

## EXECUTIVE SUMMARY

This Executive Summary is intended to provide a brief overview of the Proposed Action, alternatives, and conclusions from the impact analyses. For the supporting documentation and detailed analyses, please see the full Environmental Impact Statement (EIS).

## PROJECT OVERVIEW AND LOCATION

Lost Creek ISR, LLC (LCI) is proposing the construction, operation, and reclamation of facilities for In Situ Recovery (ISR) operations within the Lost Creek Permit Area (Permit Area) of the Lost Creek In Situ Uranium Project (Project). ISR involves the use of a recovery solution, known as a lixiviant, to extract the mineral from the geologic formation, and the mineral is removed from the solution using ion exchange resins at the processing facility (the Plant). ISR occurs without physically removing the ore-bearing strata. Under the Proposed Action, about six million pounds of uranium would be produced from the Permit Area. The Proposed Action would occur over a 12-year period, including about seven months for initial construction, seven years for production, and the remaining time for final reclamation. With appropriate regulatory approval, the Plant could also be used to process ion exchange resins from other ISR mines in the region after completion of mineral recovery in the Permit Area.

The Permit Area is located in northeast Sweetwater County, south-central Wyoming. Rawlins is 38 miles southeast; Rock Springs is 80 miles southwest; Casper is 90 miles northeast; and Jeffrey City is 25 miles north. The nearest population center, located 15 miles northeast of the Permit Area, is Bairoil, with a population of about 100 people. A series of paved and unpaved roads across state, private and Bureau of Land Management (BLM) public land provide access to the Permit Area, which is located about 30 miles from the nearest highway (United States [US] Highway 287/State Highway 789). There are no publicly maintained roads within the Permit Area. The Permit Area is geographically located in the north-central portion of the Great Divide Basin. The regional rolling landscape has draws, rock outcroppings, ridges, and bluffs. The Permit Area is characterized by low relief sagebrush-dominated plains dissected by small, ephemeral drainage networks. The site elevation ranges from approximately 6,790 to 7,050 feet above mean sea level.

There are grazing allotments in the Permit Area. Farms, residences, and population centers are not present. The closest mining project is Kennecott Uranium Company's Sweetwater Project, about three miles south-southwest of the Permit Area. The Sweetwater Project once included an open pit mine, which targeted a different ore zone than the Proposed Action, and a conventional mill. The mine was reclaimed by the operator and the mill is on standby. Oil and gas exploration has been conducted in the vicinity, but the closest existing or proposed production is at least seven miles to the south-southwest.

The Permit Area covers about 4,254 acres for adequate spacing of facilities and to encompass the ore trend, which extends east-west. Eighty-five percent of the Permit Area is public land managed by the BLM Rawlins and Lander Field Offices. The Permit Area includes 201 unpatented federal lode claims. Fifteen percent of the Permit Area (the northeast portion of the Permit Area) is owned by the State of Wyoming and subject to state mineral lease. Under the Proposed Action, the projected surface disturbance is about 345 acres, and the majority of the Project's activities would occur on public land.

Pursuant to 43 CFR Subpart 3809, which applies to operations authorized by mining laws on public lands, LCI submitted a Plan of Operations to the BLM in November 2009. The Plan of Operations essentially constitutes the Proposed Action in this Environmental Impact Statement (EIS). The most current information on the Project is included in the Wyoming Department of Environmental Quality, Land Quality Division's (WDEQ-LQD) Permit to Mine (LCI, 2011b). Although the Permit to Mine evaluates environmental impacts of the Proposed Action, the requirements of the National Environmental Policy Act of 1969 (NEPA) must be fulfilled by a federal agency. The Nuclear Regulatory Commission (NRC) prepared a Generic EIS (GEIS) and Supplemental EIS (SEIS) for the Project, and issued LCI a Material License in August 2011. In order to support the BLM's NEPA requirements and regulatory authorities, the BLM prepared this EIS to focus on the issues and mitigation measures not analyzed in sufficient detail in the NRC NEPA documents. The BLM is the lead agency for this EIS.

