United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Battle Mountain Field Office
50 Bastian Road
Battle Mountain, NV 89820
(775) 635-4000
http://www.nv.blm.gov

TAKE PRIDE IN AMERICA

In Reply Refer To:
NVN-082316
3809
(NV-063)

SEP 21 2006

Dear Reader:

The Bureau of Land Management (BLM) Battle Mountain Field Office has received a Plan of Operations from X-Cal Resources Inc. for the Mill Creek Exploration Project. Proposed operations are located north of Mill Creek Canyon (northwest part of the Shoshone Range) approximately 28 miles southeast of Battle Mountain, Nevada.

X-Cal Resources has proposed a phased drilling program: The initial phase of activities would be comprised of 20 acres of disturbance and the second phase, based on the results from initial drilling, would result in approximately 30 acres of additional disturbance. Disturbance would consist of overland access and construction of new roads and drill pads. Existing access roads and overland access to drill sites would be used wherever possible.

The BLM has prepared an Environmental Assessment (EA) for this proposed action. This Environmental Assessment will be available for public comment and review for 30 days. Written comments on the EA will be accepted at the above listed address, until 4:30 p.m. (COB), October 25, 2006.

If you have any questions or comments regarding this proposal, please contact Sheila Mallory at the above address or at (775) 635-4000.

Sincerely,

Thomas J. Seley

Thomas J. Seley
Assistant Field Manager,
Non-Renewable Resources

United States Department of the Interior
Bureau of Land Management
Battle Mountain Field Office

September 2006

Bureau of Land Management
Battle Mountain Field Office
50 Bastian Road
Battle Mountain, Nevada 89820

Environmental Assessment
NV063-EA05-085

X-Cal Resources, Ltd.
Mill Creek Exploration Project

File Number
NVN-079769

MISSION STATEMENT

The Bureau of Land Management is responsible for the stewardship of our public lands. It is committed to manage, protect, and improve these lands in a manner to serve the needs of the American people for all times. Management is based upon the principles of multiple use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include recreation, rangelands, timber, minerals, watershed, fish and wildlife, air and scenic, scientific and cultural values.

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LIST OF ACRONYMS & ABBREVIATIONS

AMSL	Above Mean Sea Level
AUM	Animal Unit Month
BLM	Bureau of Land Management
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EA	Environmental Assessment
MBTA	Migratory Bird Treaty Act
NAC	Nevada Administrative Code
NDEP	Nevada Division of Environmental Protection
NDOW	Nevada Department of Wildlife
NDWR	Nevada Division of Water Resources
NEPA	National Environmental Policy Act
NNHP	Nevada Natural Heritage Program
NOI	Notice of Intent
NRHP	National Register of Historic Places
NRS	Nevada Revised Statute
OHV	Off-Highway Vehicle
POO	Plan of Operation
RMP	Resource Management Plan
TCP	Traditional Cultural Properties
TES	Threatened, Endangered, and Sensitive
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
X-Cal	X-Cal Resources, Ltd.

ENVIRONMENTAL ASSESSMENT
MILL CREEK EXPLORATION PROJECT
X-CAL RESOURCES, LTD.

1.0 INTRODUCTION/PURPOSE AND NEED

X-Cal Resources, Ltd. (X-Cal) proposes to conduct exploration activities along the northwestern portion of the Shoshone Mountain Range located approximately 28 miles southeast of Battle Mountain, Nevada (Figure 1). The Mill Creek Exploration Project (Project) is accessed by traveling south on Nevada State Route 305 for approximately 25 miles, then east-northeast along the graded Mill Creek Road for approximately eight miles into the Shoshone Mountain Range.

The Project proposes to conduct mineral exploration activities to determine whether precious metals are present in economically viable quantities and reclaim surface disturbance associated with approved activities.

X-Cal submitted a Plan of Operations (POO) for the Project in August 2005 to permit a maximum of 50 acres of disturbance within the proposed Project area. Through phasing, 25 acres of disturbance would be incrementally bonded and disturbed as needed; the disturbance associated with the existing Notices of Intent (NOIs) would be included within the total 50 acres under the Project POO.

