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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.29½ 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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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 described Code of Federal Regulations, 43 CFR 3809.11 (b), this EA was prepared.

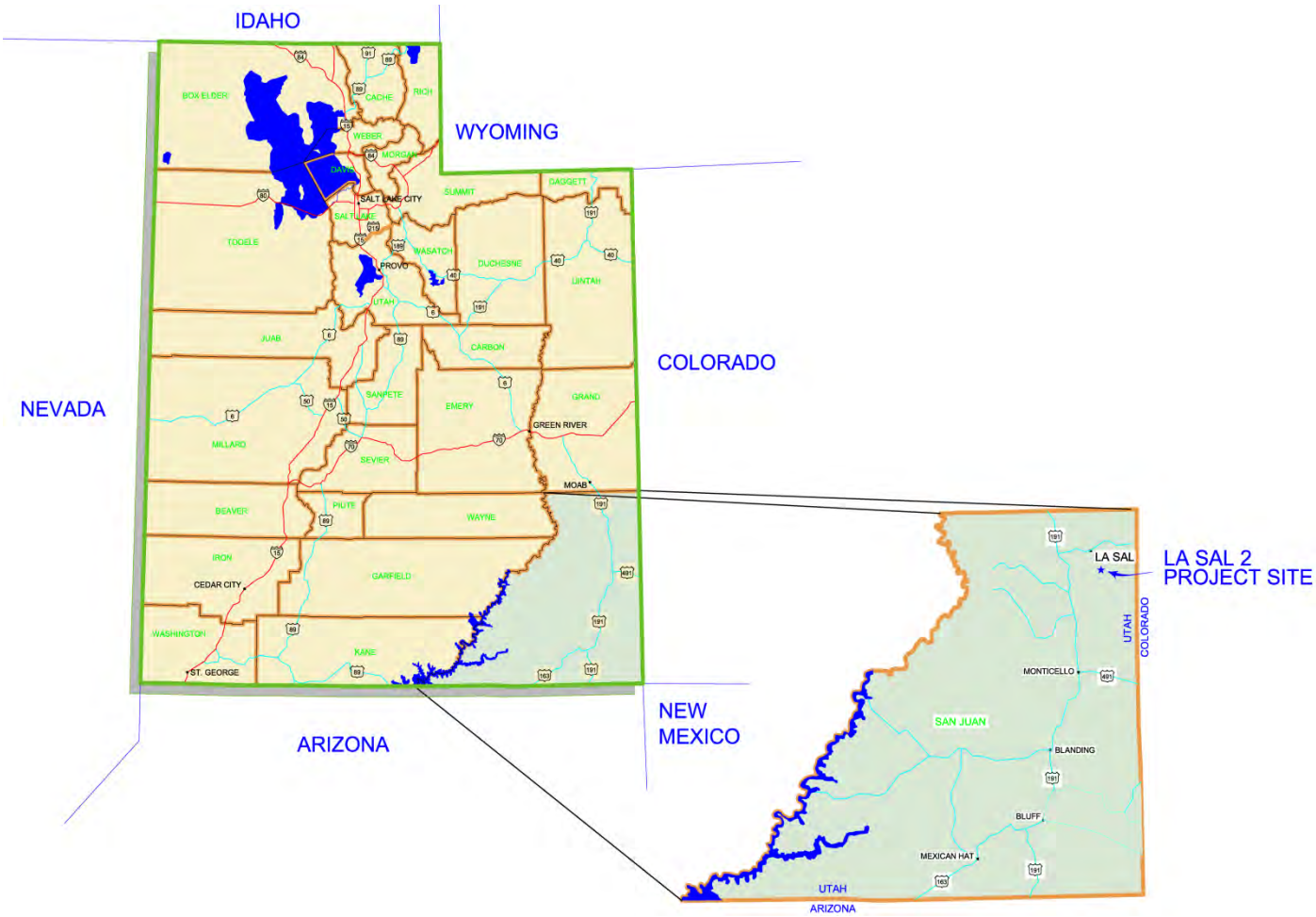
The La Sal No. 2 Project is planned for a site that has undergone past surface disturbance. Homestake Mining Company (Homestake) developed both a decline and a ventilation raise at the site in the early 1980s and delivered an estimated 46,610 tons of uranium ore to off-site mills. There was no on-site 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 was 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 purpose of this EA is to disclose the environmental effects of the La Sal No. 2 uranium exploration project. The BLM is charged with ensuring no undue and unnecessary degradation of the environment occur and to 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 protect public safety and cultural and wildlife resources.

The BLM's need for this EA is to respond to Laramide's plan of operations for underground exploration activities in compliance with Federal Land Policy and Management Act of 1976 (FLPMA), and is under the authority of the Mining Law of 1872, as amended. By examining probable environmental effects of the project, design criteria may be recommended that would reduce adverse environmental effects. Specific elements of the proposed exploration plan have alternatives developed to further protect the environment.

The underlying need for the Proposed Action is for Laramide to sample a potentially valuable deposit of uranium from unpatented mining claims under the authority of the Mining Law of 1872, as amended.

This exploration would be used to confirm the following:

- Geologic data: Nature, grade and continuity of mineralized structures;
- Metallurgical data: Information on the optimal milling methods by conducting metallurgical studies and off-site testing of bulk samples; and,
- Mining methods evaluation: Information on rock characteristics and extraction techniques for use in mine design.

This information is needed by geologists, mining and metallurgical engineers, and company management to determine the extent and viability of possible future underground mining activities. Mineral exploration is an iterative process designed to provide information about the geologic extent of the mineral resource. Geologic conditions are best tested and established by exploration, but mineral exploration does not mean that future mining is imminent.

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 Resource Management Plan (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

Preparation of an EA and the actual permitting processes are related but distinctly separate. An EA is designed to explore alternatives and to discuss environmental effects. The permitting or approval processes give individual government decision makers the authority to grant, conditionally grant, or deny individual permit applications. Permits can be granted with requirements and conditions to eliminate and/or mitigate specific adverse impacts pursuant to individual regulations and guidelines.

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

In addition, the project must comply with other planning laws, such as the 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).

1.7 IDENTIFICATION OF ISSUES

The BLM conducted scoping to focus the EA on those issues considered important to the public and various government agencies. Issues are areas of interest or concerns about the effects of proposed activities on various resources.

The BLM assembled an interdisciplinary team (IDT) to identify issues important for this EA. The scope of the uranium exploration project was presented to the IDT specialists discussed the potential for resource protection in relationship to the proposed surface disturbance, duration and intensity of the exploration activities.

The BLM IDT used a scoping checklist to document issues and narrow the field investigations for each resource. The completed IDT checklist is attached, *See Appendix A: Interdisciplinary Team Checklist.* The checklist also provides rationale for those resources that are not present or not impacted by the project.

The proposed action was posted on the BLM Utah's Environmental Bulletin Board on April 15, 2011. A Notice of Availability of the proposal and a 30 day public scoping and comment period was initiated through publication in Monticello's *San Juan Record* newspaper on May 4, 2100, in Moab's *Times Independent* newspaper on May 5, 2011. The comment period ended on June 6, 2011. Only one letter was received from the public during the comment period. Based on internal and external scoping, the BLM identified six issues that are addressed in this 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 Soils Resources

Issue 1 – Soils impacts

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

1.7.3 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?

1.7.4 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?

1.7.5 Wildlife

Issue 1 – Disturbance

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

1.7.6 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 analyzed, but will not be carried through the environmental analysis process are listed below. Also see *Appendix A: Interdisciplinary Team Checklist*, which presents those resources or elements of the environment that are not expected to be encountered or affected by the La Sal No. 2 Project activities.

1.8.1 Cultural Resources

A cultural resource inventory was conducted for the La Sal No. 2 Uranium Sampling Project. The objectives of the inventory were to locate, document and evaluate any cultural resources within the project area in order to attain compliance with a number of federal and state mandates, including the National Historic Preservation Act of 1966, the National Environmental Policy Act of 1969, the Archaeological and Historic Preservation Act of 1974, the Archaeological Resources Protection Act of 1979, the American Indian Religious Freedom Act of 1978 and the Utah State Antiquities Act of 1973 (amended 1992).

The inventory revealed that several previous cultural resource surveys were conducted near the current project area, which resulted in the documentation of numerous archaeological sites. However, no previously documented sites, or newly documented sites occur within the current project boundary. Further research on the La Sal No. 2 Mine revealed that this mine was previously permitted and developed by Homestake Mining in the late 1970's. The La Sal No. 2 Mine was reclaimed in the 1980's. The mine is not mentioned specifically in any historic references.

There are eight previously documented sites located in the project vicinity, but none adjacent to or within the project area. None of the sites are eligible to be listed on the National Register of Historic Places.

The cultural resource inventory for the La Sal No. 2 Uranium Sampling Project resulted in no cultural resources found. Based on these findings, a determination of "no historic properties affected" is recommended for the undertaking pursuant to Section 106, of the National Historic Preservation Act and the Code of Federal Regulations at 36 CFR 800.

1.8.2 Special Status Wildlife Species

Special Status Wildlife Species were considered in this analysis and the results are described below, along with the rationale for dismissing them from further analysis.

Federally Listed Species

The proposed project area does not include critical habitat as designated by the U.S. Fish and Wildlife Service (USFWS) for any listed species. The Mexican Spotted Owl designated critical habitat adjacent to this project contains only weakly modeled habitat according to the 1997 Willey-Spotskey Mexican Spotted Owl Habitat Model. The area is not suitable for Mexican Spotted Owl occupancy because the primary constituent elements are lacking. This project would have no effect on Mexican Spotted Owls and their habitats.

The proposed project area includes limited Mexican Spotted Owl foraging habitat, according to the 1997 Willey-Spotskey Mexican Spotted Owl Habitat Model. No canyon nesting habitat is depicted in the model. Thus, Mexican Spotted Owl foraging habitat in or near the project area is not suitable for Mexican Spotted Owl occupancy because the primary constituent elements for nesting are lacking. The nearest suitable habitats have a current absence designation and are well over two miles away; therefore foraging Mexican Spotted Owl are not located in this area. Due to the lack of nesting habitat and occupancy in nearby suitable habitats this project would have no effect on Mexican Spotted Owls and their habitats.

There are no riparian habitats in the project area; therefore there would be no impacts to Southwestern willow flycatchers or their habitats. No other Federally Listed Species are known to occur or to have suitable habitats in the project area

Utah BLM Sensitive Species

The project area is within historical Gunnison sage grouse habitats however, the Utah Division of Wildlife does not consider the project area to have historical habitat suitable for occupancy. Since the mid 1990's there has not been any known sage grouse occupancy in this portion of the Moab Field Office, therefore, the proposed action would not impact Gunnison sage grouse or their habitats.

The Moab Resource Management Plan has identified potential burrowing owl habitat in and near the project area, but due to the lack of prairie dog activity and suitable prairie dog habitats, burrowing owl nesting or foraging is not expected. Raptor surveys preformed during the 2011 breeding season further confirmed this fact (Grassland, 2011); therefore the proposed action would not impact burrowing owls or their habitats.

The Moab Resource Management Plan has identified Gunnison prairie dog habitat near the project area, but there is no suitable prairie dog habitat within the project area and there are no known occurrences documented. Therefore, the proposed action would not impact prairie dogs or their habitats.

Several sensitive bats have the potential to occur in the project area. Impacts on bats are analyzed in this document. No other sensitive species are expected to consistently utilize the project area. Although there could be a possibility that additional sensitive species could be in the project area, the likelihood of encountering one of the additional sensitive species would be low due to marginal habitat.

1.8.3 Noise

The exploration activities were considered in relationship to being a nuisance to neighboring residents. The closest residence is approximately one mile north of the proposed project however, the activities would mostly be underground. 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 and raise. Traffic noise would be noticeable in areas adjacent to the roads.

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.

This chapter also includes the environmental management and mitigation measures, including reclamation, that have been proposed by Laramide, along with 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/Escape 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.

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.

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

UNDERGROUND EQUIPMENT	*SURFACE EQUIPMENT*
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 right has been provided to the BLM, and is in compliance with water regulations administered by the State of Utah.