### **Purpose and Need**

Expanding nuclear power is a key component of the Energy Policy Act (EPACT 2005) signed into law in 2005. The policy calls for federal agencies "to develop a national energy policy designed to help the private sector, and, as necessary and appropriate, State and local governments, promote dependable, affordable, and environmentally sound production and distribution of energy for the future." Exploration and development of locatable federal minerals by private industry is part of BLM's minerals program under the authority of 43 CFR 3800, Mining Claims Under the General Mining Laws, the Mining and Minerals Policy Act of 1970, the Federal Land Policy and Management Act of 1976 (FLPMA), and the National Materials and Minerals Policy, Research, and Development Act of 1980. Taking into account the BLM's multiple-use mandate, the purpose and need for this EIS is to analyze the site-specific impacts associated with the Proposed Action and its alternatives, identify mitigation measures to potentially reduce or eliminate those impacts, and provide agency decision makers with detailed information upon which to base their decision.

## **Lost Creek ISR, LLC Interests and Objectives**

The Proposed Action would allow LCI to mine a valuable uranium deposit under the authority of the US mining laws, while ensuring that operations are conducted in a manner that prevents unnecessary or undue degradation of public lands in conformance with BLM requirements. The Project would also support energy-independence and environment-awareness policies.

## **Decisions to be Made**

The authorized official with the BLM will decide whether or not to approve the proposed development of federal minerals (uranium) within the project referred to as the Lost Creek In-situ Uranium Project, and if so, the approval will contain changes or conditions that are necessary to meet the performance standards of 43 CFR 3809.420 and to prevent unnecessary or undue degradation per 43 CFR 3809.411(d).

## **Applicable Statutes, Regulations, and Associated Requirements**

ISR projects, such as the Lost Creek Project, must conform to several statutory and regulatory programs and their associated requirements to address environmental and operational concerns. The BLM programs and requirements to which the Project must conform include: federal guidelines for implementing NEPA; the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA outlined in 40 CFR Parts 1500 to 1508; Department of Interior Regulations 43 CFR Part 46; Department of the Interior and BLM policies and manuals; the Minerals Goal and Objectives in Section 2.3.7 of the Rawlins Resource Management Plan (RMP); the provisions of the Lander RMP for the Green Mountain Management Unit; Invasive Plant Management; the Grazing Plan for the Green Mountain Common Allotment; and the Wyoming Standards for Healthy Rangelands.

**Section 1.4.3** outlines other federal, state, and county requirements. **Table 1.4-1** provides an overview of the federal, state, county, and local laws applicable to uranium development and the key regulatory requirements that would govern project implementation.

## **THE PROPOSED ACTION AND ALTERNATIVES**

### **The Proposed Action**

This uranium ISR operation would extract the mineral from permeable, uranium-bearing sandstones through a series of mine units. The mine units follow the ore deposits delineated by exploration drilling. The deposits generally occur at depths of 300 to 700 feet below the ground surface in long, narrow trends varying from a few hundred to several thousand feet long and 50 to 250 feet wide.

The ISR operation essentially reverses the natural processes that deposited the uranium. During mining (also called operation or production), lixiviant is pumped from a processing facility (the Plant) through buried pipelines to the injection wells in the operational mine unit(s). The lixiviant oxidizes the uranium mineral, allowing dissolution of uranium in groundwater. After circulation through the production zone (i.e., from the injection wells to the production wells), the resulting uranium-laden solution is pumped from the production wells in the mine unit(s) through buried pipelines to the Plant. There, the uranium is recovered by a series of circuits (e.g., ion exchange, elution, precipitation) and prepared for shipment as either a yellowcake slurry or dried yellowcake. The lixiviant is regenerated and pumped back to the mine unit(s) to recover additional uranium. Storage ponds are used in conjunction with Underground Injection Control (UIC) Class I wells for waste water disposal at depths between 6,139 and 9,590 feet below the ground surface.

After mining, groundwater restoration essentially reverses the effects of oxidation to re-establish the reducing conditions that were present prior to mining. Restoration methods include groundwater sweep, reverse osmosis, recirculation, and, if site conditions are suitable, groundwater transfer, reductant addition, and bioremediation. Groundwater monitoring during active restoration and during a subsequent stability phase is used to confirm that restoration criteria have been met.