The Project area totals approximately 640 acres in Lander County, Nevada (Figure 2). From 2003 to 2004, X-Cal drilled under an active NOI (No. NVN-078096). The Project is entirely on public lands administered by the U.S. Bureau of Land Management (BLM) Battle Mountain Field Office. The area covered by the POO is located within all of Section 30, Township 29 North, Range 45 East (T29N, R45E).

This Environmental Assessment (EA) was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and in compliance with applicable regulations and laws passed subsequently, including the President's Council on Environmental Quality regulations (40 CFR parts 1500-1509), U.S. Department of Interior requirements, guidelines listed in the BLM Manual Handbook H-1790-1, and the BLM Battle Mountain Field Office Environmental Analysis Guidebook (2002).

Historic Mining Activity

The proposed Project is not in any designated mining district and is approximately 20 miles northwest of the Cortez-Pipeline mine complex, and six miles southwest of the Hilltop mining district. The Project is located approximately 14 miles east of the McCoy Cove mine area.

1.1 PURPOSE AND NEED

The purpose for the proposed Project is to: 1) determine if economically viable precious metals-bearing deposits exist within the proposed Project area, and 2) define the nature and extent, shape, and economic value of precious metals-bearing deposits within the proposed Project area. The proposed drilling operations are needed to evaluate the potential for future mine development. The need for the proposed Project arises from the international, national, and regional market demands for gold.

1.1.1 Land Use Plan Conformance Statement

The Proposed Action is in conformance with the Shoshone-Eureka Resource Management Plan (RMP) dated March 1986 (1986a). Specifically on page 29 of the RMP Record of Decision, under the heading "Minerals" subtitled "Objective" 1: "Make available and encourage development of mineral resources to meet national, regional, and local needs consistent with national objectives for an adequate supply of minerals." Under "Management Decisions," "Locatable Materials," page 29, number 1: "All public lands in the planning areas will be open for mining and prospecting unless withdrawn or restricted from mineral entry." Under "Management Decisions," number 5, Current Mineral Production Areas: "Recognize these areas as having a highest and best use for mineral production and encourage mining with minimum environmental disturbance…" (BLM, 1986a).

1.1.2 Issues

Formal public scoping was not performed prior to the issuance of this EA. During the preliminary internal scoping, the BLM identified the following issues: noxious weeds, cultural resources, Native American issues, sensitive species, and access. The issues discussed in the internal scoping meeting in additional to others are addressed within their respective sections in this EA.

2.0 PROPOSED ACTION AND ALTERNATIVES

X-Cal proposes to conduct exploration activities associated with the Project in the area of the Shoshone Mountain Range located approximately 28 miles southeast of Battle Mountain, in Lander County, Nevada. The Project proponent's address is: P.O. Box 48479 Bentall Centre, Vancouver, British Columbia V7X 1A0. The following describes the proposed action in detail:

2.1 PROJECT DESCRIPTION

2.1.1 Existing Activities

X-Cal has conducted exploration within the Mill Creek Project area under a single NOI (NVN-078096). NOI NVN-078096 permits approximately 3.91 acres of disturbance in the Project area. This disturbance included construction of drill pads and the reconstruction of sections of roads. Reclamation of disturbance associated with this NOI has been completed. Any existing disturbance associated with this NOI would be incorporated into the total disturbance allowed by this EA. Inactive exploration activities from previous operators are present within the POO boundary.

2.1.2 Proposed Activities

The Proposed Action would consist of undertaking a phased exploration drilling program in the Project area. Exploration activities would begin upon receipt of authorization from BLM. The anticipated Project life is five to ten years, during which time X-Cal would undertake concurrent reclamation in those areas that have been drill tested and are no longer considered viable geologic targets. Previous exploration activities by both X-Cal and other operators have taken place within the POO boundary. Figure 3 outlines the proposed drill locations and access for the Project.

