La Sal No. 2 Project originate?

#### Issue 2 - Water quality

What would be the quality of the water being brought on site, and would it need treatment before being used or released into the environment?

The water that would be used for construction, drilling, dust suppression and general uranium sampling operations would come from Water Right Number 05-6 (t36917). This water right is in private ownership and is a surface source (La Sal Creek) located North 3420 feet and West 2851 feet from the SE Corner of Section 7, T28S, R25E, SLB&M. Water obtained from this location is typically used for irrigation of crops and stock watering. This temporary change in the water right (t36917) has lapsed and would have to be renewed before any operations begin.

Water samples were collected on July 13, 2011 and analyzed for dissolved metals, gross alpha, and gross beta. Table 7 lists the elements and compounds detected in the water sample and the Standards of Quality for Waters of the State (Utah Division of Water Quality, 2012). The water sample was taken from La Sal Creek, a tributary of the Dolores River. The beneficial use designation classes for tributaries of the Dolores River from its confluence with the Colorado River to the State line are: Class 2B-Protected for infrequent primary contact recreation and secondary contact recreation where there is a low likelihood of ingestion; Class 3C-Protected for nongame fish and other aquatic life, including the necessary aquatic organisms in their food chain; and Class 4-Protected for agricultural uses including irrigation of crops and stock watering. The results of the sampling show that the water is below the standards for these three classes of use. Domestic use (Class 1) is also included in Table for comparison.

**Table 7: Metals and Compounds Detected in Water Sampled from Water Right Number 05-6**

Analyte	Result	Standards for Waters in Utah			
		Domestic (Class 1)	Recreation (Class 2B)	Aquatic Habitat (Class 3C)	Agricultural (Class 4)
Arsenic, dissolved	0.0007 mg/L <sup>1</sup>	0.01 mg/L	No Standard	150 mg/L (trivalent)	0.1 mg/L
Barium, dissolved	0.02 mg/L	1.0 mg/L	No Standard		No Standard
Boron, dissolved	0.01 mg/L	No Standard	No Standard	No Standard	0.75 mg/L
Calcium, dissolved	17.3 mg/L	No Standard	No Standard	No Standard	No Standard
Iron, dissolved	0.03 mg/L	1,000 mg/L	No Standard	1,000 mg/L	No Standard
Magnesium, dissolved	2.4 mg/L	No Standard	No Standard	No Standard	No Standard
Potassium, dissolved	0.5 mg/L	No Standard	No Standard	No Standard	No Standard
Silica, dissolved	11.0 mg/L	No Standard	No Standard	No Standard	No Standard
Silicon, dissolved	5.1 mg/L	No Standard	No Standard	No Standard	No Standard
Sodium, dissolved	2.9 mg/L	No Standard	No Standard	No Standard	No Standard
Uranium, dissolved	0.0001 mg/L	30 mg/L	No Standard	No Standard	No Standard
Gross Alpha	0.93 pCi/L <sup>2</sup>	15 pCi/L	15 pCi/L	15 pCi/L	15 pCi/L
Gross Beta	0.47 pCi/L	4 mrem/year <sup>3</sup>	No Standard	50 pCi/L	No Standard
Radium 226, dissolved	0.14 pCi/L	4 mrem/year	No Standard	No Standard	No Standard
Bicarbonate as Calcium Carbonate	47 mg/L	No Standard	No Standard	No Standard	No Standard

Sulfate	11 mg/L	No Standard for La Sal Creek	No Standard for La Sal Creek	No Standard for La Sal Creek	No Standard for La Sal Creek
pH	8.1	6.5-9.0	6.5-9.0	6.5-9.0	6.5-9.0
Total Dissolved Solids (calculated)	73 mg/L	No Standard for La Sal Creek	No Standard for La Sal Creek	No Standard for La Sal Creek	No Standard for La Sal Creek
Total Alkalinity	47 mg/L	No Standard	No Standard	No Standard	No Standard
<b>Note:</b> mg/L = milligrams per liter; pCi/L = picoCuries per liter, mrem stands for 1/1000 of Roentgen Equivalent Man and is a measurement of radiation dose. PicoCuries are a measurement of radiation activity and calculated dose from activity requires information on the kind of isotope, distance from the isotope where activity was measured, and other information that is not available through the laboratory analysis.					

Given the short duration of underground exploration activities, Laramide would contract for non-potable water to be hauled to the site from an off-site source. This water would be transferred to a storage tank above the portal area.

Showering water would be labeled as "not potable". Drinking water would be provided by hauling bottled water, or installing a reverse osmosis system. Water used at the face for drilling to control dust and remove drill cuttings and cooling the bit may not be treated.

No perennial or intermittent drainages exist within or surrounding the La Sal No. 2 Project area, nor are there any springs or seeps. Surface water in this region is limited, primarily dominated by drainages that are "ephemeral" in nature, which means that they only flow in direct response to major precipitation events (such as thunderstorms) or to snowmelt.

About 0.5 miles east of the proposed project are a series of ponds that were once used by oil and gas companies to store produced water. These ponds are no longer used and they collect storm water runoff. Two small human-made ponds are located about 1.75 miles northeast of the project. The ponds are associated with private lands that were once operated as the Big Indian Copper Mine. All ponds are up gradient from the project site.

As the previous mine operated by Homestake was dry, it is expected that there will be no groundwater interception underground during the proposed sampling project.

### 3.3.5 Socioeconomics

#### Issue 1 - Jobs

How many local jobs would be created for residents of Grand and San Juan counties?

#### Issue 2 – Other local economic benefits

What would be the economic benefit from the project to Grand and San Juan counties?

San Juan County is a rural county in southeastern Utah with a 2010 population of 14,746. The county seat is Monticello (2010 population (est.) of 3,773) while Blanding is the most populous town in the county (2010 population of 4,904). The nearest town to the La Sal No. 2 Project is La Sal (2010 population of 395) (2010 Census 2011).

The San Juan County economy is dependent on the tourism industry as well as the existing oil and gas, mining, and mineral related exploration activities. The estimated 2010 medium income for San Juan County households was \$37,259; however, 25.8 % of the population in San Juan County lives below the federal poverty level (2010). Nearly 35% of workers in San Juan County are employed by government.

As of December, 2011, unemployment in San Juan County was estimated at 14.3% as compared to the Utah statewide unemployment of 5.8 per cent (Department of Labor 2012).

Grand is a rural county in eastern Utah with a 2010 population of 9,225. The county seat is Moab (2010 population of 5,046), which is the most populous town in the county.

The Grand County economy is dependent principally on tourism, although, in recent years, it has seen a surge in "second home" owners and retirees. Historically, Grand County has experienced both oil/gas production and mining. In the 1950s, Moab was known as the "Uranium Capital of the World", after geologist Charles Steen found a rich uranium deposit in Lisbon Valley. Mining activities have subsided in the area as the town has become a popular base for photographers, rafters, hikers, off-road vehicle enthusiasts, and mountain bikers. Nearby Arches and Canyonlands National Parks draw a large number of yearly visitors, as does the BLM land surrounding Moab.

The estimated 2010 medium income for Grand County households was \$39,726, with about 12.6 % of the population in the county living below the federal poverty level. About 20% of workers in Grand County are employed by government.

As of December, 2011, unemployment in Grand County was estimated at just over 11% as compared to the Utah statewide unemployment rate of 5.8 per cent (Department of Labor 2012).

### 3.3.6 Wildlife and Migratory Birds

#### Issue 1 – Disturbance

Would the project cause impacts to wildlife, including migratory birds and raptors?

#### Wildlife

Wildlife habitat in this region is predominantly comprised of sagebrush and grass, with scattered stands of pinyon-juniper. These habitats are utilized by a variety of big game, small mammals, birds, raptors and reptiles including mountain lions, coyotes, badgers, black-tailed jackrabbits, desert cottontails, antelope ground squirrels, mule deer, elk, and bats, which are typically associated with desert shrub, sage/shrub steppe and pinyon/juniper plant communities. Water resources and associated riparian zones are the most limiting habitats for area wildlife. Only ephemeral drainages exist within the project area. No riparian vegetation or habitat exists in the project and surrounding areas.

Mule deer are the primary big game species that is found in the region. Although the area has year-round habitat for mule deer, the occurrence of this species within the project area is limited by the lack of water. Elk may wander through the area during winter months; however, the area is not considered crucial winter range for this species.

Non-game species encompass a diversity of species and trophic levels. No water fowl habitat is found in the project and adjacent areas. Some of the more common and visible species include raptors or birds of prey. Cliffs and rock outcrop areas within the region provide nesting sites for raptors, but no known raptor nest sites occur at the La Sal No. 2 Project area. Various raptor species hunt over habitats similar to those in the project area. A field survey was completed in May 2011 which included raptor surveys, and notations for special species. See *Appendix B: Nesting Raptor Species Report*. Before construction begins in the spring of 2012, another raptor survey would have to be completed.

#### **Migratory Birds and Raptors**

A variety of migratory song bird species may use the La Sal No.2 Uranium Exploration Project area for breeding, nesting, foraging, and migratory habitats. Migratory birds are protected under the Migratory Bird Treaty Act of 1918 (MBTA). Unless permitted by regulations, the MBTA makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs, or migratory bird products. In addition to the MBTA, Executive Order 13186 sets forth the responsibilities of Federal agencies to further implement the provisions of the MBTA by integrating bird conservation principles and practices into agency activities and by ensuring that Federal actions evaluate the effects of actions and agency plans on migratory birds.