For the purposes of this EIS, and for correlation with the NRC SEIS, the Project is described in three phases: Construction, Operation (Production), and Reclamation, because of the similarities in the activities and impacts. These phases are sequential with respect to the Plant and each mine unit; however, because of the progressive development of the mine units, there is overlap among the mine units (e.g., the first mine unit is in reclamation when the third mine unit is in development). Therefore, the Project schedule includes:

- Construction
  - Initial Construction
  - Mine Unit Development
- Operation (Production)
- Reclamation
  - Mine Unit Restoration and Reclamation
  - Final Reclamation

Initial Construction would occur during the first year of the Project and include: the major facility construction, in particular, the Plant (including the office, Storage Ponds, and other associated structures), equipment staging areas, main pipelines, and transmission line; improvement of the access roads; drilling of the UIC Class I wells (except the first deep well that was drilled for testing in 2008); and installation of additional equipment for air and water quality monitoring.

Development of the first mine unit, which would take about two years, would overlap with the Initial Construction. The scale and number of the mine units for a given ISR operation depends on a variety of factors, including ore distribution, aquifer characteristics, plant capacity design, and operational feasibility. Three mine units are anticipated for the Proposed Action, and each mine unit has an expected production cycle of about two to three years. Development of the next mine unit would begin during production of the previous mine unit.

Each mine unit consists of patterns of production and injection wells within a ring of monitor wells. (In the Proposed Action, the injection wells are expected to be spaced 75 to 150 feet apart.) For mining efficiency and to avoid an excursion (unanticipated movement of lixiviant), a series of procedures would be in place, including regular balancing of the pattern production and injection rates, water level monitoring, and pressure and flow measurements. In addition to pattern balancing, water quality samples would be collected from the ring of monitor wells and analyzed to detect a horizontal excursion in the production zone. (In the Proposed Action, the monitor well ring is anticipated to be spaced about 500 feet from the pattern area. The distance between each monitor well in the ring is anticipated to be about 500 feet, although actual distances would be based on the aquifer characteristics of the mine unit to ensure any excursion can be detected in a timely manner.) Water quality samples would also be collected from monitor wells completed in overlying and underlying aquifers to detect a vertical excursion. (These wells would be located within the mine unit boundary at a density of about one overlying and one underlying well per four acres, depending on the hydrologic characteristics of each mine unit.) In addition, monitor wells located within the pattern area and completed in the production zone would provide information on the mining process.

During the Proposed Action, approximately 300 acres total within the 4,254-acre Permit Area would be fenced to keep out cattle and wild horses. The pattern area fencing under the Proposed Action would be wildlife-friendly, to allow passage of smaller animals but exclude cattle and wild horses. The purpose of the fencing is to reduce damage to wells and subsequent risk of spills. About 2 acres of the Plant would be fenced to keep out wildlife, cattle, and wild horses.

Mine Unit Restoration and Reclamation begins when technical, economic, and operational criteria indicate uranium recovery in a mine unit is completed. Restoration and reclamation of each mine unit includes:

- groundwater restoration,
- radiological decontamination,
- equipment removal/decommissioning (e.g., well abandonment), and
- surface reclamation (e.g., well site reseeding).

Groundwater restoration in each mine unit would require about two years, and decontamination and equipment removal and decommissioning would require about one year. Surface reclamation would occur immediately afterwards, and monitoring to ensure revegetation success would be required until at least the fifth full growing season after seeding.

Final Reclamation, including facility decontamination and decommissioning and surface reclamation, would occur once the Plant is no longer in use and would require about two years. As with Mine Unit Reclamation, monitoring of revegetation success would be required until at the least the fifth full growing season.

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

NEPA requires evaluation of a No-Action Alternative and reasonable alternatives to the Proposed Action that may avoid or minimize Project impacts. A reasonable alternative is defined by NEPA as one that is technically, economically, and environmentally practical and feasible (BLM, 2011g). With the exception of the No-Action Alternative, alternatives would need to meet the Project's objective of producing six million pounds of uranium over an operating period of 12 years. Several alternatives were identified from the BLM's review of the Proposed Action and from the issues and concerns raised from public scoping comments and collaboration with federal, state, and local agencies, as well as tribal governments.