X-Cal is proposing to conduct exploration activities utilizing two phases of drilling. Phase I is designed to test wide-spaced geologic/geophysical targets. Phase II is as follow-up on any interesting drill results in Phase I to implement further definition of potentially viable mineralization. The implementation of Phase II is completely dependent upon favorable drill results in the Phase I, or changes in geologic interpretation. The phased drilling approach is more fully described in the POO, and Table 1 presents the estimated disturbance associated with each drilling phase.

Table 1 Phased Exploration Drill Program for the Disturbance

Phase	Number of Drill Holes (Shallow slope)[2]	Number of Drill Holes (Steep slope)[3]	Overland Travel (acres)	Drill Pad[1] with Cut-and-Fill acres)	Roads Cut-and-Fill (acres)	Total (acres)
Phase I	10	20	2.0	4.2	13.8	20.0
Phase II	25	25	4.0	6.8	19.2	30.0
Total	**35**	**45**	**6.0**	**11.0**	**33.0**	**50.0**

[1] Includes sump and pad disturbance
[2] Shallow = 12 degrees
[3] Steep = 22 degrees

Disturbance Accounting

Through field experience, X-Cal has identified overland travel where no earth disturbing work is required for access. With overland travel, a disturbance corridor averaging 12-feet in width is typical. On slopes averaging 12 degrees (shallow) the overall disturbance width is 17 feet for roads, and 49.8 feet for drill pads. On slopes greater than 12 degrees (steep), a dozer is usually required to first construct access roads in order to safely traverse the terrain. Although the blade on the dozers is 10 to 12 feet wide, an overall disturbance corridor of 27.6 feet is utilized to account for cut-and-fill slope for roads, and for the construction of drill sites and sumps the disturbance width is 80.6 feet on slopes greater than 22 degrees. This equates to 0.009 acres of disturbance per mile of overland ("two-track") travel, and 0.069 acres of disturbance per mile of cut road and ancillary pads and sumps.

Access Roads

The proposed drilling would not involve restrictions on access to the drill site areas. New exploration road construction would be constructed using a D7 through D9 class bulldozer or a track-mounted excavator. Roads will be constructed such that water will flow off them and not down the road decreasing the potential for erosion. During road construction on slopes greater than 10 percent, growth medium is stockpiled as side-spill in the fill slope and is easily replaced by a trackhoe or bulldozer during reclamation. Overland travel without blading would be used where practical and safe. Efforts to reduce surface disturbance would be implemented when overland travel occurs.

Reclamation

The *Exploration Plan of Operations for the Mill Creek Project* (JBR, 2005a) describes the detailed reclamation for this Project. Reclamation on public lands would be consistent with the requirements of Nevada Revised Statute (NRS) and Nevada Administrative Code (NAC) 519A regulations, 43 CFR 3809, and in accordance with the "Nevada Interim Standards for Successful Revegetation" (BLM Instruction Memorandum No. NV-94-026). The post-exploration goal is to restore lands for use as wildlife habitat, livestock grazing, and dispersed recreational activities.

Temporary roads, drill pads, and sumps could be either entirely or partially constructed without generating side-cast material. Topsoil would be stockpiled as part of the side-spill/slope fill for reclamation where cut-and-fill disturbance is required. Overland travel routes disturb even less vegetation, resulting in equipment tracks which would be revegetated using methods described below. Temporary roads and overland travel routes, which do not require replacement of side-cast material, would be scarified or ripped prior to re-seeding.

Recontouring and scarifying constructed temporary roads, drill pads, sumps, and compacted overland travel routes would be the primary means by which seedbeds would be prepared. Available growth medium would be relocated near the immediate area of activities and returned immediately after operations cease. Where topsoil has been salvaged and stockpiled, it would be bladed as a final layer onto the roughened surface prior to seeding. Overland travel routes would be re-seeded during reclamation.

The reclamation plant list proposed for the Project area is presented in Appendix A. Species would be selected from the reclamation plant list based upon their price and availability. The seed mix would contain at least three shrubs, four forbs, and three grasses, suitable to the overall elevation in the Project area, and BLM's seed mix. The final seed mixture would be determined by the lead agency's authorized officer.