A Memorandum of Understanding (MOU) between the BLM and USFWS (BLM MOU WO-230-2010-04) provides direction for the management of migratory birds to promote their conservation. At the project level, the MOU direction includes evaluating the effects of the BLM's actions on migratory birds during the NEPA process, identifying potential measurable negative effect on migratory bird populations, focusing first on species of concern, priority habitats, and key risk factors. In such situations, BLM implements approaches to lessen such take.

Identifying species of concern, priority habitats, and key risk factors includes identifying species listed on the USFWS Birds of Conservation Concern (BCC) that are most likely to be present in the project area and evaluating objectives and recommendations for migratory birds resulting from planning efforts: Utah Partners in Flight American Landbird Conservation Plan.

The Utah Partners in Flight (UPIF) Working Group completed a statewide avian conservation strategy identifying "priority species" for conservation due to declining abundance distribution, or vulnerability to various local and/or range-wide risk factors. One application of the strategy and priority list is to give these birds consideration when analyzing the effects of Proposed Action and to implement recommended conservation measures where appropriate.

The UPIF Priority Species List, the BCC list for Region 16 (Colorado Plateau) and the Utah Conservation Data Center database were used to identify potential habitat for priority species that could utilize habitats within this La Sal No. 2 Uranium Exploration Project area. A list of these species is found in *Table 8: Utah Partners in Flight Priority Species, US Fish and Wildlife birds of Conservation Concern Species*.

**Table 8: Utah Partners in Flight, US Fish and Wildlife Birds of Conservation Concern Species**

Moab UPIF & FWS BCC Species 2008 (Regions 16 ) Found in the Project Area

Species	BCC§	UPIF†	DWR Habitats†	1st Breeding Habitat‡	2nd Breeding Habitat‡	Winter Habitat‡
Black-throated Gray Warbler		X	Prime Breeding	Pinyon-Juniper	Mountain Scrub	Migrant
Brewer's Sparrow	X	X	High	Shrubsteppe	High Desert Scrub	Migrant
Gray Vireo	X	X	Prime Breeding	Pinyon-Juniper	Oak	Migrant
Golden Eagle	X		High	Cliff	High Desert Scrub	High Desert Scrub
Juniper Titmouse	X		Critical	Pinyon-Juniper	Pinyon-Juniper	Pinyon-Juniper
Pinyon Jay	X		Critical	Pinyon-Juniper	Ponderosa pine	Pinyon-Juniper
Prairie Falcon	X		Critical/High	Cliff	High Desert Scrub	Agriculture
Sage Sparrow		X	Critical	Shrubsteppe	High Desert Scrub	Low Desert Scrub
Virginia's Warbler		X	Winter	Oak	Pinyon-Juniper	Migrant

Note §Utah Partners in Flight Avian Conservation Strategy Version 2.0 (Parrish et al., 2002),

§Birds of Conservation Concern 2008 (USFWS, 2008)

†Utah Conservation Data Center, \*Utah Sensitive Species, \*\*=Federally List, *Italic*=Utah Sensitive Species"

Habitats within the project area also may have the potential to support breeding, nesting, and foraging raptors, including wintering golden eagles. Currently there are no known winter roosts in or near the project area. A nesting raptor survey was conducted within the project area in May 2011. No active raptor nests were identified within 0.5 miles of the proposed project. A new raptor survey would have to be conducted during the spring of 2012 prior to any construction activities.

Raptor species with the potential to occur in the vicinity of the project area are identified in *Table 9: Raptor Species with the Potential to occur in the Project Area*, along with a description of their nesting and foraging habitats.



**Table 9: Raptor Species with the Potential to occur in the Project Area**

Common Name	Scientific Name	General Habitat and Potential in Project Area
American Kestrel	<i>Falco sparverius</i>	Moderate potential to nest on cliffs, and ledges. Moderate potential to forage from cliffs and ledges and low potential in desert shrub and pinyon-juniper woodland.
Cooper's Hawk	<i>Accipiter cooperii</i>	Low potential to nest in pinyon-juniper woodlands. Moderate potential to forage in pinyon-juniper woodlands.
Golden Eagle	<i>Aquila chrysaetos</i>	Commonly nests on cliff ledges and rock outcrops. Moderate potential to forage in desert shrub and pinyon-juniper woodlands.
Great-horned Owl	<i>Bubo virginianus</i>	Cliff ledges, pinyon-juniper, or nests of other species. Moderate potential to forage in desert shrub and pinyon-juniper woodlands.
Long-eared Owl	<i>Asio otus</i>	Low potential to nest in pinyon-juniper woodlands. Moderate potential to forage in desert shrub and pinyon-juniper woodlands.
Northern Harrier	<i>Circus cyaneus</i>	Moderate potential to forage and nest in sagebrush/grassland vegetative community and desert scrublands. Low potential to nest in pinyon-juniper woodlands. Utilizes open habitats such as marshes, fields, and grasslands.
Prairie Falcon	<i>Falco mexicanus</i>	High potential to nest on cliffs and ledges. Moderate potential to forage in desert shrub moderate in pinyon-juniper woodland.
Red-tailed Hawk	<i>Buteo jamaicensis</i>	Moderate potential to nest on cliffs and low potential to nest in pinyon-juniper woodlands. High potential to forage in desert shrub and pinyon-juniper woodlands.
Sharp-shinned Hawk	<i>Accipiter striatus</i>	Low potential to nest in pinyon-juniper woodlands. Low potential to forage in desert shrub and pinyon-juniper woodlands.
Swainson's Hawk	<i>Buteo swainsoni</i>	Not likely to nest in the project area. Low potential to forage in desert shrub and pinyon-juniper woodlands.

### Bats

There is potential for three species of sensitive bats (Townsend's big-eared bat, Western red bat, and fringed Myotis), as well as other non-sensitive bat species to occupy the project area and forage on the insect populations. The Townsend's big-eared bat inhabits a wide range of habitats from semidesert shrublands and piñon-juniper woodlands to open montane forests. Roosting occurs in mines and caves, in abandoned buildings, on rock cliffs, and occasionally in tree cavities; foraging occurs well after dark over water, along the margins of vegetation, and over sagebrush. Western red bats are normally found near water, often in wooded areas. Some individuals may hibernate during cold times of year, but most members of the species migrate south to warmer climates for the winter. The species is nocturnal; daytime roosting

usually occurs in trees. The fringed Myotis inhabits caves, mines, and buildings, most often in desert and woodland areas and commonly occurs in colonies of several hundred individuals.

### 3.3.7 Geology / Mineral Resources / Energy Production

#### Issue 1- Mineral quantities

How much uranium material was previously mined by Homestake from the La Sal No. 2 site and would planned bulk sampling exceed 100,000 tons?

#### Issue 2 – Future mine

Does the proposed exploration activity mean a mine would be developed?

Homestake produced 46,610 tons from the La Sal No. 2 before it closed in the early 80s. The La Sal No. 2 Mine is part of the Big Indian Mining District which was identified in the early 1950s as a source of uranium and vanadium. The targeted uranium mineralization at the La Sal No. 2 Project is of the Cutler formation in the Permian age. The rock types of the Cutler Formation consist of reddish-brown sandstones, mudstones, and siltstones with the uranium mineralization found primarily in coarse-grained sandstone lenses. The uranium-targeted zones for the La Sal No. 2 Project are in the Cutler formation, which is located about 700-800 feet vertically beneath the surface.

## 4.0 ENVIRONMENTAL IMPACTS

### 4.1 INTRODUCTION

This chapter examines the anticipated environmental impacts to air quality, noise, soil, water quality, socioeconomics, wildlife, and mineral resources associated with the implementation of the action alternatives in comparison to the no-action alternative. The implementation for the action alternatives presented in Chapter 4 represents mitigated effects, based on applicant-committed measures, including reclamation, that are discussed in Chapter 2.

For ease of presentation and comparison, the impact analysis discussions in Chapter 4 are grouped by the same technical disciplines as addressed in Chapter 3. This chapter's analyses emphasize those impacts related to issues identified in Chapter 1. Some impacts are expressed in qualitative terms, and others are expressed in quantitative terms.

Impacts are evaluated for each alternative and are defined as follows:

- **Direct Impacts** – Those effects which occur at the same time and in the same general location as the activity causing the effect.
- **Indirect impacts** – Those effects which occur at a different time or different location than the activity to which the effects are related.
- **Cumulative impacts** – Those effects which result from the incremental impact of the action when added to other past, present and reasonably foreseeable actions.

## 4.2 AIR QUALITY

The proposed project activities would not produce any significant ozone precursor emissions; therefore no emissions inventory is required for this project. Only minor levels of particulate and some very minor internal combustion emissions are likely. Radon emissions are expected, but would not exceed the 1 working-level (WL) dose that is the daily maximum for worker safety. The dispersal of radon occurs with air movement, and naturally occurs exists in the environment.

### 4.2.1 Alternative A - No-Action Alternative

Under the no-action alternative, air quality within the project boundaries and surrounding area would remain under the influence of existing cumulative sources and land use trends.

Current land use trends in the area are expected to continue, including potash and oil and gas exploration drilling, geophysical exploration mining, off-highway traffic, hunting and other dispersed recreation. These activities are not expected to cause any significant incremental degradation of air quality over time. With current and anticipated land use trends, the project site and surrounding area are expected to continue to be classified with the existing federally designated PSD (prevention of Significant Deterioration) Class II, indicating that air quality in the region is acceptable based on Environmental Protection Agency (EPA) standards for the protection of human health.

Although gamma radiation levels are elevated over background levels at the portal pad (due to past mining activities), the levels are low enough not to cause any adverse effect to site workers or the general public. A background study was conducted in May 2011 to determine levels of radiation and radon gas at the project site. The study summary is included in the impacts sections below and was conducted by Environmental Restoration Group, of Albuquerque, New Mexico. Radon levels at the site are not expected to change significantly.