### **Alternatives Evaluated in Detail**

The alternatives that were considered and evaluated in detail include:

- No-Action Alternative (also evaluated in the NRC SEIS [2011a]) - Current land uses (livestock grazing, wildlife habitat, dispersed recreation, minerals and energy development, and infrastructure) would not be expected to change. LCI would continue exploration activities, which would involve reclamation of disturbance associated with LCI's Drilling Notification, but no uranium would be produced from the Permit Area.
- Not Fencing the Pattern Areas – If the pattern areas were fenced to reduce damage to wells, grazing would not be possible in the pattern areas. Also, if a gate were left open, cattle or wild horses could be injured if they entered the pattern area and were startled. Therefore, the alternative of 'not fencing the pattern areas' was evaluated in detail. Even if the pattern areas were not fenced, about 2 acres of the Plant would still be fenced to keep out wildlife, cattle, and wild horses.
- On-Site Dryer (also evaluated in the NRC SEIS) - This alternative is the same as the Proposed Action with the addition of a yellowcake drying-packing facility in the Plant. As with the Proposed Action, yellowcake slurry would be produced. However, rather than shipping the slurry off-

site for drying, the slurry would be filter-pressed to remove additional water, dried under vacuum, and packaged (also under vacuum) in drums for off-site shipping to a fuel processing facility. Emissions from the drying chamber would be treated through a bag filter to remove yellowcake particulates; and any water vapor exiting the drying chamber would be cooled and condensed. The condensate volume from the dryer would be minimal and re-used in processing or disposed of through the disposal system used during slurry production. Use of a dryer would provide an economic benefit to the proponent because payment of processing fees to another operator would not be necessary. Use of a dryer would also result in fewer shipments from the site due to the difference in volume between yellowcake slurry and dried yellowcake. Fewer shipments would reduce traffic impacts, including the risk of transportation accidents and wildlife disturbance and collisions, and also reduce air quality impacts from travel on unpaved roads.

**Alternatives Considered and Eliminated from Detailed Study**

Alternatives considered and eliminated from detailed study are listed below, along with the primary reason(s) for elimination:

- Portable Drill Pits and Closed Loop Drilling Systems - Limited to no reduction in surface disturbance, increased transportation and wildlife impacts, and increased costs and logistical difficulties;
- Alternative Mining Methods (also an alternative eliminated from detailed analysis in the NRC SEIS [2011a]) - Significantly greater surface disturbance (with corresponding increases in soil, vegetation, and wildlife impacts), increased groundwater consumptive use, and increased health and safety risks;
- Alternative Waste Water Disposal Methods (discussed in the NRC SEIS) - Significantly increased surface disturbance, less efficient (or no) operation during adverse weather, and increased impacts to land use, vegetation, and wildlife;
- Phased Development of Mine Units - Not economically viable and constrains options for more efficient mining and groundwater restoration;
- Alternative Lixivants (also an alternative eliminated from detailed analysis in the NRC SEIS) - Geologic setting and geochemical conditions restrict use;
- Shipping Uranium-Laden Resin - Increased transportation impacts (with corresponding increases in air quality and wildlife impacts);
- Alternate Plant Locations (evaluated by LCI prior to submittal of the NRC license application and WDEQ-LQD permit application) - Interference with potential mine unit development and closer to active raptor nest; and
- Alternate Routes for the East and West Access Roads (reviewed and evaluated by the NRC, WDEQ-LQD, and WGFD) - Increased surface disturbance (with corresponding increases in vegetation, surface water, and wildlife impacts).

## PUBLIC INVOLVEMENT

In February 2010, the BLM provided a news release about the Lost Creek Plan of Operations, which was received in November 2009, and projected environmental review. The public scoping period for NEPA commenced when the Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) was published in the Federal Register (FR) on February 11, 2011 (76 FR 7877). Notification of the scoping process was also published in local newspapers and was included in the BLM's weekly report to the Washington, DC office as well as the BLM's quarterly congressional briefing. The US Fish and Wildlife Service (USFWS), Environmental Protection Agency (EPA), State of Wyoming, state and local government representatives, Native American tribes, local media, and interested organizations and individuals also received a public scoping notification via email or mail. A public scoping meeting was held at the BLM Rawlins Field Office on March 7, 2011. Media interviews were conducted with The Radio Network, which operates a syndicated string of radio stations in southwest Wyoming.

Organizations and agencies were mailed letters of invitation to become cooperating agencies in the Project's EIS development process. These organizations included: USFWS; Arapahoe Tribe; Shoshone Tribe; Ute Tribe; State of Wyoming and its agencies; Carbon County Commissioners; Fremont County Commissioners; Sweetwater County Commissioners; and members of the Coalition of Local Governments. The EPA requested to become a cooperating agency in the NEPA process. The following agencies with jurisdiction, special expertise, or interest in the EIS development process agreed to participate as cooperating agencies: EPA; State of Wyoming and its agencies; Carbon County Commissioners; and Sweetwater County Commissioners.