Temporary roads and drill sites would be reclaimed as soon as practical after the cessation of drilling activities in the area. Seeding would occur during the late fall or early spring to take advantage of winter moisture. The application rate for the mixture would be approximately 13 pounds pure live seed. Revegetation would be conducted by broadcasting and harrowing.

If drainage structures have been installed, X-Cal would remove the structures during reclamation and reshape and fill material in drainages to reestablish preexisting seasonal flow channels.

Mineral exploration and development drill holes subject to Nevada Division of Water Resources (NDWR) regulations would be abandoned in accordance with NRS 534.425 through 534.4280. Drill holes would be sealed to prevent cross contamination between aquifers and the required shallow seal would be placed to prevent contamination by surface access.

Water for the drilling programs would be acquired from nearby approved sources such as, the McCoy Cove operation or other temporary mobile on-site storage tanks at one of the drilling pad locations, filled by water trucks. Water consumption/use would not exceed the water rights allocated by the State Engineer for each source.

X-Cal would hire contract drillers to staff each phase of the proposed Project. During Phases I and II, an average of two drill rigs would be active. The drill rigs would be supported with water trucks, maintenance, fuel/lube trucks, and pickups. X-Cal geologists or drill supervisors would oversee the contractors. X-Cal plans on utilizing existing drilling companies within the area during the Proposed Action. It is not anticipated that any new hiring would take place due to the Proposed Action. Additional equipment, such as a dozer, would be used for road construction and reclamation, and water trucks may be utilized for dust control.

Solid waste products generated by the exploration activities, including trash and drill materials, would be removed from public lands and disposed in accordance with applicable state and federal regulations. Hazardous materials would not be used for or generated by this Project. Typical common materials would be used with the contracted drilling equipment, such as water, bentonite, abandonite, quick foam and other environmentally approved drilling materials. Oils, fuels, and/or explosive material would not be stored on-site for this Project.

2.1.3 Environmental Protection Measures

Throughout this Project, X-Cal will initiate environmental protection measures to prevent unnecessary and undue degradation to the environment to the greatest possible extent.

Air Quality

X-Cal, in compliance with the Nevada Division of Environmental Protection (NDEP) Surface Disturbance Permit, proposes to protect air quality during the proposed Project by undertaking road maintenance activities to reduce fugitive dust emissions. Application of water and/or a dust suppression chemical, such as magnesium chloride, by water trucks would be done, as needed, in areas of close-spaced drilling and related activity. Graveling would also be conducted, when necessary, along portions of the access road to reduce dust emissions.

Cultural Resources

The Project area has been inventoried at a Class III level for cultural resources in 2005 (Summit Envirosolutions, 2006). X-Cal would conduct all exploration activities in accordance with applicable state and federal regulations as administered by the BLM. X-Cal's proposed exploration activities would avoid all known eligible and unevaluated cultural resource sites identified within the Project area. A 50-meter buffer will be established around all cultural sites. Should X-Cal discover sub-surface cultural resources during road or drill pad development, activities in the immediate area would cease and the BLM would be notified. If exploration activities uncover human remains, X-Cal would follow BLM procedures as per the Native American Graves Protection and Repatriation Act, and other applicable laws and regulations.

Water Resources

Ephemeral drainages exist within the Project area, according to the United States Geological Survey (USGS) 7.5 minute Goat Peak quadrangle, and aerial photographs (TerraServer, 2006). There are no seeps/springs, or surface waters noted on the 7.5 minute quadrangle, or viewed on aerial photographs. Access across drainages, seeps, and springs would be avoided where possible. However, due to the Project terrain, crossings may occur at which time, culverts and/or straw bales would be utilized to protect drainages. Culverts would be temporary, and placement and size would be approved by the BLM prior to placement. Exploration activities would be conducted in such a manner that sediments or drilling additives would not enter any ephemeral or flowing drainage.

In the event groundwater is encountered during drilling activities, X-Cal would use a variety of environmental protection measures to prevent or reduce erosion. In addition to the constructed sumps discussed in the Proposed Action, measures including erosion or sediment control, such as straw bales and/or silt fencing, would be utilized to create temporary ponding and reduce sediment generation.