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

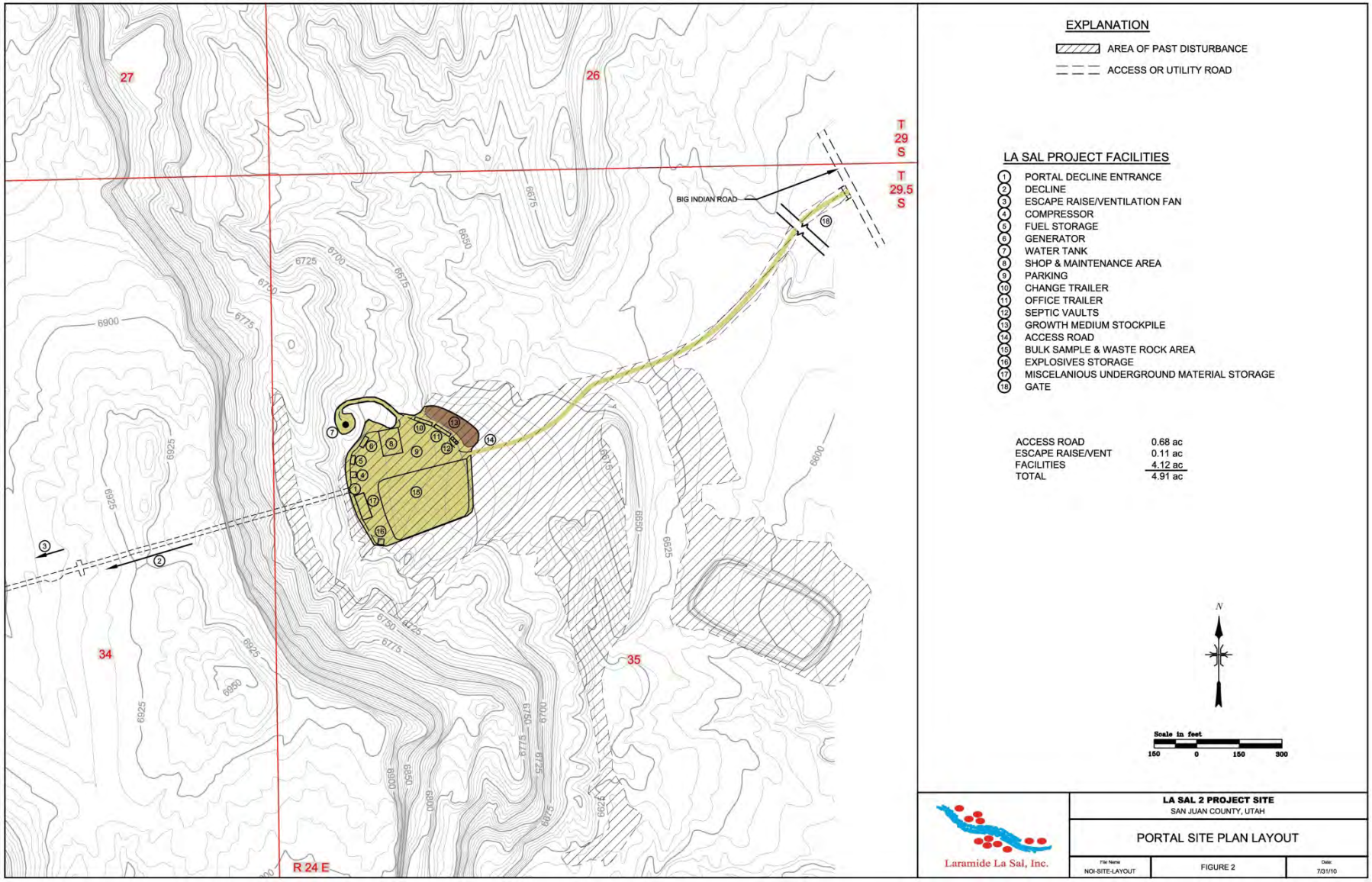
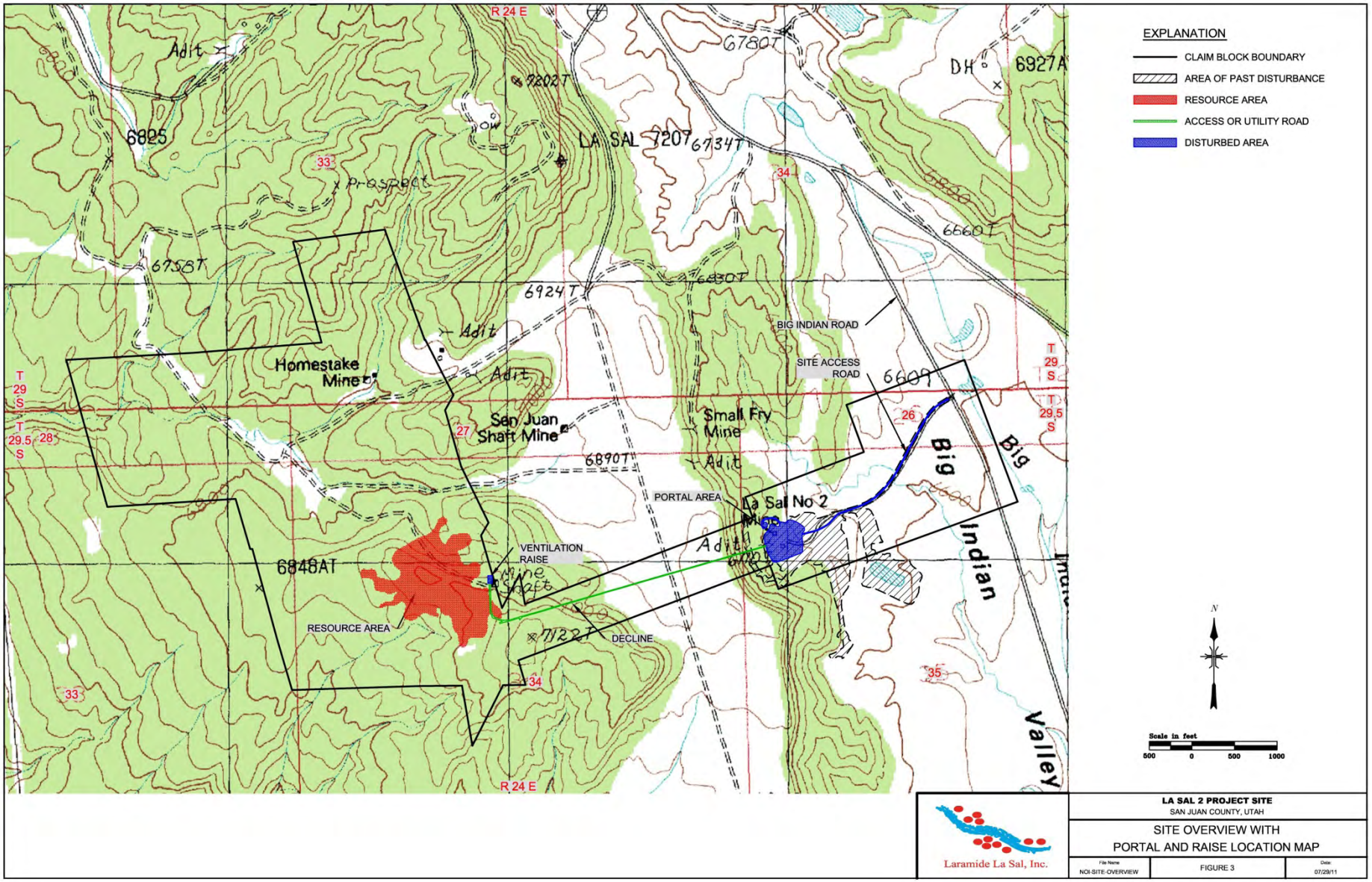


Figure 3: Site Overview with Portal and Raise Locations



Laramide expects that up to 35 people would be employed at the La Sal No. 2 Project, and the entire project would last for nearly 18 months. See *Table 2: Projected Socioeconomic Aspects*.

Table 2: Projected Socioeconomic Aspects

	Surface Site Preparation(1)	Mine Related Rehabilitation and Bulk Sample Extraction (2)	Closure and Reclamation(3)	Total
Estimated Time of Activity (months)	1-2	10-14	½ -1	11 ½ - 17
Estimated Work Force (no. of people)				
Grand County	4-5	5-7	4-5	NA
San Juan County	4-5	5-7	4-5	NA
Outside Both Counties	-	15-21	-	NA
Total Range	**8-10**	**25-35**	**8-10**	**NA**
Average	9	30	9	NA
Estimated Wages ($ x 1000) for Estimated Time of Activity(4)				
Grand County	18-46	270-531	9-23	297-600
San Juan County	18-46	270-531	9-23	297-600
Outside Both Counties	0	813-1,593	0	813-1,593
Total Range	**36-92**	**1,353-2,655**	**18-46**	**1,407-2,793**
Average	64	2,004	32	2,100
Estimated Operating Cost Expenditures ($ x 1000)(5)				
Grand County	45-50	1,350-1,650	30-35	1,425-1,735
San Juan County	45-50	1,350-1,650	30-35	1,425-1,735
Outside Both Counties	0	2,700-3,300		2,700-3,300
Total Range	**90-100**	**5,400-6,600**	**60-70**	**5,550-6,770**
Average	95	6,000	65	6,160

Notes:
(1) This work is expected to be handled by a single local contractor and would involve access road grading, portal pad preparation and grading, blading the road to the ventilation raise, and foundation preparation for various facilities. In addition, this local contractor would assist the mining contractor with placement of trailer facilities, installation of septic vaults, and dirt-rock removal from portal face and at ventilation raise.
(2) It is assumed that mining and underground exploration drilling contractors would be retained for this work and that these contractors would not be local firms, although these contractors would attempt to hire qualified local people as practical. Trucking of bulk sample to mill would probably be completed by local trucking firm.
(3) Closure and reclamation work would probably be completed by local contractor.
(4) Assumes annual average wages of $55,000/person for surface site preparation and closure/reclamation and $65,000 for mine related work. Wages do not include labor burdens, such as payroll taxes, federal and state unemployment taxes, medical and insurance benefits, and Workman's Compensation insurance premiums.
(5) This estimate includes labor, equipment, power and materials. It is assumed that local contractors would be used for surface site preparation and closure/reclamation, with 50% to Grand County and 50% to San Juan County. For mine related rehabilitation work, bulk sample extraction and haulage to the mill at Blanding, it is assumed that operating costs would be 25% to Grand County, 25% to San Juan County and 50% outside of both counties. . There may be additional spending within San Juan and Grand Counties for housing and subsistence for out of area workers, but these amounts, if any, are unknown at this time. To the extent that such expenditures occur, the positive economic impact to the planning area would be slightly greater.

The La Sal No. 2 Project site was previously disturbed and reclaimed. The proposed project would be principally 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 a marketable deposit is identified. Laramide would be required to submit a mining plan of operations for mining 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 and regarding;
- Growth medium replacement; and
- Fertilizing, mulching and seeding.

2.4 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 (3168 feet) and about 8 feet wide. Total acreage for the powerline is about 0.6 acres. 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.

2.5 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.

2.5.1 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.

2.5.2 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.

2.5.3 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).

2.5.4 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.

2.5.5 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.

2.5.6 Water Quality

Laramide would comply with applicable federal and Utah water quality standards, although the mine is expected to be "dry". The past diversion channel constructed by Homestake above the portal as part of the previous operation would route precipitation runoff away from the portal and the facilities at the portal site. Wattles and sediment fencing would be used to control sediment 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 to allow for long term surface runoff. No new culverts are proposed for access roads; there is an existing culvert located beneath the

proposed main access road. Observations by Laramide engineers indicate that this existing culvert (left in place during Homestake's reclamation of the site) would be sufficient for proposed activities.

2.5.7 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.

2.5.8 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.

2.5.9 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.

2.5.10 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.

2.5.11 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.

2.5.12 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 associated with 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.

2.6 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 considered by the BLM by eliminated from detailed evaluation.

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 form these workings.

2.6.2 Surface Drilling

Laramide could not obtain the required bulk sample nor assess the condition and integrity of the past Homestake operations through a surface drilling program. 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 a surface excavation. There would be extraordinary amounts of waste rock (uneconomic) material to be removed, and the large amounts of surface disturbance. Given these reasons, this alternative was eliminated from further consideration in this EA.