Since the Project has completed the permitting processes for the NRC, WDEQ, and Sweetwater County, public meetings for the Project had been held prior to the BLM's public scoping meeting. For NRC to meet its NEPA requirements, NRC prepared a GEIS for uranium ISR and an SEIS for the Project, both of which included public scoping and comment periods (NRC, 2009 and 2011a). For the GEIS, the NRC staff held three public scoping meetings from July 24, 2007, to November 30, 2007, and accepted public comments on the scope of the GEIS published as a final report in May 2009. Additionally, NRC held eight public meetings to receive comments on the draft GEIS, published in July 2008. Three of these meetings were held in the State of Wyoming. Comments on the draft GEIS were accepted between July 28, 2008, and November 8, 2008 (NRC, 2011a).

As part of the preparation for the SEIS, the NRC staff met with federal, state, and local agencies and authorities during a site visit to the proposed Lost Creek ISR Project site and vicinity in January 2009. The NRC gathered additional site-

specific information to assist with the environmental review and to determine whether site-specific information was consistent with the GEIS. The NRC staff also contacted potentially interested Native American tribes and local authorities, and public interest groups in person and via e-mail and telephone (NRC, 2011a).

A Notice of Opportunity for Hearing on the proposed Lost Creek ISR Project license application in the Federal Register (73 FR 39728) was published by the NRC on July 10, 2008. No hearing requests were received. NRC staff published a Notice of Intent to prepare the SEIS on September 3, 2009 (74 FR 45656) (NRC, 2011a). On December 11, 2009, NRC published a Notice of Availability (NOA) for the Draft SEIS for the proposed Lost Creek ISR Project in the Federal Register (74 FR 65806), and on February 5, 2010, NRC extended the public comment period to March 3, 2010 (75 FR 6065). In addition to the opportunities provided through the NEPA process, NRC provided multiple opportunities for public involvement during the NRC staff's safety review. Specifically, the NRC staff held six meetings or teleconferences with the applicant from 2006 through 2010. Each of these activities included an opportunity for public comment (NRC, 2011a).

The WDEQ permitting processes also require public notice and comment (Air Quality Division, Wyoming Air Quality Standards and Regulations, Ch. 6, Sec. 2(m); LQD, NonCoal Rules and Regulations, Ch. 11, Sec. 21; Water Quality Division, Water Quality Rules and Regulations, Ch. 13, Sec. 19), and these requirements have been met for the Project, including notice and opportunity to participate in the Wyoming Environmental Quality Council (EQC) Hearing on the WDEQ-LQD Permit in August 2011 (resulting in the EQC upholding the WDEQ-LQD decision to issue the permit) (EQC, 2011). Public meetings were also conducted in Sweetwater and Carbon Counties to meet planning requirements or for public information (LCI, 2009).

## **IDENTIFICATION AND ANALYSIS OF ISSUES**

Issues and concerns were identified through consultation and coordination with federal, state, and local agencies, and interested groups and individuals. The BLM Rawlins Field Office resource specialists also reviewed the Proposed Action and identified issues and concerns related to certain aspects of the human environment and other resources. Based on this coordination, the BLM determined that the following issues are key areas for assessment in the EIS:

### **Rangeland (Land Use)**

**Issues** - Confirm that all grazing permittees directly or indirectly affected by the Project are aware of the issues, decisions and resulting actions regarding the Project and that the Project is in conformance with existing Grazing Plans. Ensure that impacts to vegetation (including introduction of noxious and invasive species) and to soils are identified and appropriate

procedures for minimization and mitigation of impacts are in place along with procedures for reclamation and monitoring of reclamation success.

**Analysis (Grazing)** - The Permit Area covers less than one percent of each of the Stewart Creek, Cyclone Rim, and Green Mountain grazing allotments, and the Project-related disturbance within the Permit Area would cover less than 0.2 percent of each allotment. The reduction in the total number of cattle that could be supported during the Project would be five head of cattle. The Proposed Action includes reclamation with an approved seed mix, so the post-mining land uses, including grazing and wildlife habitat, can be supported.