Wildlife

The Project area has the potential to provide habitat for migratory birds. Land clearing and surface disturbance would be timed to prevent destruction of active bird nests or young of birds during the avian breeding season (April 15 to July 30, annually) to comply with the Migratory Bird Treaty Act (MBTA). If surface disturbing activities are unavoidable within this timeframe, X-Cal would have a qualified biologist survey areas proposed for immediate disturbance for the presence of active nests of migratory birds.

If active nests are located or if other evidence of nesting is observed (mating pairs, territorial defense, carrying nesting material, transporting of food), a protective buffer around these nests would be delineated, and the area would be avoided to prevent destruction or disturbance of nests until the birds are no longer present. After July 30, exploration activities would commence as normal and no further avian survey, in compliance with the MBTA, would be conducted until the next year.

Special Status Species (Sensitive Species)

The Project area may have potential for existence of two sensitive BLM species, the Juniper titmouse (*Baeolophus ridgwayi*) and the Pinyon jay (*Gymnorhinus cyanocephalus*). The proposed Project activities would be dispersed throughout the area, and are considered temporary such that impacts would not be anticipated. Environmental protection measures would include a bird survey by a qualified biologist, prior to surface disturbance activities during the avian breeding season (April 15 to July 30), to comply with the MBTA.

The United States Fish and Wildlife Service (USFWS) database, Nevada Natural Heritage Program (NNHP) database, United States Forest Service (USFS), Nevada Department of Wildlife (NDOW), and BLM were queried for the presence of special status species and species of concern for the Project area. The BLM sensitive species included some or all of the former USFWS Category 2 species, which occur in Nevada. No listed, proposed, or candidate species were identified by the USFWS (2005). The NNHP reviewed the database and maps for a three-mile radius around the Project area and identified potential habitat for the Tiehm beardtongue (*Penstemon tiehmii*) (NNHP, 2005). A response was not received from NDOW. The general literature search conducted prior to the field survey noted 12 possible species to have potential to occur within the proximity of the Project area. A threatened, endangered, and sensitive (TES) species survey was conducted in 2005 for the Project area (JBR, 2005b). The survey was focused to determine the presence or absence of the 12 species. All species and potential habitat was investigated during the survey and no habitat or potential species were found within the Project area (JBR, 2005b).

Solid and Hazardous Waste

Solid waste products generated by the exploration activities, including trash and drill materials, would be removed from public lands and disposed in accordance with applicable state and federal regulations.

The Project would not generate, use, or dispose any hazardous waste. Petroleum products would be used on-site. Petroleum products are excluded as hazardous substances under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Section 101 (14). Diesel, oil, and lubricants would be transported to the site in portable containers (e.g., tanks in the pickup trucks for diesel fuel), but would not be stored on-site. If regulated materials (petroleum products) are spilled, measures would be taken to control the extent of the spill, conduct cleanup activities (including hauling the material off the site and dispose it in a permitted facility) and notify the appropriate agencies in accordance with the applicable federal and state regulations.

Forest Resources

The Project area hosts a pinyon-juniper plant community. Drilling roads, pads, and sumps would be located to avoid trees to the extent practicable. During the TES survey, neither aspen nor mountain mahogany was noted within the Project area (JBR, 2005b). Some trees may be removed for construction of access roads and drill sites. Trees removed for construction of roads and drill sites would be cut and made available to the public for fire wood. If the trees have not been used as fire wood by the time reclamation takes place they would be dragged back onto the sites to aid in soil stabilization.

Noxious Weeds and Invasive Non-Native Species

The Project area was noted for noxious weeds during the TES species survey conducted by JBR (2005b). No noxious weeds from the Nevada State List were found during the 2005 survey. X-Cal would be responsible for controlling all noxious weeds in newly disturbed areas until the reclamation activities have been determined to be successful and released by the BLM authorized officer. BLM's protocol to control noxious weeds on public lands includes the cleaning of the undercarriage of vehicles from outside areas prior to entering exploration areas, to remove potentially attached noxious weed vegetative parts and seeds. X-Cal would obtain approval from the appropriate BLM officer for any and all herbicide applications, including types and quantities.