### 4.2.2 Alternative B – Proposed Action

The Proposed Action would cause a short-term increase in fugitive dust and gaseous emissions within and near the project area during construction, operations and reclamation.

Fugitive emissions, or airborne dust, are classified as PM<sub>10</sub> and PM<sub>2.5</sub>, which are particulate matter with an aerodynamic diameter of less than 10 microns and 2.5 microns, respectively. Particulate emissions would occur during construction of the portal and ventilation raise pad, as well as during any upgrade work on the access roads. Particulate emissions would also come from the exhaust from the ventilation raise, traffic on unpaved roads, and from wind erosion in areas of soil disturbance. To assist in minimizing dust from project activities, Laramide proposes to use water to abate particulates in the air.

Radon-222 (radon) in a sealed underground uranium mine does not continuously accumulate or “build-up” in a sealed underground uranium mine. See *Appendix C: Gamma and Radon Reports* for details of the baseline levels at the project site. While radon is produced from mineralized

surfaces within the mine, once produced, it undergoes radioactive decay at a constant rate related to its half-life of 3.8 days. When the mine is sealed, radon levels would rapidly reach a steady state based on the radon production rate within the mine and on the radon decay rate. Radon progeny also undergo radioactive decay at a constant rate based on their half-lives. As such, the radon progeny levels would also quickly reach a steady state condition once the mine is sealed.

Worker exposure to the radon and other radioactive hazards are regulated by the Mine Safety and Health Administration (MSHA). The reason for Laramide to rehabilitate the ventilation raise is to provide effective ventilation of the mine during exploration activities to mitigate worker exposure to radon. Normal operation in the underground workings at the La Sal No. 2 Project, with ventilation that meets MSHA requirements, is unlikely to adversely impact workers.

Based on studies at multiple uranium mines in the southwestern U.S. (Environmental Protection Agency (EPA), 1985) radon emissions from surface facilities, including ore stockpiles, development rock piles, and ore loading, are small in comparison to emissions from vents. Because these emissions are comparatively small, they can be ignored when estimating total radon emissions from a mine site. This is why the radon emission standards in 40 CFR Part 61 Subpart B are limited to radon emissions from mine vents.

The proposal is not designed to remove 100,000 tons or more of presumed ore and the proposal of the removal of 20,000 added to the 46,610 tons of past production (66,610 tons) does not meet the designation standards of a facility as described under the National Emission Standards for Hazardous Air Pollutants (NESHAPs) Standard at 40 CFR 61 Subpart B 61.20 (a) and (b). Non-designated facilities are considered to have radon emissions low enough to prevent impacts to site workers and to the general public. Pursuant to NESHAP standards, emissions of radon-222 to the ambient air from an underground uranium mine shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/y. Weekly radon monitoring at the ventilation shaft and the portal would be necessary to ensure that the operation does not exceed the dose rate of 10 mrem/y. To also help to minimize the potential of the public coming into contact with potential radon and dust from the vent shaft, public access should be prevented.

Particulate levels would be influenced by wind conditions, with higher fugitive dust particulates from surface activities occurring during windy periods. The fugitive dust concentrations would be localized and confined to the vicinity of the operation, and they are not expected to have any significant effects on air quality, as dust would be controlled.

Indirect impacts associated with the Proposed Action would be negligible and primarily associated with possible increased traffic of contract workers that might move to the region on a temporary basis for the project work. Such traffic would probably be focused in the towns of Moab or Monticello and would not be concentrated in the vicinity of the project.

Given the relative remoteness of the project area, the temporary nature of the exploration activities, and the expected low project emissions, no cumulative air quality impacts are expected for the area that would cause effects on the human environment based on the region's ambient air quality standards.

Greenhouse gases are gaseous emissions that have extremely long persistence in the atmosphere, are dispersed globally, and could result in global warming. Greenhouse gases would not be a local issue; the emitted gases have no immediate impact near the emission point but eventually disperse across the planet. Carbon dioxide (CO<sub>2</sub>) would be the major gaseous emission from the Proposed Action classified as a greenhouse gas.

The Utah Department of Environmental Quality (UDAQ) permits and regulates the White Mesa Mill through its air quality permitting program, which places operational limits on the mill to ensure emissions from mill operations do not violate ambient air quality standards. In addition, the White Mesa Mill is subject to New Standards for Point Sources, 40 CFR Part 60 Subpart Dc (Standards of Performance for Small Industrial-Commercial- Institutional Steam Generating Units) and NESHAP 40 CFR Part 61 Subpart W (National Emission Standards for Radon Emissions from Operating Mill Tailings). Maximum Achievable Control Technology (MACT) regulations do not apply to this source, nor is a Title V operating permit required at the present time.

The Denison White Mesa Mill is permitted by UDAQ Approval Order No. DAQE-AN0112050018- (UDAQ, 2011). The Approval Order includes several provisions, requirements, and limitations that are designed to mitigate impacts to air quality from mill operations. This mitigation includes opacity limitations at sources of fugitive dust, application of water or chemical treatments to roads, fuel requirements for internal combustion engines, and limitations and testing procedures for specialized equipment.

The UDAQ Approval Order authorizes the mill to process up to 720,720 tons per year (tpy). The mill receives uranium ore and alternative feed material from many sources. The Laramide La Sal Sampling projects states that the 20,000 for the 18 month life of the project, or approximately three percent of the total mill feed material. The UDAQ Approval Order allows the mill to emit 34 tpy of PM<sub>10</sub> (including 17 tpy PM<sub>2.5</sub>), 40 tpy of nitrogen oxides, 10 tpy of carbon monoxide, 3 tpy of sulfur dioxide, and 4 tpy of volatile organic compounds.

Compliance with the UDAQ Approval Order ensures that the White Mesa Mill would not violate ambient air quality standards. The amount of criteria pollutant emissions that could be attributed to the processing of the La Sal No. 2 ore samples would only be a small percent of the total allowable emission at the mill and therefore, would not cause or contribute to a violation of the NAAQS.

To require dispersion modeling to demonstrate compliance with the NAAQS would be a usurpation of state and federal permitting and review authority, and be very unlikely to demonstrate any significant air quality issues associated with indirect impacts of processing La Sal No. 2 ore samples at the White Mesa Mill.

#### 4.2.3 Alternative C – Line Electric Power

The air quality effects of Alternative C would be lower than Alternative B for two reasons: (1) there would be no or limited gaseous emissions from the on-site diesel generators as Laramide would receive electric power from Empire Electric through electric distribution line brought to the property, and (2) the amount of diesel fuel deliveries to the site would be less given the use of line electric power. Other air quality effects would be similar to Alternative B.

### 4.3 Noise

#### 4.3.1 Alternative A – No Action Alternative

Under the no-action alternative, the project area would remain undeveloped and underground exploration would not occur. There would be no added sounds in the project area, perceived as noise by people in the area.

#### 4.3.2 Alternative B – Proposed Action

Noise sources associated with the exploration activity include additional traffic on the highway with workers driving to and from the site; short-term construction activities to clear the area and install portable buildings, and noise emitted from two diesel generators, one at the portal and one at the vent raise. The fan would be installed in the vent raise. Average construction noise is estimated to be 80-85 decibels at 50 feet from that activity, but noise would return to background levels within a short distance from portal. The noise level of the construction activity at the residence, attenuated over a distance of 1.32 miles (2,127.2 meters) would be 7.5 dBA (Engineering Page

[http://www.engineeringpage.com/calculators/noise/distance\\_dB\(A\).html](http://www.engineeringpage.com/calculators/noise/distance_dB(A).html)).

Traffic noise would be noticeable in areas adjacent to the Big Indian Road. A generator located at the proposed mine portal would have an estimated decibel measurement of 80 dBA at 50 feet. This decibel measurement attenuated over 2,127.2 meters would be about 2.5 dBA. This measurement does not take in account atmospheric conditions, or any barriers in the landscape, which would further reduce the sound.

Based on decibel measurements taken at active ventilation shafts in the region, the estimated decibel measurement at the proposed vent raise is about 90 dBA at 10 feet without a barrier. The straight line-point to point distance between the vent raise and the residence is 1.44 miles (2,319.19 meters). By calculating for sound attenuation over distance using the 90 dBA sound measurement and the 2,319.19 meter distance measurement, the noise level from the vent shaft at the residence would be about 11.7 dBA. This calculation does not take in account the ridge between the vent raise and the residence, which has the potential to act as a barrier. The sound level is within the noise limits expected in a rural setting (Engineering Page [http://www.engineeringpage.com/calculators/noise/distance\\_dB\(A\).html](http://www.engineeringpage.com/calculators/noise/distance_dB(A).html)) A generator with an estimated decibel measurement of 80 dBA, attenuated over 2,319.19 meters is 1.7 dBA. This measurement does not take in account atmospheric conditions, or any barriers in the landscape which could further reduce the sound.

The estimated total sound that could potentially be heard at the residence from the proposed project is about 28 dBA (Accumulation Calculator <http://rigolett.home.xs4all.nl/ENGELS/cumucal.htm>). This calculation does not take in account any barriers in topography or atmospheric conditions. It is likely that the ridge located between the residence and the project would reduce the noise level. The noise level is within the rural parameters of 40 dBA.

#### 4.3.3 Alternative C – Line Electric Power

In Alternative C, the proposed diesel generators would be replaced with electric service that would be brought to the project as line power along wood poles and wire conductors. Implementing this alternative would limit the diesel generator noise. The generators would only be used in cases where the line service was interrupted, or prior to the installation of the electric service. Under this alternative the total noise generated by the project would be about 20 dBA.

### 4.4 SOILS

#### 4.4.1 Alternative A - No-Action Alternative

Under the no-action alternative, the project area would remain undeveloped and underground exploration would not occur. Soils would remain in the current condition.