Public meetings on the Project have been held locally, after public notice, and will continue to be held locally, to help ensure local land users understand the Project and associated impacts. The Wyoming Department of Agriculture has participated in the cooperators' meetings.

**Analysis (Vegetation)** - During the Project, a total of approximately 345 acres of the land surface and associated vegetation could potentially be disturbed, which is about eight percent of the 4,254-acre Permit Area. To the extent possible, roads and other facilities (e.g., pipelines) would be aligned with existing roads to minimize additional disturbance. The disturbance acreage includes areas from which vegetation and topsoil would be removed and areas in which the vegetation would not be removed but could be crushed or otherwise disturbed. The disturbance would be progressive, i.e., it does not all occur during Initial Construction. Interim reclamation, used in the mine units during production, and final reclamation include weed control and reseeded with a regulatory-approved seed mix suitable for the post-mine land use, which would be the same as the pre-mine land use. Revegetation success criteria must also be met, including cover and species diversity determined from baseline sampling and, after reclamation, from comparative sampling of undisturbed areas.

**Analysis (Soils)** - Procedures have been established for determining where topsoil must be removed, appropriate topsoil salvage depths, and short-term and long-term topsoil storage (e.g., short-term along pipelines and long-term where soil is removed from building footprints). Procedures have also been established for topsoil reapplication during reclamation.

### Recreation

**Issue** - Ensure the Proposed Action does not require changes to existing recreation and off-highway-vehicle management to protect the safety of public land users.

**Analysis** - Recreational use of the general area is relatively light and dispersed. The impacts to recreation would be negligible due to the small area of the impacts. To protect the health and safety of the public, recreationists would have restricted access – albeit minimal – to locations within the Permit Area that were previously available for general use. The Plant,

certain mine units and other related infrastructure would be fenced. (Approximately 300 acres total within the 4,254-acre Permit Area would be fenced.) Though the general public would be restricted from certain portions the Permit Area, recreationists would continue to have access to the general area via existing roads. Traffic on these roads may increase due to the additional use of the roads by Project vehicles; however, the additional traffic volume is not expected to greatly affect recreational access.

### **Transportation**

**Issue** - Evaluate the Project influence on access to and transportation across the BLM lands and coordination with local entities for road maintenance.

**Analysis** - The relatively minor increase in traffic would not degrade the existing road net nor reduce safety conditions to levels unacceptable to LCI (for roads on the Permit Area) or unacceptable to government agencies (for off-site roads). LCI is working with county and local governments to ensure maintenance agreements are in place. LCI would also install traffic counters on the smaller, improved surface roads for which no data currently exist.

### **Wildlife**

**Issues** - Confirm that the potential impacts to wildlife, including threatened, endangered, candidate, and sensitive species, and to wildlife habitat have been evaluated and the monitoring and mitigation measures in the Proposed Action conform to current policies and procedures.

**Analysis (Wildlife Habitat)** - The two major vegetation/habitat types in the Permit Area are the Lowland and Upland Big Sagebrush Shrublands. Of the acreage which would be disturbed, approximately 15 percent (which corresponds to about 1 percent of the Permit Area) would be the Lowland Big Sagebrush Shrubland habitat, which has the highest diversity and density of nesting birds and small mammals. As noted in the analysis of Rangeland issues above, efforts would be made to minimize Project disturbance, which occurs sequentially throughout the Project, and ensure maximum revegetation success.

**Analysis (Wildlife)** - Numerous species have been identified through multi-year baseline surveys, and continued monitoring and mitigation requirements would be established based on a variety of Project impacts, including surface disturbance, noise, and traffic. The species of primary concern are Greater sage-grouse and raptors. Since the Project is within a Greater sage-grouse Core Area, LCI initiated a more detailed Greater sage-grouse monitoring program for the Project and completed the Density and Disturbance Calculation Tool [DDCT]) to evaluate potential effects of the Project on Greater sage-grouse (Mead, 2011 and Wyoming Interagency, 2011). The Wyoming Game and Fish Department reviewed the DDCT and commented that the results indicated that the surface disturbance resulting from the Project was in line with state-wide stipulations for

Greater sage-grouse taking topography and proximity to leks into account (WDEQ, 2011a). The ferruginous hawk is the only raptor known to nest within the Permit Area. There are currently no active nests within the Permit Area, although Project activities would also take into account a one-mile buffer around nests adjacent to the Permit Area.