Reclamation

Surface soil disturbance would result from the construction of proposed drill pads and sumps, and from the development of access roads during Phase I and up to a total of 50 acres for the Project. Drill road construction would consist of blading and salvaging the soil in berms along the side of the road. An estimated salvageable topsoil/growth medium depth for the construction of access roads is 12 inches.

X-Cal would implement reasonable measures that are deemed necessary to reduce adverse impacts and prevent unnecessary surface disturbance within the designated target areas, during the proposed exploration activities. Erosion and runoff control measures, such as waterbars, ditching, and other water control structures would be implemented in areas of surface disturbance. After areas of surface disturbance are regraded, contoured, and available topsoil/growth medium replaced, the area would be seeded with an appropriate and approved seed mixture in order to establish a ground cover and reduce potential erosion effects. The reclaimed areas would have different plant composition than the existing plant communities and the structural complexity of the reclaimed plant communities is likely to be less complex than the adjacent undisturbed vegetation. These impacts are likely to occur over a period of years or decades, depending on the site. However, the additional plant species and early seral stages created by the reclamation would increase the overall regional plant diversity and community structure. Revegetation activities would be commenced at the earliest feasible time following reclamation activities.

X-Cal would provide an activity update to the BLM, which would include road and pad construction, drilling and reclamation, on an annual basis. The report would be submitted by March 1 of each year, summarizing work performed the previous year.

2.2 ALTERNATIVES TO THE PROPOSED ACTION

This section identifies alternatives to the Proposed Action. The Shoshone-Eureka RMP analyzed several alternatives, such as seeking to obtain a balance between economic uses of the public lands and environmental protection. The Shoshone-Eureka RMP also identified the No Action Alternative as follows: "Under the no action alternative, present management would be continued in the Shoshone-Eureka Resource Area" (BLM, 1986a).

2.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be approved by the BLM. X-Cal would continue exploration activities under the previously approved NOI. Under the No Action Alternative, exploration activities could continue up to five acres of disturbance under the single notice.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

There are no feasible alternative locations for the proposed exploration activity because the Project location is determined by the specific favorable geologic conditions. Therefore, this is not a viable alternative and is not evaluated further in this EA.

3.0 AFFECTED ENVIRONMENT

This section describes the affected environment in the vicinity of the Project. Location and access for the Project are presented in Figure 1. The Project area lies along the western portion of the Shoshone Mountain Range. The dominant topographic features found in this region are the Shoshone Mountain Range and the Fish Creek Mountains to the east. The highest peaks in the area are Mt. Lewis (9,680 feet above mean sea level (AMSL)) approximately five miles northeast of the Project, and Goat Peak (9,060 feet AMSL) approximately three miles east of the Project.

To comply with NEPA, the BLM has to address specific elements of the environment that are subject to requirements specified in statute or regulations or by executive order (BLM, 1988a). Table 2 identifies the 15 critical elements that must be addressed in all EAs, and Table 3 identifies other resources deemed appropriate for evaluation by the BLM, and denotes if the Proposed Action or No Action Alternative affects those elements.

Table 2 Critical Elements

Critical Elements	Present Yes/No	Affected Yes/No	Rationale
Air Quality	Yes	Yes	See discussion below
Water Resources	Yes	No	See discussion below
Wetlands and Riparian Zones	No	No	None within project area
Noxious Weeds	Yes	No	See discussion below
Threatened or Endangered Species (plants and animals)	Yes	No	See discussion below
Migratory Birds	Yes	No	See discussion below
Cultural-Paleontological Resources	Yes	No	See discussion below
Native American Religious Concerns	Yes	Yes	See discussion below
Areas of Critical Environmental Concern	No	No	None within project area
Environmental Justice	No	No	No minority or low-income populations are present within the project area.
Floodplains	No	No	None within project area
Prime or Unique Farmlands	No	No	None within project area
Wastes, Hazardous or Solid	No	No	Less than 10,000 pounds of SARA Title III chemicals, solid waste disposed off-site
Wild & Scenic Rivers	No	No	None within project area
Wilderness	No	No	None within project area

Other resources of the human environment that have been considered for this EA are listed in the table below. Elements that would not be affected are further described in the EA. Rational for those elements that would not be affected by the Proposed Action and alternatives are listed below in Table 3.