#### 4.4.2 Alternative B – Proposed Action

Impacts to soils in the project area include increased soil erosion, decreased infiltration and increased soil compaction. All these add up to a decline in soil productivity. During the initial grading for the project, the top six inches of topsoil would be salvaged and stockpiled on site for use during reclamation. The impacts to soils during project with the erosion control measures built into the proposed action. At the time of reclamation, and compacted ground would be ripped and then the stockpiles topsoil would be spread and seeded with a native seed mix. Recovery of soil conditions can take 2-5 years or more depending on site specific climactic conditions (i.e. precipitation levels and timing).

The proponent committed mitigation measures as described in the Plan of Operations, and reiterated in Section 2.3. , provide for stockpiling existing growth medium, and redistributing it at the time of reclamation. The Reclamation Plan, included in the exploration plan, includes site rehabilitation; these mitigation measures adequately address potential impacts to soil resources.

#### 4.4.3 Alternative C – Line Electric Power

The effects to the soils would be slightly more in Alternative C, as there would be approximately 0.6 acres of land occupied by an electric distribution line. The actual disturbance would be approximately 100 square feet, only at the sites where the support structures would be installed. (The 0.6 acres is calculated by using the approximately 0.6 miles (3,168 feet) of electric line, and right of way width of 8 feet, mostly aerial occupation).

## **4.5 WATER QUALITY**

### **4.5.1 Alternative A – No Action Alternative**

Uranium exploration and past mining activities have occurred at the project area. Subsequently revegetation has been successful. There would be no impacts to water quality from the No Action alternative.

No ore from the La Sal No. 2 sampling project would be processed at the White Mesa Mill so there would be indirect impacts to water quality from milling operations.

### **4.5.2 Alternative B – Proposed Action**

That water that would be used onsite that would be used for construction, dust control and drilling would not impact the water quality at the site. The water from Water Right Number 05-6 is currently used for water crops and livestock, and it meets the Standards of Quality for Waters of the State. Most of the water used for dust control (surface and underground) would evaporate or be absorbed into the soil or rock material where it is applied. Also, the water would not be applied in large quantities so ponding, puddles and run-off on the surface or underground would occur. This water would be labeled "Not for Drinking".

Potable water would be brought in for drinking purposes. For showering, culinary water would be brought in or a reverse osmosis system would be installed. Potable water would not affect water quality at the site.

Water used for the showers and sanitary facilities would be routed to concrete septic vaults, which would be regularly pumped, with the effluent being hauled off-site to an approved disposal and treatment facility. This would prevent effluent from encountering potential groundwater. A berm would be constructed around the vault facilities to protect them from storm runoff.

The Proposed Action would have limited impact on the local surface water hydrology. All project area drainages are ephemeral in nature and flow only in response to storm events.

There would be a potential for increased soil erosion at disturbed sites, although it is expected to be minor given the limited area of disturbance, the rocky nature of the soils, and the high infiltration rates of the soils. The potential for erosion and sediment loading below the areas of disturbance would be greatest during the construction phase.

Impacts, if any, to surface water from accidental spills would be limited due both to spill prevention measures and to the ephemeral nature of the surface water flows. There is no groundwater reported to exist in the workings of the previous Homestake operation, so no impacts to groundwater are expected. Any accidental spills underground would not impact water quality, as proper spill control and containment measures would be taken.



The Utah Department of Environmental Quality (UDEQ), Division of Radiation Control (DRC) has primary regulatory authority over the mill. The DRC, in conjunction with the UDEQ Division of Water Quality, regulates the monitoring of groundwater and surface water at the mill site. Denison Mines' White Mesa milling operations are conducted in accordance with the terms and conditions of its current Radioactive Materials License (License No. UT1900479) and its Ground Water Discharge Permit (Permit No. UGW370004). These permit authorizations incorporate an exhaustive list of measures to protect groundwater and surface water at the mill site. These protective measures include: installation and maintenance of a network of groundwater monitoring wells, design and use of tailings management/disposal cells, leak detection systems, stormwater and wastewater management, reclamation standards, spill control and contingency plans, and sampling and reporting requirements.

Mill production and/or maintenance operations at the White Mesa Mill have continued since 1980. Historic mill production, through 2008, is approximately 4.5 million tons of ore (Denison Mines, 2009). The Laramide No. 2 Sampling project would produce 20,000 tons of ore during its 18 month operation. This is approximately 0.44 percent of the mill's total production through 2008 (percentage would be somewhat less with mill production figures updated through the end of the La Sal No. 2 Sampling Project).

The indirect impacts to water quality from processing ore from the La Sal No. 2 sampling project at the White Mesa Mill would be negligible because of the existing permit requirements to protect water quality and the regulatory oversight of mill operations and, because the amount of ore sampled from the La Sal No. 2 that would be received at the mill would represent a relatively small percentage of overall mill production. Therefore, the processing of the La Sal No. 2 ore at the White Mesa Mill would not degrade water quality in vicinity of the mill below the State of Utah's numeric criteria pursuant to Utah Administrative Code R317-2.4.5.3

#### **Alternative C – Line Electric Power**

The water quality effects of Alternative C would be very similar to those projected for Alternative B; however, given the use of electric line power, the amount of diesel fuel delivered to the site would be reduced. This would provide less chance for accidental spills of diesel fuel, either at the site or in transit to the site.

## **4.6 SOCIOECONOMICS**

### **4.6.1 Alternative A – No Action Alternative**

Under the no-action alternative, the project area would remain undeveloped and underground exploration would not occur. Selection of the no-action alternative would forgo an opportunity for increased economic activity, including jobs and wages, for both Grand and San Juan counties.

#### 4.6.2 Alternative B – Proposed Action

Laramide expects that up to 35 people would be employed at the La Sal No. 2 Project, and the entire project would last nearly 18 months. The economic effects of the project to the planning area (Grand and San Juan Counties) would be limited, but positive. The operating expenditures for the three phases of the project can be used to estimate the total economic impacts from the Proposed Action on the planning area.

Contributions to the area economy through market based production can be measured using the IMPLAN input-output model. Input-output models describe commodity flows from producers to intermediate and final consumers. The total industry purchases are equal to the value of the commodities produced. Industries producing goods and services for final demand purchase goods and services from other producers. These other producers, in turn, purchase goods and services. This buying of goods and services continues until leakages from the region stop the cycle. The resulting sets of multipliers describe the change of output for regional industries caused by a change in final demand in an industry.

IMPLAN not only examines the direct contributions but also indirect and induced contributions. *Indirect* employment and labor income contributions occur when a sector purchases supplies and services from other industries in order to produce their product. *Induced* contributions are the employment and labor income generated as a result of spending new household income generated by direct and indirect employment. The employment estimated is defined as any part-time, seasonal, or full-time job. See *Table 10: Estimated Economic Impacts*, which summarizes the IMPLAN results from estimated expenditures within the planning area. The planning area is defined as Grand and San Juan counties; any spending that occurs outside these two counties is excluded from the analysis.

**Table 10: Estimated Economic Impacts**

Impact Type	Employment	Labor Income	Output
Direct Effect	9.0	\$579,342	\$3,000,000
Indirect Effect	1.9	\$89,573	\$308,743
Induced Effect	2.4	\$71,767	\$235,801
<b>Total Effect</b>	<b>13.3</b>	<b>\$740,681</b>	<b>\$3,544,545</b>

Source: IMPLAN 3.0

These results are due mainly to the fact that the underground sampling portion of the Proposed Action, which has the largest expenditures, would also use a relatively large out-of-area work force. The project would require crews experienced in heavy equipment operation, underground mining and mineral exploration activities. Given the limited duration of operations and the specialty work required, Laramide proposes to utilize contractors for most of the work. Local construction and reclamation contractors would be hired, but it is expected that the underground rehabilitation and exploration contractors would be from outside the local area. This explains the result of the total estimated economic output as relatively high, but the employment and labor income impacts are somewhat lower.

### Fiscal Impacts

The Proposed Action has the potential to generate fiscal benefits to state and local governments in the form of increased tax collections. These include taxes collected on purchases of goods and services in the local economy, and personal and corporate state taxes. IMPLAN has the ability to estimate fiscal benefits to both state and local governments. Based on the impacts summarized in *Table 9: Estimated Economic Impacts*, the Proposed Action would generate \$146,981 in additional tax revenues to state and local governments (Source: IMPLAN 3.0).

Additionally, the State of Utah levies a mining severance tax on extracted uranium. This tax is based on the market value of uranium extracted from milled ore. In 2011, the Utah tax is 2.6 per cent of adjusted market value. Based on Laramide's estimate of an average of 5.5 pounds of uranium extracted per ton of material processed at the mill, the state could collect \$125,362 in mining severance taxes resulting from the sample extraction phase of the project. This amount is calculated as follows:

*20,000 tons of unprocessed samples X 5.5. pounds of uranium extracted per ton of unprocessed sample X estimated market price per pound (\$55.25 average monthly price, July, 2010 to June, 2011) - \$50,000 state exemption X 80% (state adjustment) = \$125,362 (Source: Utah Tax Commission).*

Severance taxes could be higher or lower, depending on the amounts of uranium extracted and the market price at the time of sale.

The La Sal No.2 Project is not expected to significantly increase the populations of either Grand or San Juan counties. The project would employ local residents, and many of the outside contracted personnel are not expected to move to the area, given the short duration of the project work. The term "local" is intended to mean persons who have lived in either Grand or San Juan counties prior to hiring and who did not move to this area in anticipation of being hired at the La Sal No. 2 operation.