### **Wild Horses**

**Issue** - Evaluate the Project influence on wild horses and ensure that monitoring and mitigation measures in the Proposed Action conform to current policies and procedures.

**Analysis** - During the Project, a total of approximately 345 acres of the land surface and associated vegetation (eight percent of the 4,254-acre Permit Area) would be disturbed and subsequently reclaimed. Because wild horses are mobile and only a very small percentage of their range would be influenced, no significant impacts to the population are expected. Approximately 300 acres total within the Permit Area would be fenced to keep out cattle and wild horses during the Project. Fencing and gates would be constructed according to regulatory guidelines to minimize potential mortality or injury to wild horses and wildlife.

### **Water Resources**

**Issues** - Evaluate the Proposed Action to ensure that potential impacts to water resources have been addressed and that provisions are in place for monitoring to detect any impacts and for mitigation of unanticipated adverse impacts.

**Analysis (Water Quantity)** - Four BLM water wells are located outside of, but within three miles of, the Permit Area. The completion depths of the wells, based on available information, do not directly coincide with the depth of the ore zone targeted by the Project. Even if the completion depths coincided, drawdown at the BLM well locations would not exceed 15 feet, based on a Project-specific groundwater model. LCI has also committed to mitigation if any significant impacts to the BLM water wells are observed (e.g., water levels drop to a point that impairs the usefulness of the wells).

**Analysis (Water Quality)** - Because of the distance between the BLM water wells and the mine units and the different completion depths between the BLM water wells and the mine unit wells, water quality impacts to any of the BLM wells are not anticipated. One of the four BLM wells was sampled by LCI for baseline conditions and the sample contained elevated concentrations of uranium and radium, not unexpected given the extensive natural uranium deposition in this portion of the Great Divide Basin.

### **Air Quality**

**Issue** - Evaluate the measures that will be taken during the Proposed Action to minimize dust generation and other potential adverse impacts to air quality.

**Analysis** – The WDEQ Air Quality Division (WDEQ-AQD) issued an air quality permit for the Project, which is not considered a “major source” as defined in the WDEQ-AQD regulations. Under WDEQ-AQD regulations, air quality modeling is not necessary. Air emissions from the proposed Lost Creek ISR Project would comply with the conditions of the WDEQ-approved construction air permit and the required WDEQ minor source operating permit. Due to the wind and relative instability of the air, emissions would generally be quickly dispersed. As such, it is not expected that the predicted Project emissions would impact attainment for ambient air quality standards in the region surrounding the Permit Area. The Permit Area is more than 50 miles upwind of the closest Prevention of Significant Deterioration (PSD) Class I or Sensitive Class II Areas. Therefore, emissions are not expected to impact air quality in these areas. LCI would use best management practices (BMPs) to reduce fugitive dust and emissions. These BMPs include a variety of actions, such as dust suppressants, engine maintenance and tuning, use of newer equipment, speed limits, and revegetation.

### **Historical and Cultural Resources**

**Issue** - Ensure that the resources in the Permit Area have been identified in accordance with procedures established by the BLM and the Wyoming State Historical Preservation Office (SHPO) and that the Proposed Action includes protections for the resources identified in the Permit Area.

**Analysis** – Based on resource inventories conducted per BLM and SHPO procedures, one prehistoric archaeological site recorded in the Permit Area would incur adverse effects. The site lies in an area where construction related to a mine unit, an access road, and a pipeline would occur. It is anticipated that the entire site would be subjected to surface scraping; however, mitigative excavation, in accordance with an existing approved plan, would take place prior to these activities. Management practices would also be in place to protect archeological resources should a discovery of historical or cultural resources occur during the Project.

### **Visual Resources**

**Issue** - Ensure that the impacts identified in the Proposed Action conform to the objectives of the existing visual resource management (VRM) classes.

**Analysis** - The largest facility, the Plant, would be discernible during the day, but would not be a dominant landscape feature to observers outside the Permit Area. Night-time operations would be minimal. Most of the areas where visual resources may be impacted are within the Visual Resource Inventory Class IV (areas with the least amount of visual value). The largest potential visual impacts from the Plant lie in the southwesterly to

southeasterly directions, along county and BLM roads. The Plant would potentially be visible from the Continental Divide Trail, but in only very limited areas (less than 0.5 miles in total). However, at a distance of about eight miles away, the Plant would not dominate the landscape. The Plant would also be visible along about seven miles of the Rawlins-Ft. Washakie Stage Road, but the closest distance would be about 6.5 miles.