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 3: , 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 3: 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
Air Quality			
Effects from radon and other emissions upon reopening the past Homestake operation	None, the portal and vent raise would not be opened	Accumulated radon would be released upon opening of the portal and vent shafts; this is not expected to have lasting environmental effects as the radon would dissipate quickly with ventilation and has a 3.8 day half life. Proper MSHA ventilation would minimize effects. The SW prevailing winds in the area would dissipate any radon prior to reaching the nearest residents, 2.5 miles NE of the project area. EPA standards would be met.	Same as Alternative B
Effects from radon and other related emissions during operations	None, no activity	Minimal with MSHA ventilations standards; and prevailing SW winds .	Same as Alternative B
Effects from fugitive dust	Current activities such as ATV's; grazing etc.	Minor and localized with dust abatement mitigation	Same as Alternative B
Effects from gaseous emissions	None	Minor and localized. From on-site diesel generators; haul truck and vehicular traffic.	Less gaseous (diesel) exhaust with "line" electric power from Empire Electric.
Soils			
Effects of facility construction of soil properties	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 disturbance around the poles to be set for line electric service; approximately 100ft^2
Water Quality			
Potential to impact groundwater in the workings or downstream drainages	None	Negligible, as mine workings would be dry and only minimal amounts of water for drilling & dust control.	Same as Alternative B except some reduced potential of diesel fuel spill with use of "line" electric power versus on-site diesel generators.

Issue	Alternative A No Action	Alternative B Proposed Action	Alternative C Proposed Action with hard wire electric service
Effects from using an offsite water source on existing hydrologic systems at the site	None	Negligible quality of water to be imported to the site is good, still undergoing testing	Same as Alternative B
Socioeconomics			
Employment – Grand County	None	4 – 7	Same as Alternative B
Employment – San Juan County	None	4 – 7	Same as Alternative B
Employment from Outside Grand and San Juan Counties	None	15 – 21	Same as Alternative B
Estimated total wages paid to workforce from Grand and San Juan Counties	$ 0	$594 – 1,200,000	Same as Alternative B
Estimated operating cost expenditures made in Grand and San Juan Counties during life of the project	$ 0	$2,850 – 3,470,000	Same as Alternative B
Effects to Grand and San Juan Counties housing, public utilities, public services and present lifestyles	None	Negligible given short duration of project, although wages and operating expenditures would add to general welfare of area.	Same as Alternative B
Wildlife			
Disturbance (acres)	None	5	5.5
Effects to Wildlife and Wildlife Habitat	None	Minimal – given small amount of disturbance	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
Geology / Minerals Resources / Energy Production			
Amount of uranium removed by Homestake (tons) historical perspective only	None	46,610	Same as Alternative B
Bulk sample size (tons)	None	10 - 20,000	Same as Alternative B
Potential for future mining operations	None	Unknown	Unknown

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 under 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 33^0Farenheit (F), but cold conditions are frequent in the winter, and nighttime temperatures often plunge below 0^oF. Conversely, summertime temperatures can climb above 100^oF, with the average maximum temperature at La Sal, Utah, being approximately 59^0F.

Annual precipitation averages around 13 inches at La Sal and 9 inches at Moab. These include average annual snowfalls of nearly 45 inches at La Sal but less than 10 inches at Moab.

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?

A GPS-based gamma survey was performed at the proposed exploration project site in May 2011. Natural background gamma exposure levels for the Colorado Plateau range from 75 - 140 mrem/yr (NCRP Report No. 45). With an average exposure rate of 15.8 microrem/hr (138.5 mrem/yr based upon 24 hours/day and 365.25 days/yr) for the survey data set, the average exposure rate is within the range of natural background gamma radiation for the Colorado Plateau. The value is on the higher end of this range, however, the project site is a former uranium mine, and is located in an area of known uranium deposits and other past uranium mines.

Table 4, Basic Statistics of Gamma Survey Data as Converted to Exposure Rates in MicroRem/Hr

Survey Data	Number of Readings	Average Exposure Rate (microrem/hr)	Maximum Exposure Rate (microrem/hr)	Minimum Exposure Rate (microrem/hr)	Standard Deviation (microrem/hr)
Entire Survey Data Set (1)	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 based on Environmental Protection Agency (EPA) standards for the protection of human health. 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 (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 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" (Soil Survey of Canyonlands Area, Utah, Parts of Grand and San Juan Counties, 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 (Soil Survey of Canyonlands Area, Utah, Parts of Grand and San Juan Counties, 1980)." This site was previously disturbed, in the 1980s, but has successfully revegetated.

3.3.3 Water Quality

Issue 1 - Water source
Given the short duration of underground exploration activities, Laramide would contract for water haulage to the site from an off-site source. This water would be transferred to a storage tank above the portal area. The water would be purchased from a private right holder.

Issue 2 - Water quality
Water used at the trailers would be treated to meet Utah State potable water standards. Alternatively, potable water could be delivered via bottles. 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.

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

3.3.4 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 2000 population of 14,413. The county seat is Monticello (2000 population of 1,958) while Blanding is the most populous town in the county (2000 population of 3,162). The nearest town to the La Sal No. 2 Project is La Sal (2000 population of 339).

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 2008 medium income for San Juan County households is reported to be around $35,000; however, over 30% of the population in San Juan County lives below the federal poverty level. Nearly 35% of workers in San Juan County are employed by the government.

As of April 2010, unemployment in San Juan County was estimated at 12% as compared to the Utah statewide unemployment at 7%.

Grand is a rural county in eastern Utah with a 2000 population of 8,485. The county seat is Moab (2000 population of 4,779), 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, and the *Sunset Magazine's* March 2009 issue listed Moab as one of the "20 best small towns in the West". 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 2008 medium income for Grand County households was reported to be around $32,000, with about 15% of the population in the county living below the federal poverty level. About 20% of workers in Grand County are employed by the government.

As of April 2010, unemployment in Grand County was estimated at just over 12% as compared to the Utah statewide unemployment rate at around 7%.

3.3.5 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 tropic 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*.

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 and considering management objectives and recommendations for migratory birds resulting from comprehensive planning efforts, such as the 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 specific consideration when analyzing the effects of proposed management actions 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 in found in *Table 5: Utah Partners in Flight, US Fish and Wildlife birds of Conservation Concern Species* and in *Table 6: Utah Partners in Flight Priority Species.*

Table 5: Utah Partners in Flight, US Fish & 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‡
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
Sage Sparrow		X	Critical	Shrubsteppe	High Desert Scrub	Low Desert Scrub
Virginia's Warbler		X	Winter	Oak	Pinyon-Juniper	Migrant
Ferruginous Hawk	X	X	Prime Breeding	Pinyon-Juniper	Shrubsteppe	Grassland

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"

Table 6: Utah Partners in Flight Priority Species

Utah Partners in Flight Priority Species*			
Species	***DWR Habitat Value†***	***Breeding Habitat***	***Winter Habitat***
Black Rosy-Finch*	Substantial	N/A	Grassland
Brewer Sparrow*	Critical	Shrubsteppe/High Desert Scrub	Migrant
Golden Eagle	High Value	Cliff/ High Desert Scrub	High Desert Scrub
Sage Sparrow	Critical	Shrub steppe	Low Desert Scrub

Note *Utah Partners in Flight Avian Conservation Strategy Version 2.0.*

*FWS BCC and PIF Priority Species (**Bolded only on PIF list,** * on both lists)*
† Utah Conservation Data Center

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.

Raptor species with the potential to occur in the vicinity of the project area are identified in *Table 7: Raptor Species with the Potential to occur in the Project Area,* along with a description of their nesting and foraging habitats.

Table 7: Raptor Species with the Potential to Occur in the Project Area

Common Name	Scientific Name	General Habitat and Potential in Project Area
American Kestrel	*Falco sparverius*	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	*Accipiter cooperii*	Low potential to nest in pinyon-juniper woodlands. Moderate potential to forage in pinyon-juniper woodlands.
Ferruginous Hawk	*Buteo regalis*	Commonly nests on ground, in pinyon-juniper woodlands, and on rock outcrops. Low potential to forage in desert shrub and pinyon-juniper woodlands.
Golden Eagle	*Aquila chrysaetos*	Commonly nests on cliff ledges and rock outcrops. Moderate potential to forage in desert shrub and pinyon-juniper woodlands.
Great-horned Owl	*Bubo virginianus*	Cliff ledges, pinyon-juniper, or nests of other species. Moderate potential to forage in desert shrub and pinyon-juniper woodlands.
Long-eared Owl	*Asio otus*	Low potential to nest in pinyon-juniper woodlands. Moderate potential to forage in desert shrub and pinyon-juniper woodlands.
Northern Harrier		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	*Falco mexicanus*	High potential to nest on cliffs and ledges. Moderate potential to forage in desert shrub moderate in pinyon-juniper woodland.
Red-tailed Hawk	*Buteo jamaicensis*	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	*Accipiter striatus*	Low potential to nest in pinyon-juniper woodlands. Low potential to forage in desert shrub and pinyon-juniper woodlands.
Swainson's Hawk	*Buteo swainsoni*	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, big free-tailed 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 piñyon-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. The big free-tailed bat prefers rocky and woodland habitats, where roosting occurs in caves, mines, old buildings, and rock crevices. The fringed Myotis inhabits caves, mines, and buildings, most often in desert and woodland areas and commonly occurs in colonies of several hundred individuals.

3.3.6 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?

The targeted uranium mineralization at the La Sal No. 2 Project is of the Cutler formation in the Permian age. The sediments 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, 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 would be of the largest concern.

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 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 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.

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_{10} and $PM_{2.5}$, 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 Survey* 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. (Baker, Ken; personal e-mail, Environmental Restoration Group, Inc., June 20, 2011)

Worker exposure to the radon and other radioactive hazards are regulated by the Mine Safety and Health Administration (MSHA). The reason for Laramide to rehab the ventilation raises is to provide effective ventilation of the mine during exploration activities to mitigate worker exposures to these potential hazards. 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.

Radon emission from the mine during exploration activities are potentially subject to emission standards contained in 40 CFR 61, Subpart B. A 10 mrem per year dose standard to any person would apply and is considered protective. Non-designated facilities have radon emissions low enough to prevent adverse impacts to site workers or to the general public. Due to the limited nature of the exploration operation (i.e. removal of 10,000 to 20,000 tons of material), the impacts to grazing animals, wildlife, soils and air quality is not expected to be measurable.

Gaseous emissions would result from construction equipment used to build the portal and ventilation pads, from the diesel generator used to supply the site and underground operations with electricity, and from work crew, management and supply vehicles commuting to and from the project sites. Gaseous emissions include oxides of nitrogen (NO_X), carbon dioxide (CO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and volatile organic compounds (VOC).

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

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 town of Moab 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_2) would be the major gaseous emission from the proposed action classified as a greenhouse gas.

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 SOILS

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. Soils would remain in the current condition.

4.3.2 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. These impacts can

be mitigated by revegetation efforts when the project is completed. Recovery of soil conditions can take another 2-5 years 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 probable 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 0.58 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 0.58 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).

4.4 WATER QUALITY

4.4.1 Alternative A – No Action Alternative

Uranium exploration and past mining activities have already occurred at or surrounding the project area, and some effects of that previous activity are evident in this region. However, the actual site to be used by Laramide (both the portal and ventilation raise pad) have been reclaimed. Under the no action alternative, existing land use trends would be expected to continue. These include uranium exploration, livestock grazing and recreation (four-wheeling and hunting). These activities would continue to cause a slow incremental increase in erosion rates in the area.

4.4.2 Alternative B – Proposed Action

Use of “imported” water for dust control, drilling and limited potable use would have negligible effects on the hydrology of the site. Most of the water used for dust control (surface or underground) and drilling would evaporate or be absorbed into the soil or rock material where it is applied. 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. A constructed berm would surround 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 erosion to occur 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. Actual erosion and down-drainage sediment loading would depend largely on the amount of runoff from heavy precipitation and subsequent flood events. The potential for erosion and sediment loading below the areas of disturbance would be greatest during the construction phase.

Natural runoff causes erosion in this area of Utah, particularly in the washes and drainages in this region; and runoff from flood events would continue to substantially affect channel stability and cause channel erosion.

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 accidental spills underground would be limited, provided proper spill control and containment measures are undertaken.

Potential indirect impacts to surface water quality of the area could result from off-site spills or releases of diesel fuel, but the potential for such impacts are low. The potential for indirect groundwater impacts in the region are expected to be minimal, because most site workers would live or stay in communities (such as Moab) with established water and sewer systems.