Given the short duration of the project, the La Sal No. 2 Project is not expected to create a potential for long-term housing demand, but it would generate a demand for temporary housing, particularly from the underground rehabilitation and underground exploration contractors who would probably import skilled workers for the project. It is expected that both Grand and San Juan counties (and, in particular, the town of Moab) would be able to accommodate temporary housing needs, specifically for those individuals seeking hotel or motel rooms and recreational vehicle parking spaces. Similarly, It is expected that workers seeking apartments, houses or mobile homes to rent could be accommodated in the town of Moab.

The La Sal No. 2 Project would not strain community facilities and public services in either Grand or San Juan counties. The public facilities and services of both counties would be able to accommodate the relatively small population increment associated with the project. Further,

the project would generate tax revenues, which would be used to fund any demand for community or public services created by the direct or indirect employment and population increases that result from the project.

#### **4.6.3 Alternative C – Line Electric Power**

The socioeconomic effects of Alternative C would be the same as addressed for Alternative B.

### **4.7 WILDLIFE**

#### **4.7.1 Alternative A – No Action Alternative**

Under the no-action alternative, there would be no direct disturbance or indirect effects to wildlife or wildlife habitat. However, current land use trends in the area would continue, including exploration, mining, grazing, hunting, four-wheeling, and other dispersed recreation. These land use trends would have ongoing unqualified effects on wildlife populations and habitats.

#### **4.7.2 Alternative B – Proposed Action**

##### **Wildlife**

Wildlife would be displaced due to the increased human activity, noise, and vehicle use during construction and installation activities. Increased vehicular traffic and construction activities could cause direct mortality to species or impede daily activities of wildlife. In light of the current traffic on the Big Indian roads, the increase in vehicle / wildlife incidents would be very minimal. The disturbed area would remove wildlife habitat and could permanently displace some individual animals; however most species would readily relocate to adjacent habitats.

Habitat disturbance could result in direct losses of smaller, less mobile species of wildlife, such as small mammals, as well as displacement of more mobile species to adjacent undisturbed habitats until the project operations cease and reclamation has been completed.

There would be approximately 5 acres of mule deer and elk habitat that would be removed or altered due to surface disturbance from the Proposed Action. These areas would likely not be available for mule deer or elk use on a continual basis, although herds typically move through the area to higher elevation during the spring and summer months.

Human presence, and any noise associated with the project activities, may cause wildlife to avoid the area. Reaction of animals to noise varies depending on the intensity of the noise source and whether it is continuous or intermittent. Transient loud noises generally provoke alarm responses, while many animals apparently learn to ignore more constant, lower-level noise sources not associated with negative experiences such as being chased. Therefore, there is the potential for some wildlife species to access the site during exploration activities.

No new access roads would be constructed that could adversely impact the movement of animals with larger ranges (e.g., mammalian predators) and big-game animals that use the area (e.g., mule deer and elk).

Past and ongoing exploration and mining in this area have resulted in the loss of some native wildlife habitats. However, the amount of habitat disturbance is quite small in comparison with the overall wildlife habitat of the area. Some of the historic pinyon-juniper chaining might have enhanced some big game habitat. Increase human presence in the region could also cause cumulative impacts to wildlife through vehicle mortalities, four-wheeling use, increased legal or illegal hunting, noise effects and harassment.

#### **Migratory Birds and Raptors**

Numerous migratory bird species may utilize the project area for a portion of the year as noted in the affected environment. Approximately 5 acres of potential foraging and nesting habitat would initially be disturbed or removed as a result of construction activities at the portal and vent raise sites. However, a decrease in foraging and nesting opportunity is not expected based on the surrounding areas that contain abundant acreages of suitable sage-steppe habitat which would not be disturbed.

The proposed exploration project is planned to begin in the spring to early summer 2012, if authorized by the BLM. Surface disturbance presents the greatest impacts to migratory birds if activities occur during the nesting season. The impacts described below would be specific to the nesting season during which exploration construction occurs, as birds could nest in adjacent areas in subsequent seasons. Surface disturbing activities where nesting activity is occurring may lead to nest abandonment and chick mortality if nests are destroyed.

The most likely species of concern that would be impacted are the sage sparrow and the Brewer's sparrow. Surface disturbing activities taking place outside of the migratory bird breeding and nesting season (typically May 1 through July 31) may cause temporary, short-distance and short-term displacement that would have minimal to no impacts to birds.

All raptors (eagles, hawks and owls) are given federal protection under the Migratory Bird Act and Executive Order 13186. Breeding season surveys completed in May 2011 indicate there are no raptors nesting in the vicinity of the proposed project area. If construction activities in new areas continue into future years, breeding season surveys must again be conducted and nest territories avoided.

Individual raptors and wintering raptors and golden eagles may avoid areas immediately surrounding the exploration activities while construction activities are on-going. However, this is not likely to adversely impact raptors as adjacent areas could be used for foraging and roosting.

Small-scale raptor habitat degradation or fragmentation may potentially occur as an indirect effect. Foraging habitat impacts would be limited to the disturbance footprint, as prey species may be displaced but individuals would be able to relocate to surrounding suitable habitat

within the project area. An immeasurable indirect effect could occur if human and vehicular activity increases along the roads within or near suitable, unused nesting habitat. New disturbance created by increased activity may make this nesting habitat undesirable by potential nesting raptors during the following or in future breeding seasons.

Surface disturbance from this project would present the greatest impacts to migratory birds and raptors if surface-disturbing activities occur during nesting season. These impacts would be specific to that nesting season, as parent birds could re-nest in following years in more suitable locations. Activities taking place outside of migratory bird breeding and nesting season (typically May 1st through July 31st) may cause temporary, short-distance and short-term displacement that would have minimal to no impacts to birds.

Raptors, including red-tailed hawks, Cooper's hawks, and golden eagles are known to utilize the project area for foraging. No nests were identified during the biological survey conducted in May 2011. See *Appendix B: Nesting Raptor Species Report*.

#### **Bats**

Bats may forage in or near the project area but no bats are known to roost at the project site. Potential roosting habitat may exist in the vicinity of the proposed project. The past Homestake portal and ventilation shaft have been sealed and covered with rock and soil material. Bats may avoid foraging during surface disturbing activities, but, given the small nature of the proposed disturbance, any effects would be minimal. Abundant suitable foraging and roosting habitats are found near the project area. The loss of roost habitat (caves, abandoned mines, and rock crevices) and dramatic changes to water sources, may negatively impact bat populations if these changes were to occur on a large scale and impact their insect forage base. The proposed project would impact approximately five acres of surface lands and would not alter local water sources. Therefore project activities are not expected to reduce bat populations in the area.

#### **4.7.3 Alternative C – Line Electric Power**

The impacts to wildlife of Alternative C would be the same as addressed for Alternative B, as long as raptor proof power pole structures and conductor configuration are used for the distribution line that would supply the project site. The configuration of the conductors on the support structures would not allow the construction of nests, by raptor species inhabiting the project area.

### **4.8 GEOLOGY / MINERAL RESOURCES / ENERGY PRODUCTION**

#### **4.8.1 Alternative A – No Action Alternative**

Homestake produced and shipped an estimated 46,610 tons of uranium material from the La Sal No. 2 operation: 41,562 tons was processed at the Rio Algom mill, which was a carbonate leach mill (now closed and reclaimed) about two miles from the site and 5,048 tons were processed at the White Mesa mill, an acid leach facility about 60 miles south of the project.

Under the no-action alternative, no underground exploration would occur, and the extraction of 20,000 tons of uranium material would not occur. The potential to sample this uranium at some point in the future would remain.

#### **4.8.2 Alternative B – Proposed Action**

There would be negligible effects to the geologic resources as a result of the underground exploration and the removal of up to 20,000 ton bulk sample. Although some tonnage would be removed for test purposes, the existing geologic structure and lithology of the area would not be altered. The potential recoverability of uranium resources would remain pending the decision that such a resource could be economically recovered and processed. In addition, under the Proposed Action, there would be no indirect or cumulative effects to the geologic resources. At this time no mine is proposed, but should the results of sampling be favorable, a mine could potentially be proposed. Laramide would be required to modify their mine plan to accommodate mining and another environmental analysis for mining would be completed.

The ore that would be removed for the bulk sample would be an irreversible and irretrievable expenditure of the rock resource in the area.

#### **4.8.3 Alternative C – Line Electric Power**

The geology / mineral resources/Energy Production effects of Alternative C would be the same as addressed for Alternative B.

### **4.9 MITIGATION FOR ACTION ALTERNATIVES, B AND C**

#### **4.9.1 Air Quality Mitigation**

Laramide would be required to monitor radon levels at the portal and ventilation shaft on a weekly basis and submit the data in a quarterly report to the BLM. The data should indicate the device and method used to collect the data and should be reported as a dose equivalent measured as mrem.

For public safety, install a fence around the ventilation shaft. This would help keep the public away from direct contact with any vented materials.

In addition, the BLM would require Laramide to return the site to pre-exploration gamma levels, as described in *Appendix C, Gamma Report*.

#### **4.9.2 Wildlife**

Laramide would be required to fence a portion of the perimeter of the exploration site, including the mine opening and building location for security and to deter large species of wildlife from accessing the site and to prevent livestock access to the site.

#### **4.9.3 Geology/Mineral Resources/Energy Production**

To document the removal of sampled material, Laramide would be required to provide the BLM with copies of the scale tickets or delivery tickets from the White Mesa Mill. This would ensure no more than 20,000 tons of material would be removed from the mine.