### **Socioeconomics**

**Issue** - Ensure that the potentially affected counties and cities have the necessary infrastructure to support the development associated with the Project.

**Analysis** - There would not be an increase in the local and regional population that would strain the ability of communities and/or counties to provide adequate housing and services, nor would there be an increase in the local or regional cost of living as a result of the Project. There would be an increase in government revenues to offset increased demands for services and an improvement in socioeconomic viability due to indirect economic activity (e.g., purchase of local goods). Therefore, the potentially affected communities and counties have expressed support for the Project. LCI has also met with county and local governments to help ensure a cooperative effort to sustain and improve the economies and conditions.

## **COMPARISON OF ENVIRONMENTAL IMPACTS AND CONSIDERATION OF CUMULATIVE IMPACTS**

**Table 2.3-1** summarizes the impacts of the Proposed Action and the alternatives evaluated in detail. The cumulative impacts that result from the incremental impact of the Proposed Action, when added to other past, present, and reasonably foreseeable future actions, were also considered. Because of limited specific information about future actions, primarily related to uranium, oil, and gas exploration and development, reasonable assumptions about the actions were used in the analysis. The proposed Lost Creek ISR Project would not contribute perceptibly to cumulative impacts, due to: the dispersed locations of the actions in the north-central portion of the Great Divide Basin; the fact that not all the actions would occur at once; and the current reclamation requirements, which were not in place during older resource exploration and development actions.

## **CONCLUSIONS**

The authorized official with the BLM will decide whether or not to approve the proposed development of the Lost Creek ISR Uranium Project, and if so, the approval will contain changes or conditions necessary to meet the performance standards of 43 CFR 3809.420 and to prevent unnecessary or undue degradation per 43 CFR 3809.411(d). The Preferred Alternative is the Proposed Action for ISR mining and processing, including a vacuum yellowcake dryer, in accordance with the WDEQ-LQD Permit to Mine (Permit No. 788), the NRC Source and

ByProduct Material License (SUA-1598) and other issued agency approvals. The WDEQ-LQD Permit requires the BLM's consent, and there is a Memorandum of Understanding between the BLM and the State of Wyoming recognizing the authorities and responsibilities of both agencies when permitting mining operations on BLM-administered lands. For example, following completion of the Record of Decision for this EIS, the BLM can request a license amendment or permit revision to incorporate new design features and/or mitigation measures that may be developed during this EIS. In addition, the Record of Decision is also enforceable in terms of compliance with, or execution of, the environmental protection measures listed in it (BLM, 2011g).

The Proposed Action would allow LCI to mine a valuable uranium deposit under the authority of the US mining laws, while ensuring that operations are conducted in a manner that prevents unnecessary or undue degradation of public lands. The Project would be constructed and operated to avoid and minimize adverse environmental impacts, and timely reclamation is required to further reduce impacts. Baseline information on vegetation, soils, surface water, wildlife, land use, and other resources has been collected, as summarized in this EIS. Regulatory requirements and operator initiatives for resource protection and reclamation, including minimization of surface disturbance, topsoil handling and replacement, vegetation re-establishment, and wildlife monitoring and protection stipulations, are also summarized in this EIS. ISR mining requires groundwater withdrawal and changes in groundwater quality; however, there would be no interference with existing water uses, and groundwater restoration to a quality consistent with pre-mining uses is required. As a result of baseline data analysis and interpretation, operational procedures, and reclamation requirements, environmental impacts are anticipated to be minimal. Project-wide resource monitoring during the life of Project is required to confirm that actual project impacts are consistent with the environmental impacts disclosed in this EIS. Additional details in the WDEQ-LQD Permit and NRC License are referenced, where appropriate.

The Project is unlikely to have adverse effects on public health, welfare, and safety because of the monitoring and protections required by the NRC and other agencies. Adverse socioeconomic impacts, e.g., excessive housing demand, would be minimal because of the relatively small size of the Project. Benefits to the state, counties, and local communities would include tax revenues, employment opportunities, and indirect economic activity.