Cumulative surface water quality impacts as a result of the proposed action would be negligible. Regional surface water quality would continue to be mostly influenced by local and regional land use trends and activities, which include ranching and agriculture, other mining and exploration operations, and recreation use. Based on the historic dry conditions at the Homestake operation, the existing groundwater in the area is expected to be stratigraphically below the workings at the site, and therefore the cumulative water quality impacts to groundwater are not expected to change from the current state.

4.4.3 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.

4.5 SOCIOECONOMICS

4.5.1 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.

4.5.2 Alternative B – Proposed Action

The proposed La Sal No. 2 project activities for underground exploration are expected to last fewer than 18 months. As a result, the effects of the project to the socioeconomic aspects of Grand and San Juan Counties would be limited. See *Table 2: Socioeconomic Aspects* in *Section 2.3 Alternative B -Proposed Action*, which summarizes expected employment and spending, created by the proposed action. 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. The planning area is defined as Grand and San Juan counties; any spending that occurs outside these two counties is excluded from the analysis.

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 8: Estimated Economic Impacts,* which summarizes the IMPLAN results from estimated expenditures within the planning area.

Table 8: 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
Total Effect	**13.3**	**$740,681**	**$3,544,545**
Source: IMPLAN 3.0			

These results are due mainly to the fact that Phase 2 of the proposed action, which has the most 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.

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 8: 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 sample 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.

*Table 9: Estimated Wages***,** shows average wages for project workers, which are expected to range from $55,000-$65,000, given the skill levels required for construction and underground operations. Over the projected life of the proposed exploration project, total wages from direct and indirect employment over the nearly 18 months of activities associated with the project could exceed $3.6 million.

Table 9: Estimated Wages

Source of Wages	Estimated Wages ($)
Direct Wages	1,407,000 – 2,793,000
Indirect Wages	422,000 – 838,000
Total Wages	**1,829,000 – 3,631,000**

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.

4.5.3 Alternative C – Line Electric Power

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

4.6 WILDLIFE

4.6.1 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.

4.6.2 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.

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 late fall of 2011, if authorized by the BLM, after NEPA compliance. This schedule would allow for birds to adapt to the new disturbance by the following nesting season in 2012. However, 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 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.

4.6.3 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.

4.7 GEOLOGY / MINERAL RESOURCES / ENERGY PRODUCTION

4.7.1 Alternative A – No Action Alternative

Homestake produced and shipped an estimated 46,610 tons of uranium material from the La Sal II 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. The White Mesa mill has undergone extensive retrofitting and is now operated by a new owner.

Under the no-action alternative, no underground exploration would occur, and there would be no extraction of 10-20,000 tons of uranium material. The potential to recover this uranium at some point in the future would remain.

4.7.2 Alternative B – Proposed Action

There would be negligible effects to the geologic resources as a result of the underground exploration and the removal of a 10-20,000 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.

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

4.7.3 Alternative C – Line Electric Power

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

4.8 MITIGATION FOR ACTION ALTERNATIVES, B AND C

Seeds of medicinal plants identified by the Zuni would be included in the seed mix used for reclamation.

Measures that would minimize the environmental effects of the action, alternatives consist of the proponent – committed management and mitigation measures and BLM requirements for land occupancy, related to mineral exploration activities.

Laramide Resources, Inc. plans to implement standard environmental protection measures, See *Section 2.5, Proponent-Committed Management and Mitigation Measures.*

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 MONITORING AND / OR COMPLIANCE

Monitoring includes inspections for compliance with the terms and conditions of the approved Mine Plan of Operations. 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. 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.

4.10 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.

4.10.1 Physical Resources- Air, Soil, Water, Wildlife and Geology

Cumulative Impact Area (CIA)

The cumulative impact area (CIA) for the physical resources is the geographic area called Lisbon Valley, which includes Big Indian Valley and west to the first set of power lines, north to West Coyote Wash, East Coyote Wash to the northwest and south to Three Step Hill and the Lisbon Valley Road. This area is about 81,469 acres in size. The area was chosen based on the similarity in the geology, vegetation, soils, and wildlife use in the area.

Past and Present Actions

Past actions in the CIA consist of livestock grazing, uranium and copper mining and exploration, exploratory drilling for oil and gas, production of oil and gas, and geophysical surveys for oil and gas, and the installation of a gas plant. Present actions are an active copper mine, 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.

Livestock grazing has taken place in the CIA for more than 100 years. Both cattle and sheep have been grazed within the Lisbon Valley area. Range improvements in the CIA include 3 water wells, 17 stockponds, 20 reservoirs, 5 cattleguards, and fences between pastures. These improvements have resulted in minimal surface disturbance amounting to an estimated 55 acres.

There has been past exploration for uranium and old mines are located within the CIA; however, there are no mines currently in operation. The Lisbon Mine and uranium mill site have been reclaimed, although they were about 300 acres in size. Estimated surface disturbance from other past uranium exploration and mining is an additional 200 acres. Most of the uranium mines in the area have been reclaimed as there are no known abandoned mine shafts or adits. Exploration for copper has occurred within the CIA with one active copper mine. An un-reclaimed copper mine is located within the Lisbon Valley area. This mine is on private land and was once called the Big Indian Mine. This mine site is approximately 100 acres. The Lisbon Valley Copper Mine is about 1,104 acres in size.

Oil and gas exploration in the area has involved the drilling of 118 wells. Of these wells, 72 have been plugged and abandoned, 27 wells are shut in and may be capable of production, and 15 wells are producing. There are also 4 water disposal wells. For the plugged and abandoned wells, the disturbed areas have been reclaimed. Therefore, there are about 690 acres of surface disturbance for the 46 remaining wells. Geophysical surveys have been conducted in the CIA.

Four oil and gas produced-water evaporation ponds are located within the CIA. Though the ponds are no longer used, they have not been reclaimed. The surface disturbance for these ponds is about 45 acres.

The Patara gas plant is located within the CIA. Based on the satellite image and GIS analysis, the surface disturbance for this facility is estimated to be 96 acres.

Exploration for potash has occurred on SITLA land near the limestone quarry. This surface disturbance was about 9 acres. The limestone quarry is approximately 45 acres in size.

Reasonably Foreseeable Action Scenario (RFAS)

The following RFAS identifies reasonably foreseeable future actions that would cumulatively affect the same resource in the cumulative impact area as the proposed action and alternatives.

Livestock grazing, oil and gas operations, potash exploration and copper and uranium mining are reasonably foreseeable activities within the CIA. These activities are discussed in terms of an approximate 15-year time frame which is the time frame that was used to project activities in the Final Environmental Impact Statement for the Moab RMP.

Livestock grazing would continue in a similar manner as the current operation. The numbers of cattle and range structures are expected to remain at about the current levels. No additional range structures are anticipated at this time. Maintenance of the existing range structures would continue.

An Exploration Notice for copper is proposed to begin in early fall of 2011 within the Lisbon Valley Copper Mine's permit area. The proposed surface disturbance for the project is 5 acres. All surface disturbances would be reclaimed.

The projections for future oil and gas operations are based on the BLM's Reasonably Foreseeable Development (RFD) Scenario for Oil and Gas (2005). The RFD projected an average of 2 to 4 wells drilled annually in the Lisbon Valley area over 15 years, or approximately 30 to 60 wells. The projection includes the Big Indian and Lisbon area which has experienced more interest in drilling due to favorable drilling results. Therefore, it is reasonable to assume that there would be an average of 1-2 wells drilled annually in the CIA for a total of 15 to 30 wells over the next 15 years. The initial surface disturbance associated with this drilling would amount to about 225 to 450 acres (15 acres per well) for roads and drill pads. It is assumed that 50 percent of the wells drilled would not be productive and would be abandoned and reclaimed.

Future disturbance limited to the Lisbon Valley area was not specifically quantified within BLM's RFD (2005) scenario for geophysical exploratory surveys. However, the Moab Field Office has received a Notice of Intent for a seismic project that would include the very northern portion of the CIA and a second Notice of Intent for a seismic project in the southern end of the CIA. Estimated surface disturbance for these two projects is about 45 acres.

The BLM is in the initial stages of preparing an environmental assessment to analyze the effects of leasing parcels within the Lisbon Known Potash Leasing Area through a competitive lease sale. Because of this, it is reasonable to assume that potash exploration would occur in the Lisbon Valley area in the next 15 years. The SILTA administered lands within the Lisbon Valley are leased for potash. For purposes of this analysis, it is assumed one exploratory bore hole for potash per State lease, totaling 15 exploratory bore holes for potash in the project area. Surface disturbing activities associated with reasonably foreseeable potash exploration on these State lease parcels include the construction of drilling areas or pads.

Estimated surface disturbance for drilling areas would be approximately 3.8 acres. In addition, additional road construction would likely be needed within each State lease parcel to access the drilling area, resulting in an estimated 5 acres of disturbance per State lease parcel. Thus, surface disturbance associated with each reasonably foreseeable potash bore hole is estimated

at about 9 acres, for a total of 135 acres. Exploratory core hole testing would involve the use of a standard drill rig, which would likely operate on a 24 hours/7 day per week basis for 20 to 30 days to extract potash core.

Cumulative Impact Analysis

As described in the past, present, and reasonably foreseeable section, actions within the CIA include livestock grazing, oil and gas operations, copper mining, copper exploration, and potash and uranium exploration. Some hunting and other recreational activities occur within the CIA, however these activities are small in scale and limited to the use of the designated infrastructure (roads) and dispersed campsites, which are small (<0.1 acres) and low in number. For purposes of this analysis, these actions are quantifiable in terms of surface disturbance (acres) as shown in *Table 10: Past, Present, and Reasonably Foreseeable Actions and Associated Surface Disturbance within the CIA*.

Table 10, Past, Present, and Reasonably Foreseeable Actions and Associated Surface Disturbance within the CIA (acres)

	Total Acres within CIA	Past Actions (Acres of Disturbance)	Present Actions (Acres of Disturbance)	RF Actions (Acres of Disturbance)	% of CIA (Total Disturbance from all Actions)
	81,469	Livestock: 55 Copper Mining: 100 Uranium Mining: 200 Potash: 9	Copper Mining: 1,104 Oil and Gas: 690 Gas Plant: 96 Limestone Quarry: 45	Livestock: 0 Copper Exploration: 5 Uranium: 0 Oil and Gas: 225 to 450; Average 338 Potash: 135 Geophysical Surveys: 45	
TOTAL Acres	81,469	364	1,935	523	3.46% -2,822 acres
Alternative A No Action		364	1,935	523	3.46% -2,822 acres
Alternative B Proposed Action		364	5 (add the present actions to this the total acreage is 1,940)	523	3.47% - 2,827acres.
Alternative C Proposed Action plus Line Electric Power		364	6 (add the present actions to this the total acreage is 1,941)	523	3.47% -2,828 acres.

As shown in *Table 10, Past, Present, and Reasonably Foreseeable Actions and Associated Surface Disturbance Within the CIA (acres)* the total surface disturbance in the CIA resulting from past, present, and reasonably foreseeable actions amounts to about 2,822 acres or about 3.46 percent of the CIA. This surface disturbance is associated with the cumulative impacts for air quality, soils, water quality, wildlife and migratory birds and geology resources. However, these cumulative impacts are considered minor because the disturbances only amount to a small portion of the CIA (3.47 percent) and are widely dispersed. The Proposed Action (Alternative B) and the Line Electric Power (Alternative C) adds only an incremental amount (less than 0.1 percent) to the total surface disturbance and the associated cumulative impacts for air quality, soils, water quality, wildlife and migratory birds and geology resources. Also the temporary nature (18 months) of the Proposed Action and Line Electric Power alternatives would have little to no cumulative effect on these resources.

Foreseeable development for uranium and copper exploration, copper mining, oil and gas and potash in the CIA includes drilling exploration bore holes, wells and geophysical surveys. These mineral-related activities would have a minimum effect on air, soils, water quality, wildlife and migratory birds and geology as these future projects would have mitigation measures and a reclamation component.

The potential cumulative impacts to air quality, soils, water quality, wildlife and migratory birds and geology resources, would be substantially mitigated by applying the mitigation measures that include avoidance, data recovery, and site monitoring during surface disturbing activities. The Proposed Action and Line Electric alternative would not appreciably contribute to the cumulative impacts to the resources analyzed in this EA.