#### **4.10 MONITORING AND / OR COMPLIANCE**

Monitoring includes inspections for compliance with the terms and conditions of the approved Mine Plan of Operations for exploration. Pursuant to 43 CFR 3809.600, the BLM Moab Field Office currently inspects operations, as needed, to ensure compliance with regulations at the 43 CFR Subparts 3809 and 3715, including all conditions of approval. BLM would conduct compliance inspections on a routine bases and would coordinate its inspection efforts with other agencies as necessary, including the State of Utah Division of Oil, Gas and Mining for compliance with permit terms and reclamation standards.

The office resource specialists may also participate in the compliance inspections as part of general resource monitoring.

#### **4.11 CUMULATIVE IMPACTS ANALYSIS**

Federal Regulations at 40 CFR 1508.7, define a cumulative impact as: " ... the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." The following sections describe past, present and reasonably foreseeable actions in the vicinity of the proposed project.

##### **4.11.1 Air Quality**

###### **4.11.1.1 Cumulative Impact Area (CIA)**

The effects analysis domain for assessing cumulative air quality impacts consists of the Big Indian Valley area, which covers about 17,423 acres. Because the amount of radon and dust that would be generated from implementation of Alternatives B and C would be small and easily dispersed by the characteristically moderate winds, cumulative impacts to air quality would likely be greatest near the ventilation shaft, portal area and access road. The residence located about 1.3 miles (point-to-point) as drawn on a map would be the closest receptor of any dust or radon. Dust control is built into the proposed action and the venting of radon gas is expected to be low and limited to the immediate project site. The timeframe for analysis for cumulative effects on air quality is 18 months.

###### **4.11.1.2 Past and Present Actions**

In the cumulative impact area uranium mining began in 1952 and continued to the early 1980s. No active mines are operating in Big Indian Valley at this time. Oil and gas exploration has occurred in the past. Thirty-one wells have been drilled in the Big Indian Valley area, of those 15 have been plugged and abandoned, 13 are shut in, and three are producing.



The Lisbon Gas Plant is located within the Big Indian cumulative impact area. The plant currently produces natural gas, condensate, natural gas liquids, and liquid helium.

East of the proposal is an active limestone quarry (on School and Institutional Trust Administration (SITLA) lands and private lands) and exploratory drilling for potash (potassium salts) on lands administered by SITLA are located within the CIA.

Copper was mined at the Big Indian about 1.5 miles northeast of the proposed project area. Copper was discovered at the Big Indian Mine in 1903 (UGS, 2006) and has occurred off and on into the early 1990s. Livestock grazing is also a past and present action occurring within the CIA.

#### **4.11.1.3 Reasonably Foreseeable Action Scenario (RFAS)**

The Moab Field Office does not have any mine proposals in the Big Indian Valley area. If the results of La Sal No. 2 Sampling project identify an economic uranium deposit, then a mine may be proposed at that time. For now any mining is speculative.

In terms of oil and gas drilling, the BLM predicted that 30 to 60 wells would be drilled in the Lisbon-Big Indian area over the next 15 years (BLM 2005).

Livestock grazing is expected to continue, as are the activities on lands managed by SITLA.

#### **4.11.1.4 Cumulative Impact Analysis**

The cumulative impacts to air quality are slightly different between Alternatives B and C. In Alternative A, generators would be used to provide electricity for the mine. These generators would be diesel powered, but would operate for 18 months. In Alternative C, an electric power line would be installed which would limit the use of generators to periods of time when the line power goes down. It was determined that no emissions inventory was needed for this project because of the limited time of the operation. Alternative A, the No Action alternative would not result in an accumulation of effects to air quality impacts.

Radon gas emissions would be limited to the immediate ventilation shaft and the mine portal. Radon disperses quickly in the atmosphere and does not travel far. Dust would be managed in Alternatives B and C and Laramide would be required to monitor radon emissions. Under Alternative A, the No Action alternative, some background radon would be generated from the geologic formations and soils in the area that would not result in an accumulation of effects to air quality impacts.

The White Mesa uranium mill would process the 20,000 tons of sampled ore from the La Sal No. 2 project. Stockpiling this ore at the White Mesa uranium mill prior processing would result in negligible indirect impacts as it is a small percentage of the total ore the uranium mill processes and therefore, would cause no cumulative impacts when combined with the minor direct impacts of the mine sampling operation.

#### **4.11.2 Noise**

##### **4.11.2.1 Cumulative Impact Area (CIA)**

The cumulative impact area for noise is a 1.44 mile radius around the ventilation shaft and encompasses the residence and the mine portal. This was chosen as the CIA because of the effects of noise on the residence and approaches the limits of sound attenuation generated by the project. The effects of noise are expected to occur for the 18 month life of the project.

##### **4.11.2.2 Past and Present Actions**

Past and present actions within the CIA are uranium mining and exploration at the La Sal No. 2 during the late 1970s and early 1980s. The La Sal No. 2 mine site was reclaimed. Copper mining began at the Big Indian Mine in 1903 and continued off and on into the 1990s. No reclamation has occurred at the copper mine. Any noise generated by these projects ended when operations ended. Livestock grazing occurs within the CIA.

##### **4.11.2.3 Reasonably Foreseeable Action Scenario (RFAS)**

Reasonably foreseeable action that is expected to occur within the CIA is livestock grazing. The BLM has no other proposals for this area at this time.

##### **4.11.2.4 Cumulative Impact Analysis**

The cumulative effects from past, present, and reasonably foreseeable actions are negligible. The noise generated by previous operations ended when those operations ceased. Alternative B would generate more noise because Laramide would use generators to provide electricity to the project. Alternative C would generate less noise, because the use of generators would be limited to times when the line power is down. In both alternatives, the noise levels would be highest at the portal and ventilation shaft and would lower distance away from these facilities. The proposal is expected to last 18 months and is not expected to noticeably add to other noises in the area. Alternative A, the No Action alternative would not result in an accumulation of effects to noise impacts.

#### **4.11.3 Soil and Wildlife Resources**

##### **4.11.3.1 Cumulative Impact Area (CIA)**

The effects analysis domain for assessing cumulative air quality impacts consists of the Big Indian Valley area, which covers about 17,423 acres. This area was chosen because the soil types and wildlife use across the area are similar. The timeframe of analysis for cumulative effects for soils and wildlife is 18 months, which is the duration of the proposed project.

##### **4.11.3.2 Past and Present Actions**

In the cumulative impact area uranium mining began in 1952 and continued to the early 1980s. No active mines are operating in Big Indian Valley at this time. Oil and gas exploration has occurred in the past. Thirty-one wells have been drilled in the Big Indian Valley area, of those 15 have been plugged and abandoned, 13 are shut in, and three are producing.

The Lisbon Gas Plant is located within the Big Indian cumulative impact area. The plant currently produces natural gas, condensate, natural gas liquids, and liquid helium.

East of the proposal is an active limestone quarry (on School and Institutional Trust Administration (SITLA) lands and private lands) and exploratory drilling for potash (potassium salts) on lands administered by SITLA are located within the CIA.

Copper was mined at the Big Indian about 1.5 miles northeast of the proposed project area. Copper was discovered at the Big Indian Mine in 1903 (UGS, 2006) and has occurred off and on into the early 1990s. Livestock grazing is also a past and present action occurring within the CIA.

#### **4.11.3.3 Reasonably Foreseeable Action Scenario (RFAS)**

The Moab Field Office does not have any mine proposals in the Big Indian Valley area. If the results of La Sal No. 2 Sampling project identify an economic uranium deposit, then a mine may be proposed at that time. For now any mining is speculative.

In terms of oil and gas drilling, the BLM predicted that 30 to 60 wells would be drilled in the Lisbon-Big Indian area over the next 15 years (BLM 2005).

Livestock grazing is expected to continue, as are the activities on lands managed by SITLA.

#### **4.11.3.4 Cumulative Impact Analysis**

In terms of Alternatives B and C, the cumulative effects from past, present and reasonably foreseeable actions on soil resources include surface disturbance contributing to reduced soil productivity, soil compaction, erosion, and subsequent sedimentation. These cumulative impacts have been minimized by imposing erosion control measures with many of these actions. The Proposed Action would contribute a negligible amount to the cumulative impacts because soils would be stabilized on site using erosion control measures, and would last until the site is reclaimed. For Alternatives B and C the cumulative effects from past, present and reasonably foreseeable actions include habitat loss and degradation resulting from the removal of vegetation, habitat fragmentation, and wildlife displacement in disturbed and occupied areas. These cumulative impacts have been minimized by applying seasonal restrictions for surface disturbing activities and requiring reclamation and revegetation of disturbed areas after activities are completed. The Proposed Action would contribute a negligible amount to the cumulative impacts because the impacts are limited to the duration of the project which would result in the temporary displacement of wildlife during sampling activities. Alternative A, the No Action alternative, would not result in the accumulation of effects to soil or wildlife impacts.

#### **4.11.4 Water Quality**

##### **4.11.4.1 Cumulative Impact Area (CIA)**

The effects analysis domain for assessing cumulative air quality impacts consists of the Big Indian Valley area, which covers about 17,423 acres. This area was chosen because Big Indian

Valley is a small watershed. The timeframe of analysis for cumulative effects for water resources is 18 months, which is the duration of the proposed project.

#### **4.11.4.2 Past and Present Actions**

In the cumulative impact area uranium mining began in 1952 and continued to the early 1980s. No active mines are operating in Big Indian Valley at this time. Oil and gas exploration has occurred in the past. Thirty-one wells have been drilled in the Big Indian Valley area, of those 15 have been plugged and abandoned, 13 are shut in, and three are producing.

The Lisbon Gas Plant is located within the Big Indian cumulative impact area. The plant currently produces natural gas, condensate, natural gas liquids, and liquid helium.

East of the proposal is an active limestone quarry (on School and Institutional Trust Administration (SITLA) lands and private lands) and exploratory drilling for potash (potassium salts) on lands administered by SITLA are located within the CIA.