4.10.2 Human Resources- Socioeconomics, Native American Religious Concerns

Cumulative Impact Area (CIA)

The economics effects of the proposed sampling project extend to generally the western states, as the miners and technical specialists used for the exploration would likely be brought in from other states. Locally, employment opportunities would exist in San Juan and Grand counties, Utah.

Native American Religious Concerns typically extend to the historic range of a tribe's inhabited area. Each of the tribes consulted have different original home ranges; the tribes consulted have home ranges that in whole or part are located in southeastern, Utah. Tribes consulted include the Ute Tribe (globally encompassing all Ute factions), the White Mesa Ute Tribe(centered around Blanding, Utah), the Paiute, and the Dine'(Navajo).

Past and Present Actions

Past actions in the CIA consist of livestock grazing, uranium and copper mining and exploration, exploratory drilling for oil and gas, production of oil and gas, and geophysical surveys for copper, oil and gas, and the installation of a gas plant. Present actions are dispersed recreation, four wheeling, an active copper mine, 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.

Big-game (deer and elk) hunting is the primary recreation activity within and adjacent to the proposed exploration are. Big game hunting is expected to continue into the future. The other major dispersed recreational activity in this region includes some four-wheeling, especially further to the east in the Cameo Cliffs Special Recreation Management Area.

Reasonably Foreseeable Action Scenario (RFAS)

The following RFAS identifies reasonably foreseeable future actions that would cumulatively affect the same resource in the cumulative impact area as the proposed action and alternatives.

If the exploration work from the La Sal No. 2 Project does prove successful (i.e, sufficient quantities of mineralization are found with grades that can support a profitable mining and ore

processing), then any future mining activities at the site would most likely mirror the other small underground mines in the area. In addition, if exploration work proves successful, the BLM would require a detailed mining plan of operation, which would be subject to environmental analyses as required by NEPA and other related regulatory review.

Cumulative Impact Analysis

Given the short duration of the La Sal No 2 Project, cumulative socioeconomic effects are expected to be minimal.

5.0 CONSULTATION AND COORDINATION

5.1 INTRODUCTION

The issue identification section of Chapter 1 identifies those issues analyzed in detail in Chapter 4. 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:

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

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
Utah State Historic Preservation Office (SHPO)	Consultations undertakings, as required by the National Historic Preservation Act (16 USC 470)	MOU with BLM authorizes BLM to make determination of "no effect".
State of Utah, Department of Natural Resources, Utah Division of Oil Gas and Mining	Filing the Notice of Intent to undertake mineral exploration	Letter pending
Uranium Watch	Citizens Group	Letter received
Ute Mountain Ute Tribe	*Gary Hayes; Chairman*	*No response received.*
Hopi Tribe	*Leigh Kuwanwisiwma; Director*	*Response received, but no issues were raised to carry forward for analysis or mitigation.*
Navajo Nation	*Joe Shirley; President*	*No response received.*
Paiute Tribe	*Jeanie borchardt; Chairwoman*	*No response received.*
Southern Ute Tribe	*Pearl E. Casias; Chariman*	*No response received.*
Ute Indian Tribe	*Irene Cuch; Chariman*	*No response received.*
Zuni Pueblo	*Kurt Dongoske; Director*	*Added native seed mixture to reclamation planning requirements (to be confirmed)*
White Mesa Ute Tribe	*Elayne Atcitty; Council Member*	*No response received.*

5.3 SUMMARY OF PUBLIC PARTICIPATION

During the preparation of this EA, the public was notified of the proposed action through its April 15, 2011 posting on the Utah BLM's Electronic Notification Bulletin Board https://www.blm.gov/ut/enbb/index.php). The process used to involve the public included the publication of a legal notice in Moab's *Time-Independent* newspaper on May 5, 2011 and the publication of a legal notice in Monticello's *San Juan Record* newspaper on May 4, 2011. A public comment period for the sampling mine plan, which equated to a public scoping period for NEPA, was offered per 43 CFR 3809.432 between May 4, 2011 and June 6, 2011. The sampling mine plan was posted on the BLM Moab Field Office's website at http://www.blm.gov/ut/st/en/fo/moab/more/minerals/laramide_lasal__2.html) on May 2, 2011 to the present date. The BLM received only one comment letter as a result.

A 30-day comment period for the EA is planned. At the end of the comment period for the EA, the comments will be summarized and would be included in and incorporated into the final document.

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 – Water Issues	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	Botonist Mergen Ecological Delineations	Vegetation, Reclamation
Joe Nagengast	Civil Design Nagengast Brothers, Inc.	Graphics
Andrea Van Schmus	Archaeologist, Montgomery Archaeologists	Cultural Resources

6.0 REFERENCES

Author	Title	Source	Date
Baker, Ken	e-mail response	Environmental Restoration Group, Inc.	20 June 11
Bureau of Economic Analysis, U.S. Department of Commerce	Regional Economic Information System	http://bea.gov/bea/refional/data.htm	1-Jul-11
Bureau of Labor Statistics, U.S. Department of Labor	Local Area Unemployment Statistics	http://www.bls.gov/lau	1-Jun-11
Bureau of Land Management, U.S. Department of Interior	Record of Decision and Approved Resource Management Plan	Moab Field Office	31-Oct-08
Census Bureau, U.S. Department of Commerce	American Fact Finder	http://factfinder.census.gov/home/saff/main.htm	1-May-11
Census Bureau, U.S. Department of Commerce	County Business Patterns	http://www.census.gov/econ/cbp/index.html	1-Jun-11
Farr, Chuck	GPS-Based Gamma Survey and Track Etch Detector Deployment at the La Sal Mine in Sal Sal, Utah	Environmental Restoration Group, Inc.	30-May-11
Gayer, Chris	Laramide La Sal, Inc. La Sal 2 Uranium Exploration Project Nesting Raptor Survey San Juan County, Utah	Grasslands Consulting	9-May-11
Klesert, Anthony L.	An Archaeological Survey of a Proposed Homestake Mining Surface Plant Area in San Juan County, Utah	Centuries Research, Inc.	19-Jun-80
Laramide La Sal, Inc.	Exploration Plan of Operations		1-Feb-11

Natural Resources Conservation Service	Soil Survey of Canyonlands Area, Utah, Parts of Grand and San Juan Counties	http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx	1-Mar-80
National Council on Radiation Protection & Measurements	Report No. 094 – Exposure of the Population of the Unites States and Canada from Natural Background Radiation	http://www.ncrppublications.org/Reports/094	1-May-11
Sanders, Thomas G.	Road Dust Suppressants: A Win-Win Solution	Department of Civil and Environmental Engineering, Colorado State University, Fort Collins, Colorado	1-Jun-08
United States Environmental Protection Agency	National Ambient Air Quality Standards (NAAQS)	http://www.epa.gov/air/criteria.html	18-Aug-11
Van Schmus, Andrea	Cultural Resource Inventory of Laramide La Sal, Inc.'s Proposed La Sal No. 2 Uranium Exploration Project	Montgomery Archaeological Consultants, Inc.	23-May-11
Western Regional Climate Center La Sal, Utah (424946)	La Sal, Utah 1961-1990 Temperature and Precipitation	http://www.wrcc.dri.edu/cgi-bin/cliF30.pl?utlasa	16-Jun-11
Western Regional Climate Center La Sal, Utah (424946)	La Sal, Utah POR - Daily Snowfall Average and Extreme	http://www.wrcc.dri.edu/cgi-bin/cliFSrec.pl?utlasa	16-Jun-11
Western Regional Climate Center La Sal, Utah (424946)	Period of Record General Climate Summary – Precipitation	http://www.wrcc.dri.edu/cgi-bin/cliGCStP.pl?utlasa	16-Jun-11
Western Regional Climate Center La Sal, Utah (424946)	Period of record Monthly Climate Summary	http://www.wrcc.dri.edu/cgi-bin/cliRECtM.pl?utlasa	16-Jun-11

APPENDIX A: Interdisciplinary Team Checklist

Project Title: La Sal No.2 Uranium Sampling Project.

NEPA Log Number: DOI-BLM-UT-Y010-2011-0162-EA

File/Serial Number: UTU-88256

Project Leader: Rebecca Doolittle

DETERMINATION OF STAFF: ***(Choose one of the following abbreviated options for the left column)***
NP = not present in the area impacted by the proposed or alternative actions
NI = present, but not affected to a degree that detailed analysis is required
PI = present with potential for relevant impact that need to be analyzed in detail in the EA
NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section D of the DNA form. The Rationale column may include NI and NP discussions.

The following elements are not present in the Moab Field Office and have been removed from the checklist: Farmlands (Prime or Unique), Wild Horses and Burros.

Determi-nation	Resource	Rationale for Determination*	Signature	Date
RESOURCES AND ISSUES CONSIDERED (INCLUDES SUPPLEMENTAL AUTHORITIES APPENDIX 1 H-1790-1)				
PI	Air Quality Greenhouse Gas Emissions	Emissions from diesel fueled ventilation fan, and exploration equipment addressed through Alternative C. No emissions inventory required on small project; gamma and radon carried in analysis	***Ann Marie Aubry***	
NI	Floodplains	Stormwater drainage controls already in place, retention pond used for stormwater catchment will be maintained	***Ann Marie Aubry***	
PI	Soils	Surface disturbance is 5 acres, almost all previously disturbed in 1980s. Potential impacts include increased erosion, decreased infiltration and reduced soil productivity	***Ann Marie Aubry***	
PI	Water Resources/Quality (drinking/surface/ground)	Ground water is not expected to be encountered;. There is no surface water in or near this project location. Vault toilets instead of septic system will contain wastes Non-potable water will be brought in from offsite, carried in analysis	***Ann Marie Aubry***	
NP	Wetlands/Riparian Zones	None present (see 2008 Moab RMP)	***Ann Marie Aubry***	
NP	Areas of Critical Environmental Concern	None present (see 2008 Moab RMP)	***Katie Stevens***	
NI	Recreation	Limited recreation in the project vicinity	***Katie Stevens***	
NP	Wild and Scenic Rivers	None present (see 2008 Moab RMP)	***Katie Stevens***	
NI	Visual Resources	Project located in a context of previous disturbance; terrain has limited visibility from important view points	***Katie Stevens***	
NP	BLM Natural Areas	None present (see 2008 Moab RMP)	***Bill Stevens***	

Determi-nation	Resource	Rationale for Determination*	Signature	Date
PI	Socio-Economics	Expect up to 30 workers; not at one time; staged with exploration activities; County specific numbers; IMPLAN results carried in analysis	***Bill Stevens***	
NP	Wilderness/WSA	None present (see 2008 Moab RMP)	***Bill Stevens***	
NP	Lands with Wilderness Characteristics	None present (see 2008 Moab RMP)	***Bill Stevens***	
NP	Cultural Resources	Class I survey complete; Class III for all potential disturbance; none found; context includes previous mining	***Don Montoya***	
NI	Native American Religious Concerns	Letters sent August 1, 2011. Responses from the Hopi and the Zuni were received. The Hopi Tribe stated that they did not like the project, but provided no substantive comments for analysis and mitigation. The Zuni said that the exploration could disturb medicinal plants growing in the area. The BLM has asked for a list of the medicinal herbs to include in the seed mix at the time of reclamation. Answer pending as of September 22, 2011.	***Don Montoya***	
NI	Environmental Justice	Moab Field Office RMP Final EIS concluded no management actions could cause disproportionate adverse impacts to minority or low income populations; the short duration of the proposed project, and the remote location ensure no high adverse human health or environmental effects	***Bill Stevens***	
NI	Wastes (hazardous or solid)	Use of diesel fuel for generators – hazardous materials typical exploration; petro, propane, batteries, etc. handling addressed in Exploration Plan of Operations; Alternative C minimizes diesel use, mitigating storage and spill potential for energy fuel; protection measures defined in the Exploration Plan of Operations are included by reference	***Rebecca Doolittle***	
NI	Threatened, Endangered or Candidate Animal Species	**MSO**-Project area include limited forging habitat. The nearest suitable habitats have a current absents designation, therefore forage MSOs are not expect and project activities will not affect MSOs or their habitats. **SWFL-** No riparian habitats occur in the project area & no suitable habitats occur near project area. No other Federal List Species in known to occur or to have suitable habitats in the project area	***Pam Riddle***	
PI	Migratory Birds	Surface disturbing activities have the potential to impact nesting birds (5/1 -7/31) and nest raptors (3/1 – 8/31). Activities outside of nesting season will have minimal impacts as birds will seek other areas to occupy; carried in analysis.	***Pam Riddle***	
NI	Utah BLM Sensitive Species	**Sensitive Bats-**Potential impacts to sensitive bat species if roosting in the project area is occurring. Bats may avoid foraging during surface disturbing activities and relocate to new roost areas. Abundant suitable habitats are found near the project area; therefore impacts are expected to be minimal. **Sage Grouse**-Project area is within historical sage grouse habitats but currently there is no know occupancy within the Moab FO, therefore no impacts are expected. **Burrowing owls** - Habitat is identified in the project area but due to the lack of prairie dog activity and suitable habitats nesting or foraging is not expected. No other	***Pam Riddle***	

Determi-nation	Resource	Rationale for Determination*	Signature	Date
		sensitive species are expected to consistently utilize this area.		
PI	Fish and Wildlife Excluding USFW Designated Species	Potential impacts from disturbance to general wildlife may occur. Deer and elk may utilize the area but the project is outside of crucial habitat identified in the Moab RMP; carried in analysis	***Pam Riddle***	
NI	Invasive Species/Noxious Weeds	Use standard protocols, washing vehicles to limit introduction; and certified reclamation seed minimize opportunity for noxious weed establishment	***Jordan Davis***	
NP	Threatened, Endangered or Candidate Plant Species	No habitat present	***Dave Williams***	
NI	Livestock Grazing	Extremely small portion of current allotment no drift fencing on site	***Kim Allison***	
NI	Rangeland Health Standards	Project would remove vegetation for duration of exploration activities; see above	***Kim Allison***	
NI	Vegetation Excluding USFW Designated Species	All disturbance in context of reclaimed site; expect minimal species diversity; reclaimed species mix; pinyon juniper on ridges; tall sage brush	***Jordan Davis***	
NI	Woodland / Forestry	Minimal pinyon juniper in disturbed area; past chaining activities effects still evident	***Jordan Davis***	
PI	Geology / Mineral Resources/Energy Production	Purpose and need for consideration; carried in analysis	***Rebecca Doolittle***	
NI	Lands/Access	Short term curtailment of public access by gate to protect portal facilities; very limited in area in context of public use	***Jan Denney***	
NP	Paleontology	Cliffs above portal site, potential resources, none identified during field work	***Rebecca Doolittle***	

FINAL REVIEW:

Reviewer Title	Signature	Date	Comments
Environmental Coordinator	***Katie Stevens***		
Authorized Officer	***Rock Smith*** – Field Office Manager		

APPENDIX B: Nesting Raptor Species Survey Report

Grasslands Consulting, Inc.

4800 Happy Canyon Road, Suite 110, Denver, CO 80237
(303) 759-5377 Office (303) 759-5324 Fax

NESTING RAPTOR SPECIES REPORT

Report Date: May 17, 2011

Operator: Laramide La Sal, Inc.

Contact: Sally Edwards (sally@montanasky.net; 406-857-2496)

Proposed Project: La Sal 2 Uranium Exploration Project including a proposed facility (on existing disturbance), upgrade of site access road, and construction of a utility corridor

Location: Sections 34 and 35, Township 29 1/2 S Range 24 E, San Juan County, Utah

Survey Species: Nesting raptor species

Survey Dates: May 9 and 10, 2011

Observers: Grasslands Consulting, Inc. Biologists: Chris Gayer and Nick Hall

Weather: Sunny, clear visibility, 50-70°F, winds 0-5 MPH, no precipitation

PROPOSED PROJECT

Laramide La Sal, Inc. (Laramide) proposes to construct the La Sal 2 Uranium Exploration Project including a proposed facility (on existing disturbance), upgrade of site access road, and construction of a utility corridor. This project is located approximately 5.5 miles south of La Sal, Utah in Sections 34 and 35, Township 29 1/2 S Range 24 E, San Juan County, Utah (see Project Map). The proposed project is located on lands administered by the Bureau of Land Management-Moab Field Office. In support of this project, Laramide contracted Grasslands Consulting, Inc. (Grasslands) to conduct a biological field survey for nesting raptor species in the vicinity of the proposed development.

SURVEY METHODOLOGY

Grasslands biologists Chris Gayer and Nick Hall conducted a nesting raptor survey within ½ mile of the proposed development on May 9-10, 2011. Prior to conducting the survey, Trimble GPS units were loaded with project infrastructure (facility, access road, and utility corridor) and a surrounding ½ mile survey area. No known nest locations were identified prior to conducting the survey.

A pedestrian survey was conducted throughout the project area. During the survey, visual observations were made using 10X42 binoculars, focusing on suitable mature woodland, rock outcrop, and cliff habitats. The surveyors targeted areas with signs of previous use by birds such as white wash or nest structures. Observations of raptors and potential raptor nests were recorded using Trimble GPS units and photographs were taken to document the current condition of the nests and habitats.

SURVEY RESULTS

A total of approximately 2 square miles (facility, access road, pipeline, and ½ mile buffer) was surveyed for nesting raptors. This area included approximately 1.7 miles of linear cliff face that was suitable habitat for nesting raptors and approximately 600 acres of wooded area. Two inactive raptor nests of unknown species were identified during the survey.

One unknown raptor nest (nest #01) was observed to be an old nest/eyrie on a south facing slope located approximately 40 feet high on a 50 foot cliff. A large amount of old (years) whitewash observed at this potential nest. No stick material was visible from the ground and a vantage point could not be obtained where the biologists could see the flat ledge where the whitewash was located. No signs of recent activity (fresh whitewash, feathers, downy, prey remnants) were observed at the nest and no raptor species were observed in the area.

Unknown raptor nest (nest #02) was observed to be a medium size stick nest on a southeast facing cliff 25 feet high on a 30 foot cliff. Older whitewash was observed on the nest and the

surrounding ledge. No signs of recent activity (fresh whitewash, feathers, downy, prey remnants) were observed at the nest and no raptor species were observed in the area.

Multiple perches were documented in the survey area where large amounts of fresh whitewash were observed on cliff face where no nest, significant ledge, or cavity was documented. Locations of these perches were documented and are included in the Project Map.

Raptor species observed during the survey include two golden eagles (*Aquila chrysaetos*), one Swainson's hawk (*Buteo swainsonii*), and one American kestrel (*Falco sparverius*). The two golden eagles were observed soaring outside of the project area. These eagles were later documented perching in the same area following the survey on the drive out of the project. No nest was observed in the proximity of these eagles. The Swainson's hawk and American kestrel were observed to be hunting in the project area and did not show signs of fidelity to any nearby nests or nesting habitats.

Pinyon-juniper nesting habitats in the western portion of the surveyed area have been significantly disturbed by historic mining activity. Numerous roads, trails, and other excavated or disturbed areas were observed throughout the project area (see Project Map and Photo Log).

DISCUSSION

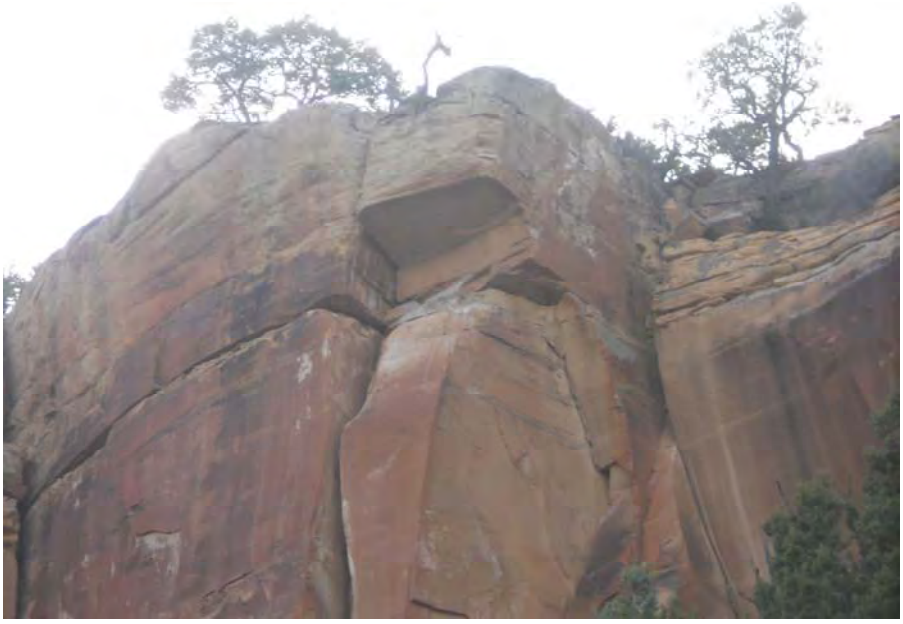
No active raptor nests were observed within ½ mile of the proposed La Sal 2 Uranium Exploration Project during the field survey. Two inactive raptor nests were documented during the field survey. The project area is situated adjacent to an area with significant surface disturbance. Habitats within and near these disturbed areas are not ideal for nesting raptors due to large amounts of existing surface disturbance and the lack of large amounts of mature stands of trees.

PHOTO LOG

Photo taken from western portion of survey area facing east. Typical non-mature pinyon juniper habitat with a large amount of surface disturbance throughout.

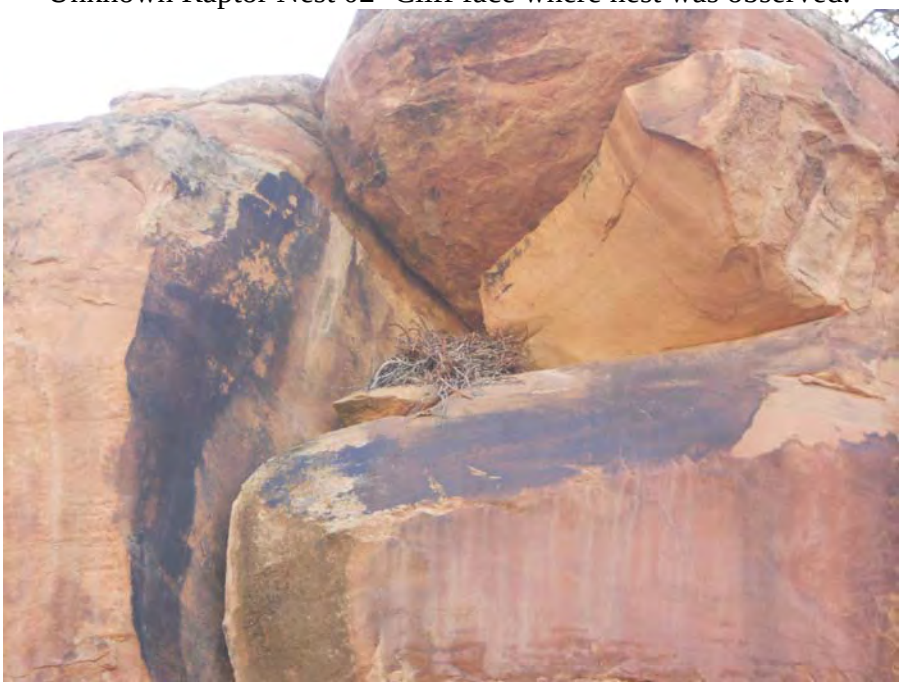
Photo taken from the east side of the project facing west. Large cliff face that runs north to south in view. This cliff face was extensively searched, and no nests or large amounts of whitewash were observed.

Unknown Raptor Nest 01-Photo facing northwest, cliff face with inactive nest in center of photo.



Unknown Raptor Nest 01-Photo facing northwest close up, ledge where large amount of old whitewash was observed. No stick material visible, no sign of recent activity.