Also east of the proposal are a series of ponds that oil and gas companies used to place their produced water. These ponds are no longer used, but they do collect storm runoff.

Copper was mined at the Big Indian about 1.5 miles northeast of the proposed project area. Copper was discovered at the Big Indian Mine in 1903 (UGS, 2006) and has occurred off and on into the early 1990s. Livestock grazing is also a past and present action occurring within the CIA.

#### **4.11.4.3 Reasonably Foreseeable Action Scenario (RFAS)**

The Moab Field Office does not have any mine proposals in the Big Indian Valley area. If the results of La Sal No. 2 Sampling project identify an economic uranium deposit, then a mine may be proposed at that time. For now any mining is speculative.

In terms of oil and gas drilling, the BLM predicted that 30 to 60 wells would be drilled in the Lisbon-Big Indian area over the next 15 years (BLM 2005).

Livestock grazing is expected to continue, as are the activities on lands managed by SITLA.

#### **4.11.4.4 Cumulative Impact Analysis**

The cumulative effects to water quality from past, present and reasonably foreseeable actions are negligible due largely to the lack of water sources in the area. Alternatives B and C have spill prevention and control measures to address potential spills. The water that would be used for underground drilling and dust control meets the State of Utah Water Quality standards for livestock use. Alternative A, the No Action Alternative would not contribute to the accumulation of effects to water quality impacts.

#### **4.11.5 Socioeconomics**

##### **4.11.5.1 Cumulative Impact Area (CIA)**

The cumulative impact area for socioeconomics is Grand and San Juan Counties, because these counties would receive any economic benefits that the project would generate.

##### **4.11.5.2 Past and Present Actions**

Uranium mining and exploration have occurred in Grand and San Juan Counties since the 1950s and have gone through several boom and bust cycles. The last cycle ended in the early 1980s, when uranium prices dropped making mining not economically viable. Any present mining and exploration that occurs is dependent on the price of uranium ore and the grade of the uranium deposits. The La Sal Mines Complex provides jobs to San Juan and Grand County and pays revenues to San Juan County.

Oil and gas exploration and development have occurred in the project area since the 1980s (BLM 2005). Oil and gas wells in the area are demonstrating economically viable production volumes. The Lisbon Valley Gas Plant has been in operation for several years and provides a few local jobs.

The Lisbon Valley Copper Mine employs about 100 people from the area and provides revenues to San Juan County.

##### **4.11.5.3 Reasonably Foreseeable Action Scenario (RFAS)**

Oil and gas activities may provide benefits to income, job creation, and revenues from an estimated 40 future wells (BLM 2005).

The La Sal No. 2 Sampling project is located within the Lisbon Valley Known Potash Leasing Area (KPLA). The Moab Field Office has a proposal to analyze the effects of competitive leasing within this KPLA. This proposal is in the initial stages and the office is still fine tuning the proposed action. The amount of revenues that may result from future potash development is speculative and cannot be quantified.

The Moab Field Office also has a proposal for potash exploration at Hatch Point. Exploration is expected to provide a few jobs for drill pad construction and the drill crew would likely stay in local hotels and motels, providing some revenue to Moab and Monticello.

The Moab Field Office does not have any mining proposals so the amount of revenues that may result from future mining operations is speculative and cannot be quantified.

##### **4.11.5.4 Cumulative Impact Analysis**

Alternatives B and C under the La Sal No. 2 Sampling project would provide a limited, but beneficial cumulative effect to the socioeconomics of Grand and San Juan Counties. The project would employ 35 people for the 18 month term of the project, and would provide \$146,981 in additional tax revenues to state and local governments. Alternative A, the No Action would not result in an accumulation of effects to socioeconomics impacts.

The White Mesa Uranium Mill currently employs approximately 150 people and is the largest non-government employer in San Juan County, Utah.

#### **4.11.6 Geology/Mineral Resources/Energy Production**

##### **4.11.6.1 Cumulative Impact Area (CIA)**

The cumulative impact area for analysis for Geology/Mineral Resources and Energy Production is the immediate vicinity of the La Sal No. 2 mine site.

##### **4.11.6.2 Past and Present Actions**

The La Sal No. 2 was mined in the late 1970s and early 1980s when it was forced to close when the uranium prices dropped. The La Sal No. 2 produced 46,610 tons of uranium ore. The proposed sampling project would produce another 20,000 tons of uranium ore. Livestock grazing is the only other known past and present action that occurs in this CIA.

##### **4.11.6.3 Reasonably Foreseeable Action Scenario (RFAS)**

The results of the La Sal No. 2 Sampling project may or may not identify an economic uranium deposit. Any future mining at this location is speculative. Livestock grazing is expected to continue.

##### **4.11.6.4 Cumulative Impact Analysis**

Removing 20,000 tons of uranium ore for sampling would add to the 46,610 tons that were removed in the late 1970s to the early 1980s. This additional tonnage is expected to have a very minimum effect on the geologic and mineralogic resources in the area. Alternative A, the No Action would not result in an accumulation of effects to socioeconomic impacts.

## **5.0 CONSULTATION AND COORDINATION**

### **5.1 INTRODUCTION**

The issue identification section of Chapter 1 identifies those issues analyzed in detail in the EA. The Interdisciplinary Team Checklist provides the rationale for issues that were considered but not analyzed further. The issues were identified through the public and agency involvement process described in sections 5.2 and 5.3 below.

### **5.2 PERSONS, GROUPS, AND AGENCIES CONSULTED**

As part of the EA scoping process, the public was notified of the Proposed Action by posting on the BLM Moab Field Office web page, the BLM Utah State Office Environmental Notification Bulletin Board, and publication in local newspapers. The BLM Moab Field Office received one comment letter during the scoping period. The scoping comment responses are listed the table in Appendix B.

Consultation with the State Historic Preservation Officer (SHPO) was conducted under the Utah Protocol of the BLM's nationwide programmatic agreement. Under this agreement, the BLM is authorized to make a determination of "No Historic Properties Effectuated" for the project.

On July 27, 2011, the BLM sent consultation letters to 15 tribal entities describing the Proposed Action, and presenting the results of the cultural resource inventories conducted within the Area of Potential Effect (APE). A map of the general project location was attached to the letter. The BLM received response letters from the Pueblo of Zuni and the Hopi Cultural Preservation Office. The responses from the tribes and consultations conducted by the BLM as a follow-up to those letters are described below.

The response from the Pueblo of Zuni (dated August 5, 2011) stated that the proposed project may disrupt and destroy plants that are important to Zuni ceremonies and medicines. However, this letter did not include a list of plant species that could be looked for so that they could be left undisturbed or protected in some way during exploration. On August 12, 2011 the BLM sent a letter to the Pueblo of Zuni, asking for a list of medicinal plant species that could be used in a seed mix for reclamation. To date, the BLM has not received a response to this letter. However, the BLM located an ethnobotanical list for the Pueblo of Zuni that was developed by Crow Canyon. Some of these plants would be incorporated into the seed mix at the time of reclamation.

The response letter from the Hopi Cultural Preservation Office (dated August 18, 2011) stated that the Hopi Tribe claims cultural affiliation to prehistoric cultural groups in Utah, and that the Hopi Cultural Preservation Office considers the archaeological sites of their ancestors to be Traditional Cultural Properties (TCPs). The letter also stated that they understood that the cultural resource survey of the project area identified no National Register-eligible sites, but that they oppose exploration and mining on public lands pursuant to the 1872 Mining Law. Concerns expressed by the Hopi did not relate to specific sites, TCPs, or sacred areas.

The letter received from the Navajo Historic Preservation Department (HPD) (dated October 3, 2011) was in response to the EA. The letter stated that the proposed undertaking/project area may impact Navajo traditional cultural resources and requested a formal meeting.

The BLM met with Mr. Tony Joe, Jr. of the Navajo HPD, at his office in Window Rock, Arizona on January 4, 2012. During this meeting Mr. Joe stated that he felt that the project area needed to be fenced to protect wildlife and livestock. Fencing was added to the wildlife section of the EA and to mitigation in section 4.9. He also expressed concerns about ore stockpiled before it is transported to the mill and felt that it should be tarped or kept moist to keep the wind from blowing the ore. He was told that the ore is generally damp when it comes out of the mine, because water had to be used during its removal to minimize dust and that the ore would only be on the surface temporarily prior to transportation to the mill. In terms of Navajo traditional cultural properties, after reviewing maps of the proposal and that the area had been disturbed in the past, it was determined that the project would not impact any Navajo TCPs.

The BLM concludes that no traditional cultural properties, sacred sites, or other areas of concern to Native American tribes will be impacted by the proposed project. This conclusion is based on 1) the results of the cultural resources inventories and the finding that no historic properties are present or will be affected, and 2) consultations with the tribes failed to produce any additional information about specific TCPs, sacred sites, or other cultural concerns.

To confirm that the project does not meet the radon monitoring requirements under NESHAPS the Environmental Protection Agency was consulted (personal communication with Angelique Diaz, March 30, 2012). The results of the consultation are that the project is of a small scale and short duration, that it would not be required to monitor radon under NESHAPS.

**Table 11: List of all Persons, Agencies and Organizations Consulted for Purposes of this EA**

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
Lori Hunsaker -Utah State Historic Preservation Office (SHPO)	Consultations undertakings, as required by the National Historic Preservation Act (16 USC 470)	Protocol Agreement between the SHPO and the BLM authorizes BLM to make determination of "no effect".
Ute Mountain Ute Tribe	Gary Hayes; Chairman	No response received.
Hopi Tribe	Leigh Kuwanwisiwma; Director	A letter was received on August 26 2011. No issues were raised to carry forward for analysis or mitigation however, the Tribe expressed opposition to uranium mining on public lands.
Hopi Tribe	Terry Mogart,	Response received in an August 26, 2011 letter through Director Kuwanwisiwma.
Navajo Nation	Joe Shirley; President	Response received in a letter dated October 11, 2011 through Mr. Joe, Mr. Francis' replacement.
Navajo Nation	Kelly Francis; Cultural Specialist	In a letter received on October 11, 2011 the Navajo Tribe requested a consultation meeting. This meeting was held on January 4, 2012. See ID Team Checklist and Appendix D
Palute Tribe	Jeanie Borchardt; Chairwoman	No response received.
Palute Tribe	Dorena Martineau; Cultural Resource Director,	No response received.
Southern Ute Tribe	Pearl E. Casias; Chariman	No response received.
Southern Ute Tribe	Nell Cloud; NAGPRA Coordinator,	No response received.
Ute Indian Tribe	Irene Cuch; Chariman	No response received.
Ute Indian Tribe	Betsy Chapoose; Director	No response received.
Zuni Pueblo	Arlen Quetawki, Sr.; Governor	A response was received in a letter dated August 26, 2011 through Mr. Dongoske.
Zuni Pueblo	Kurt Dongoske; Director	A letter was received on August 26, 2011 which led to adding a native seed mixture requirement to the reclamation planning requirements.
Ute Mountain Ute Tribe	Terry Knight; Tribal Historic Preservation Officer	No response received
White Mesa Ute Tribe	Elayne Atcity; Council Member	No response received.
Angelique Diaz	EPA Region 8 NESHAPS Air Quality Specialist	March 30, 2012 personal communication NESHAPS does not apply to this proposal because it is a small operation <100,000 tons per year. Radon dispersion and deposition will likely be negligible, again, because of the size of the proposal.



### 5.3 SUMMARY OF PUBLIC PARTICIPATION

Public scoping for this EA started on April 15, 2011, when BLM posted the proposal on its Environmental Notification Bulletin Board (ENBB). The Mining Plan of Operations for Exploration was posted on the Moab Field Office's website on May 2, 2012 and the BLM posted a legal notice in the Moab's *Times Independent* (May 5, 2011) and Monticello's *San Juan Record* (May 4, 2011) newspapers. Three comment letters were received as a result of scoping. The comment letters received were from Uranium Watch, the Pueblo of Zuni and the Hopi Tribe. The letters provided input on issues related to the project or expressed opposition to the project. The comments are summarized in Appendix B: Scoping Comments and Responses and discussed in Section 5.3.1 of this EA.

A 30-day comment period for the EA was initiated on October 7, 2011 and ended on November 7, 2011. The BLM informed the public that the EA was available for their review and comment through the ENBB, the Moab Field Office's website and local newspapers. Four comment letters on the EA were received. The comments that were received were from Uranium Watch, William Harrison, The Navajo Nation and San Juan County. The comments and responses to comments are summarized in Appendix E: Comments and Responses. As a result of public comments more details were added to the EA. These are discussed further in Section 5.3.2 of this EA.

#### 5.3.1 Scoping Comment Analysis

Pursuant to 43 CFR 3809.411(c), the public and agencies were afforded time to comment on the MPO. BLM placed announcements in local papers (Moab, and Monticello) and sent letters to tribal entities. As a result of this scoping effort BLM received three comment letters.

Commenters spoke against its approval and expressed concerns regarding many topics. There was a range of comments, but not all were considered resource issues to be addressed in detail in the EA. Comments were made concerning NEPA, air quality, geology and mineral resources, human health and safety, water quality, reclamation, vegetation, wildlife, worker safety and alternatives. This section presents an overview of the issues raised in the comments; Appendix B presents a detailed summary of the comments and BLM's responses to each issue raised during scoping.

These comments were carefully considered and helped drive both issue identification and impact analysis. Not all of the comments presented by the public are actual resource issues to be discussed in detail in this EA. Some comments are outside the scope of this EA, some are addressed through standard operating procedures because they are required by federal law, rule, or regulation, and some are issues that are discussed in detail in this EA. The Interdisciplinary Team Checklist in Appendix A further focused the efforts for this EA.

##### 5.3.1.1 NEPA

One comment stated that the BLM should look at the potential environmental impact with the intent of identifying all potential environmental effects.

One comment stated that the following items should be analyzed as separate issues in the EA: transportation of ore to the mill, worker health and safety, impacts of the processing of the material at the White Mesa Mill (along with the unique impacts to the low-income and tribal communities in the vicinity of the mill), impacts to nearby residents at the Big Indian Mine, and cumulative impacts of uranium mining in the Lisbon Valley.

#### **5.3.1.2 Air Quality**

One comment stated that a radiation survey should be completed to establish background levels of radiation at the site.

Several comments were related to radon, radon progeny, radioactive particulates and dust. Specifically to the venting of radon from the mine and dust generated on roads and the effects on wildlife, workers, nearest residents, soil and water.

#### **5.3.1.3 Geology/Mineral Resources**

Concerns were expressed that the operation would generate 100,000 tons or more of presumed ore during sampling.

#### **5.3.1.4 Reclamation Plan**

Comments were made that the reclamation plan should include the full operation of a mine and the use of inorganic fertilizer to use during revegetation.

#### **5.3.1.5 Vegetation**

One comment was made regarding the existing condition of vegetation at the site and past revegetation efforts at the Homestake Mine and other uranium mines in the Lisbon Valley Area.

#### **5.3.1.6 Water Quality**

Comments were made regarding the water that would be hauled to the site. Concerns over its quality and the validity of the water right were made.

#### **5.3.1.7 Wildlife**

Comments were made regarding the effects of noise, radon, and dust on wildlife were made.

#### **5.3.1.8 Worker Health and Safety**

Comments expressing MSHA requirements regarding the availability of mine rescue teams, use of Moab's medical resources and an emergency response plan.

#### **5.3.1.9 Alternatives**

One comment was to have an alternative that included mitigative measures for the impacts from the proposed exploration. Mitigation measures are included in Chapter 4.

A second comment was to include an alternative to using diesel generators. In this alternative the commenter asked that solar power be used to power the operation. The installation of solar power is not practical for this sampling project. However, an alternative to using diesel generators was added as Alternative C in this EA.

A third comment asked that the BLM look at an alternative that did not include electrical power to the ventilation shaft. This is an alternative considered, but not carried forward in the analysis.

### 5.3.2 Response to Public Comments on the EA

The purpose for scoping and for making the EA available for public review is to involve the public in the NEPA process. The BLM received comments on the EA from four respondents during the scoping and comment periods. To help identify issues, analysis requirements, and frame the Alternatives, the BLM has responded to scoping comments in Appendix B. Brief descriptions of the scoping process and letters can be found in Section 1.7; comments from these letters have been summarized in Appendix B.

The BLM received four comment letters during the EA 30-day comment period. Each comment was carefully reviewed and comment responses are summarized in Appendix E.

Several changes were made to the EA as a result of public comments. Changes ranged from minor editorial corrections to additional discussion of environmental impacts, none of which affected the scope of analysis. As a result of public comments, the following changes were made to the EA:

1. Noise was added as a separate issue and analyzed in Chapters 3 and 4. In the original EA, noise was included in the discussion on wildlife, however, the general impacts of noise on a residence was not included in the wildlife section.
2. More information on radon was added to the air quality section in Chapter 3, and monitoring for radon was added as mitigation.
3. Water sampling data and the water right information was added to the water quality section in Chapter 3 and a more detailed discussion of the effects included in Chapter 4.

### 5.4 LIST OF PREPARERS

**Table 12: List of Preparers**

**BLM Preparers**

Name	Title	Responsible for the Following Section(s) of this Document
Kim Allison	Range Management Specialist	Livestock Grazing, Rangeland Health Standards
Ann Marie Aubry	Hydrologist	Floodplains, Soils, Water Quality, Ground and Surface Water, Wetlands, Riparian
Jordan Davis	Range Management Specialist	Invasive Species / Noxious Weeds, Vegetation, Woodland / Forestry
Jan Denney	Realty Specialist	Lands / Access

Rebecca Doolittle	BLM Project Manager Geology – Minerals	Geology / Mineral Resources / Energy Production, Paleontology, Mineral Resources
Leonard Herr	Air Quality Specialist, Utah State Office	Air Quality
Don Montoya	Archaeologist	Cultural Resources, Native American Religious Concerns
Pam Riddle	Wildlife Biologist	Threatened and Endangered Animals, Migratory Birds, Utah BLM Sensitive Species, Fish and Wildlife
Bill Stevens	Recreation Planner –Economist	BLM Natural Areas, Socioeconomics, Wilderness / WSA, Lands with Wilderness Characteristics, Environmental Justice
Katie Stevens	Recreation Planner	Areas of Critical Environmental Concern, Recreation, Wild and Scenic Rivers, Visual Resources, NEPA coordinator
Doug Wight	GIS Coordinator	GIS
Dave Williams	Range Management Specialist	Threatened and Endangered Plants

**Non-BLM Preparers**

Name	Title	Provided input for the Following Section(s) of this Document
Sally Edwards	Project Manager 48 Degrees North	Environmental Analysis
Chris Gayer	Biologist Grasslands Consulting, Inc.	Raptor Surveys, Wildlife
Nick Hall	Biologist Grasslands Consulting Inc.	Raptor Surveys, Wildlife
Daryl Mergen	Botanist Mergen Ecological Delineations	Vegetation, Reclamation
Joe Nagengast	Civil Design Nagengast Brothers, Inc.	Graphics
Andrea Van Schmus	Archaeologist, Montgomery Archaeologists	Cultural Resources

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**APPENDIX A:      Interdisciplinary Team Checklist**