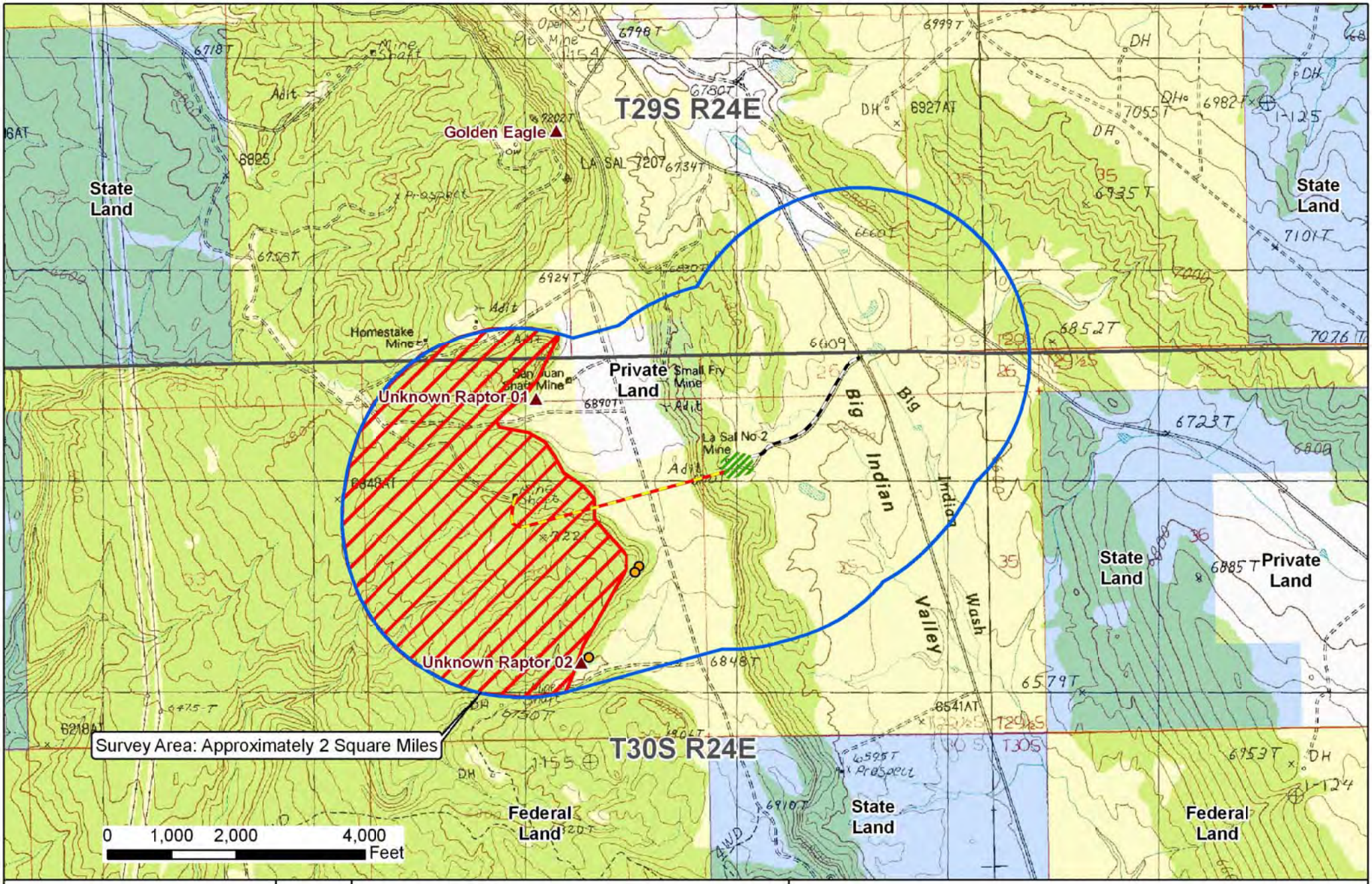
Unknown Raptor Nest 02- Cliff face where nest was observed.



Unknown Raptor Nest 02- Medium size stick nest with a small amount of whitewash identified. No signs of recent activity or use.

Perch where high amount of fresh sign was observed. No stick material was identified and no birds or nests were observed in the area.

Old perch where a very small amount of stick material was identified. We do not label this location as a nest. No birds or other nests were observed in the area.



GRASSLANDS CONSULTING

Laramide La Sal, Inc.

La Sal 2 Uranium Exploration Project
Nesting Raptor Survey
San Juan County, Utah

Surveyed May 9-10, 2011

- Raptor Nest
- Raptor Perch
- Site Access Road (to be upgraded)
- Proposed Utility Corridor
- Proposed Facility (existing disturbance)
- 1/2 Mile Raptor Survey Area
- Previously Disturbed Area

APPENDIX C: Gamma Report

Environmental Restoration Group, Inc.
8809 Washington St NE, Suite 150
Albuquerque, NM 87113

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June 1, 2011

Mr. J. Mersch Ward
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62329 North Star Drive
Montrose, CO 81403

Mersch,

Below is the report related to the La Sal Mine work conducted in La Sal, Utah last week. Please contact me with any questions or comments.

Thanks,

Chuck Farr

GPS-Based Gamma Survey and track Etch Detector Deployment
at the La Sal Mine in La Sal, Utah
May, 2011

Introduction

On May 24-26, 2011 ERG personnel performed a GPS-based gamma survey of the vent raise, mine portal, stormwater catch basin, and surrounding disturbed and undisturbed features of the La Sal Mine located near La Sal, Utah. Track-etch detectors were also deployed at 9 locations around the site to measure the radon-222 concentrations in air. The track-etch detectors are on a quarterly schedule and will need to be replaced near the end of August 2011, November 2011, and February 2012.

Gamma Survey of Disturbed and Undisturbed Areas at Mine Site

The survey system used to perform the gamma survey consisted of a Ludlum Model 44-10 two-inch by two-inch Sodium Iodide (NaI) detector and Ludlum Model 2221 ratemeter/scaler coupled to a Trimble Pro XRS mapping grade GPS . The Model 2221 and GPS unit were carried in a backpack and the Model 44-10 NaI detector was held approximately 18-inches above the ground surface. The Model 2221 was set to ratemeter mode so the gamma count rate was output every one second and logged with associated position. Upon completion of the survey the data were downloaded and processed using ESRI ArcGIS.

The disturbed areas of the mine site were surveyed with a detector spacing of approximately 25 feet while the undisturbed areas of the mine site and surrounding areas were surveyed with a lower density detector spacing of approximately 50 feet.

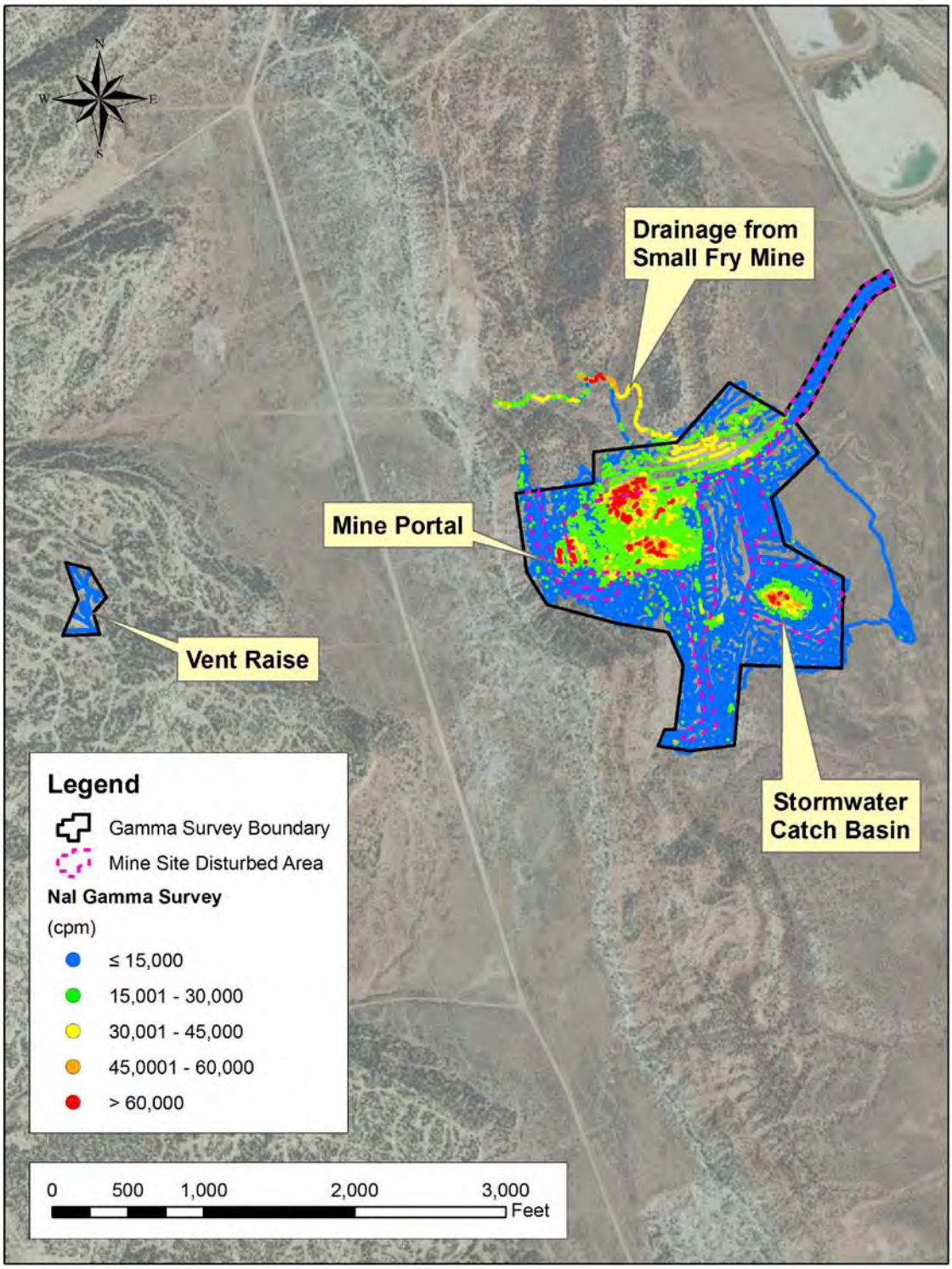
The results of the gamma survey are shown in Figure 1 below. The basic statistics of the gamma survey data are provided in Table 1 below. The background gamma count rate for the mine site and surrounding area was in the 10,000 cpm range. Gamma count rates of up to 347,000 cpm were observed in the middle of the mine site's disturbed area. Gamma count rates of up to 66,000 cpm were observed in the stormwater catch basin. Elevated gamma readings were also observed in other areas of the site including the northern edge of the undisturbed area boundary. Upon further investigation of the northern boundary, the elevated count rates were restricted to a drainage channel that leads to the Small Fry Mine just up gradient of the site. No elevated gamma readings were observed at the vent raise.

Table 1. Basic Statistics of Gamma Survey Data

Survey Data	Number of Readings	Average Count Rate (cpm)	Maximum Count Rate (cpm)	Minimum Count Rate (cpm)	Standard Deviation (cpm)
Entire Survey Data Set (1)	66383	15767	347273	4578	11221
Survey Boundary	59420	15969	347273	7114	11392
Mine Site Disturbed Area	28669	18342	347273	7226	13822
Mine Site Undisturbed Area	31760	13690	117494	7114	7790
Vent Raise	1129	6082	10406	4578	872

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

Figure 1. Gamma Survey Results



Track-Etch Detector Deployment for Measuring Radon-222 Concentration in Air

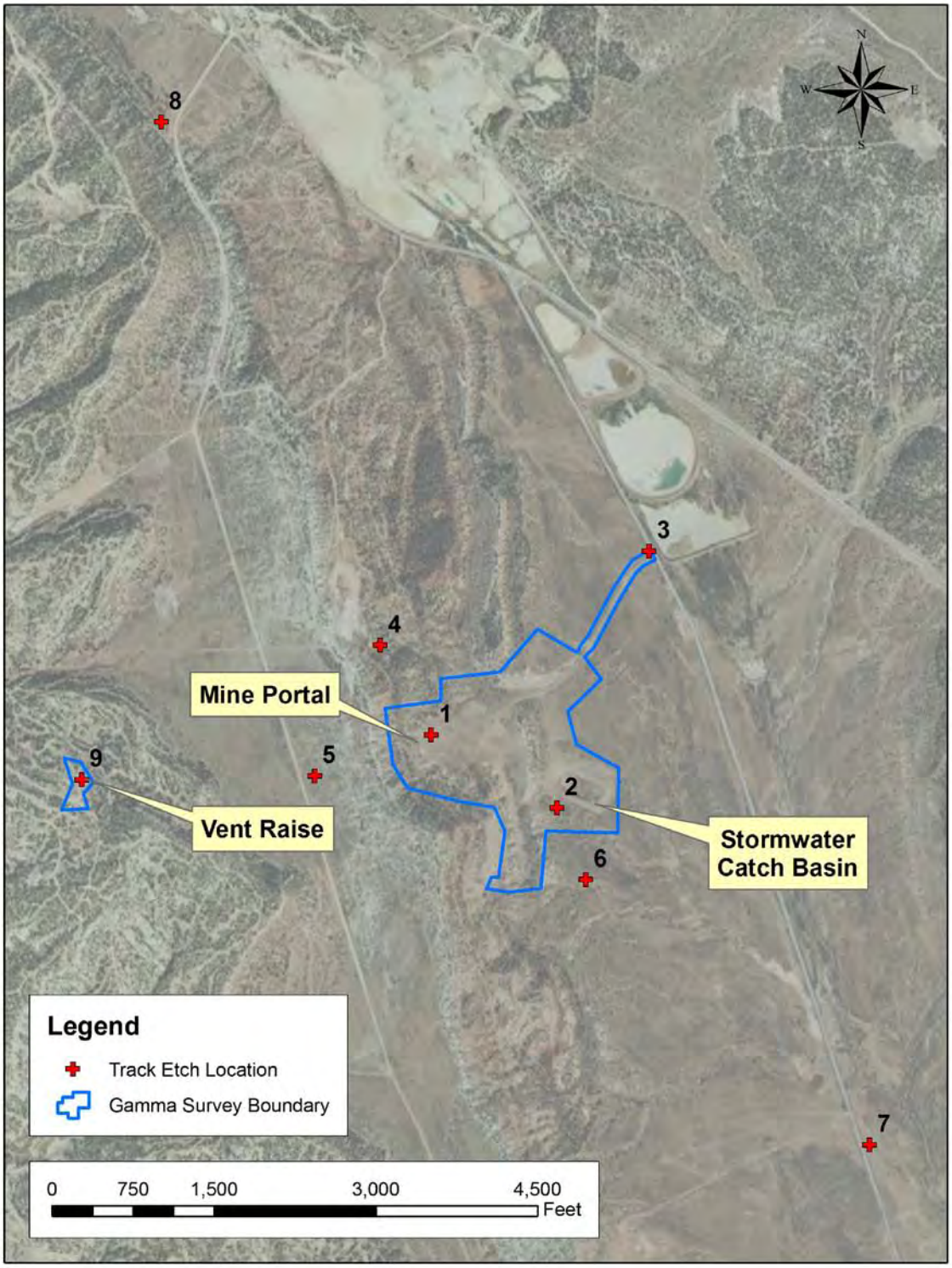
Track-etch detectors for passively measuring radon-222 concentrations in air were deployed at 9 locations around the site, with 1 location having a duplicate detector. The deployment locations relative to the site are shown in Figure 2 below. Since track etch detectors are deployed and retrieved quarterly there are no results to report at this time. The track etch detectors are on a quarterly schedule and will need to be replaced near the end of August 2011, November 2011, and February 2012. The detector location number, detector serial number, and location coordinates are provided in Table 2 below.

Table 2. Track-Etch Detector Information

Location	Detector Serial Number	Coordinates (1)		Comments
		Northing	Easting	
1	4828460	10,417,876	2,282,480	Mine portal.
2	4828463	10,417,199	2,283,646	Near catch basin.
2 Dup.	4828464	10,417,199	2,283,646	Duplicate near stormwater catch basin.
3	4828465	10,419,581	2,284,501	Entrance to site.
4	4828461	10,418,708	2,282,005	Up drainage towards Small Fry Mine.
5	4828458	10,417,496	2,281,395	Above mine portal on Homestake Rd.
6	4828462	10,416,535	2,283,914	South of site.
7	4828467	10,414,075	2,286,545	South of site on Big Indian Rd.
8	4828466	10,423,560	2,279,972	North of site on Homestake Rd.
9	4828459	10,417,462	2,279,235	Vent Raise

Note (1): Coordinates are in NAD83 Utah South. Units are feet.

Figure 2. Track-Etch Detector Locations



Quality Control

All gamma survey detection systems were calibrated within six months prior to use using NIST traceable sources and pulser, and were function checked before and after use each day. Function check forms and calibration sheets are included below.

Certificate of Calibration

Calibration and Voltage Plateau

Environmental Restoration Group, Inc.
8809 Washington St NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224
www.ERGoffice.com

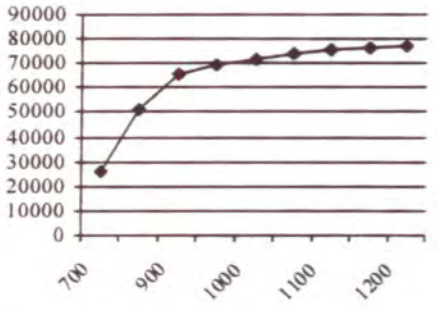
Meter:	Manufacturer:	Ludlum	Model Number:	2221	Serial Number:	254772
Detector:	Manufacturer:	Ludlum	Model Number:	44-10	Serial Number:	PR118372

☑ Mechanical Check ☑ Geotropism ☑ THR/WIN Operation ☑ Audio Check ☑ Battery Check (Min 4.4 VDC)
☑ F/S Response Check ☑ Meter Zeroed ☑ Reset Check HV Check (+/- 2.5%): ☑ 500 V ☑ 1000 V ☑ 1500 V
Source Distance: ☐ Contact ☑ 6 inches ☐ Other: Cable Length: ☐ 39-inch ☑ 72-inch ☐ Other:
Source Geometry: ☑ Side ☐ Below ☐ Other: Temperature: 74 °F Relative Humidity 20 %
Threshold: 10 mV Window: Barometric Pressure: 24.69 inches Hg
Instrument found within tolerance: ☑ Yes ☐ No

Range/Multiplier	Reference Setting	"As Found Reading"	Meter Reading	Integrated 1-Min. Count	Log Scale Count
x 1000	400	400	400	399373	400
x 1000	100	100	100		100
x 100	40	400	400	39948	400
x 100	10	100	100		100
x 10	4	400	400	3998	400
x 10	1	100	100		100
x 1	400	400	400	399	400
x 1	100	100	100		100

High Voltage	Source Counts	Background
700	25805	
800	50932	
900	65853	
950	69386	
1000	71716	
1050	73733	
1100	75592	
1150	76413	10860
1200	76750	

Voltage Plateau



Comments: HV Plateau Scaler Count Time = 1-min. Recommended HV =1150

Reference Instruments and/or Sources:

Ludlum pulser serial number: ☐ 97743 ☑ 201932 Fluke multimeter serial number: ☐ 8749012
☐ Alpha Source: Th-230 @ 13,000 dpm (1/13/10) sn: 4098-03 ☑ Gamma Source Cs-137 @ 5.37 uCi (1/13/10) sn: 4097-03
☐ Beta Source: Tc-99 @ 17,700 dpm (1/13/10) sn: 4099-03 ☐ Other Source:

Calibrated By: Calibration Date: 3-1-11 Calibration Due: 3-1-12

Reviewed By: Review Date: 3/3/11

This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997.
NMRCB Registration No. 921-3 * Calibration of Radiation Detection Instrument Devices

Certificate of Calibration

Calibration and Voltage Plateau

Environmental Restoration Group, Inc.
8809 Washington St NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224
www.ERGoffice.com

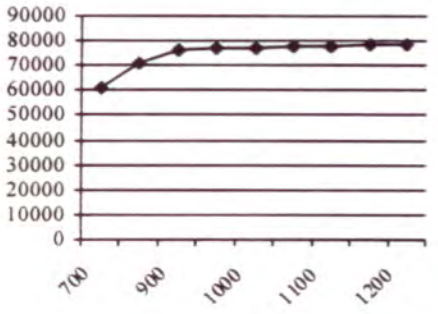
Meter:	Manufacturer:	Ludlum	Model Number:	2221	Serial Number:	117357
Detector:	Manufacturer:	Ludlum	Model Number:	44-10	Serial Number:	PR144055

☑ Mechanical Check ☑ Geotropism ☑ THR/WIN Operation ☑ Audio Check ☑ Battery Check (Min 4.4 VDC)
☑ F/S Response Check ☑ Meter Zeroed ☑ Reset Check HV Check (+/- 2.5%): ☑ 500 V ☑ 1000 V ☑ 1500 V
Source Distance: ☐ Contact ☑ 6 inches ☐ Other: Cable Length: ☐ 39-inch ☑ 72-inch ☐ Other:
Source Geometry: ☑ Side ☐ Below ☐ Other: Temperature: 74 °F Relative Humidity 20 %
Threshold: 10 mV Window: Barometric Pressure: 24.69 inches Hg
Instrument found within tolerance: ☑ Yes ☐ No

Range/Multiplier	Reference Setting	"As Found Reading"	Meter Reading	Integrated 1-Min. Count	Log Scale Count
x 1000	400	400	400	399094	400
x 1000	100	100	100		100
x 100	40	400	400	39914	400
x 100	10	100	100		100
x 10	4	400	400	3992	400
x 10	1	100	100		100
x 1	400	400	400	399	400
x 1	100	100	100		100

High Voltage	Source Counts	Background
700	61031	
800	71071	
900	76025	
950	76860	
1000	77069	
1050	77960	
1100	78171	11033
1150	78399	
1200	78872	

Voltage Plateau



Comments: HV Plateau Scaler Count Time = 1-min. Recommended HV =1100

Reference Instruments and/or Sources:

Ludlum pulser serial number: ☐ 97743 ☑ 201932 Fluke multimeter serial number: ☐ 8749012
☐ Alpha Source: Th-230 @ 13,000 dpm (1/13/10) sn: 4098-03 ☑ Gamma Source Cs-137 @ 5.37 uCi (1/13/10) sn: 4097-03
☐ Beta Source: Tc-99 @ 17,700 dpm (1/13/10) sn: 4099-03 ☐ Other Source:

Calibrated By: Calibration Date: 3-1-11 Calibration Due: 3-1-12

Reviewed By: Review Date: 3/3/11

This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997.
NMRCB Registration No. 921-3 * Calibration of Radiation Detection Instrument Devices

ERG

Function Check Form
Single Channel Detector

Ratemeter: 2221 Serial No. 254772 Cal. Due Date: 3-1-12

Detector: 44-10 Serial No. PR 118372 Cal. Due Date: 3-1-12

Source: Cs-137 Activity: 4 μCi on 4/18/96 (2.83 μCi on 5/23/11) Serial No. 544-96

Comments: Gross counts 1min Background 1min

DISTANCE FROM DETECTOR EDGE TO SOURCE EDGE ~5"

	Date	Time	Battery	High Voltage	Threshold	Gross Counts	Background	Net Counts	Efficiency	Initial
erg office –	5/23	8:43	5.4	1152	101	46599	12096	34503	–	JLS
	5/24	6:18	5.1	1102	101	41601	8059	33542	–	JLS
	5/24	15 32	5.3	1103	101	41585	7485	34100	N/A	JLS
VIRGINIAN HOTEL ROOM	5/25	6:44	5.4	1104	101	41747	7288	34459		JLS
	5/25	16:16	5.2	1102	101	41089	7279	33810		JLS
	5/26	6:27	5.3	1102	101	41804	7214	34590		JLS

Reviewed By: [signature] Date: 6/1/11

ERG Form 1.30A

ERG

Function Check Form
Single Channel Detector

Ratemeter: 2221 Serial No. 117357 Cal. Due Date: 3-1-12

Detector: 44-10 Serial No. RR144055 Cal. Due Date: 3-1-12

Source: Cs-137 Activity: 4 μCi on 4/12/86 (2.83 μCi on 5/23/11) Serial No. 544-96

Comments: Gross counts: 1min Background: 1min

DISTANCE FROM DETECTOR EDGE TO SOURCE EDGE ~ 5"

	Date	Time	Battery	High Voltage	Threshold	Gross Counts	Background	Net Counts	Efficiency	Initial
erg office -	5/23	9:02	5.6	1116	103	48038	12772	35266	-	JLS
	5/24	6:29	5.4	1117	103	42135	8434	33701		JLS
VIRGINIAN	5/24	15:40	5.2	1120	103	43507	7803	35704	N/A	JLS
HOTEL	5/25	6:34	5.3	1122	103	42689	7962	34727		JLS
ROOM	5/25	20:06	5.2	1115	103	42696	7568	35128		JLS
	5/26	6:34	5.2	1119	103	42612	7658	34954		JLS

Reviewed By: [signature] Date: 6/1/11

ERG Form 1.30A