Table 3 Other Resources

Other Resources	Present Yes/No	Affected Yes/No	Rationale
Geology	Yes	No	The Proposed Action is an exploration plan; only small geologic samples will be collected, which will not affect the geologic formation.
Soil Resources	Yes	Yes	See discussion below
Forestry	Yes	Yes	See discussion below
Vegetation	Yes	Yes	See discussion below
Invasive Non-native Species	Yes	Yes	See discussion below
Wildlife	Yes	Yes	See discussion below
Special Status Species (plants and animals)	Yes	No	None found within project area, but potential habitat is present
Wild Horses and Burros	No	No	No HMAs within the project area
Livestock/Rangeland Resources	Yes	Yes	See discussion below
Land Use/Access	Yes	Yes	See discussion below
Visual Resources	Yes	Yes	See discussion below
Recreation	Yes	Yes	See discussion below
Socio-Economics	Yes	No	It is unlikely that any new hiring would take place in response to the Proposed Action.

The Project area does not include any Areas of Critical Environmental Concern, environmental justice issues, farmlands (prime or unique), floodplains, wilderness area, wild horses and burros, or wild and scenic rivers. These resources will not be addressed further in this analysis.

3.1 PROPOSED ACTION AND ALTERNATIVES

The description of the affected environment for the No Action Alternative would be the same as that for the Proposed Action.

3.1.1 Air Quality

Generally, air quality in the Project area is good. The Project area is located in an unclassified area, and thus is considered to be in attainment for all criteria air pollutants. The Project area is also within a designated Prevention of Significant Deterioration Calls II area, which allows for moderate incremental increases in emission concentrations as long as the concentrations do not reach standards set by the State of Nevada and the Federal government. Fugitive dust from existing roads and smoke from season fires are the primary sources of air pollution within the Project area.

3.1.2 Water Resources

The Project area lies along the west side of the Shoshone Mountain Range in Lander County, Nevada. Topography for the Project is predominantly moderate mountainous terrain, with intermittent drainages, typical of that found in the Basin and Range Physiographic Province and defined by north-south trending mountain ranges separated by wide basins. The Project area is

within the Humboldt River Hydrographic Basin Area 4, Sub-Area 57, Reese River Valley (NDEP, 2005). The hydrographic basin Area 4 covers 16,843 square miles in parts of eight counties, and contains 34 hydrographic areas and one hydrographic sub-area.

Surface Water

There are no seeps/springs, surface waters, or major drainages noted on the USGS 7.5 minute quadrangle, or viewed on aerial photographs (TerraServer, 2006) within the Project area. Ephemeral drainages are present within the Project area; however, during the TES survey, no flowing water was noted in drainages (JBR, 2005b). Ephemeral drainages flow in response to precipitation events. No flow or general water quality information is available for drainages within the Project area. There are no bodies of water or stream segments within the Project area, noted on the Section 303(d) list (NDEP, 2004).

Groundwater

Groundwater in the Project area occurs in variable amounts depending upon the geological unit of the aquifer, with flows generally following the topography. Typically, geological structures (faults, dikes, etc.) play a significant role in controlling the groundwater flow system. Previous drilling activity by X-Cal has provided initial water depths ranging from 500 feet below ground surface to 620 feet below ground surface (Redfern, 2005). No other groundwater quality information is available for the Project area.

3.1.3 Wetlands and Riparian Zones

A review of the USGS 7.5 minute series (topographic) map, Goat Peak quadrangle Nevada, Lander County (1985), indicates the Project area does not contain wetland and/or riparian habitats. There are no seeps/springs indicated on the topographic map or aerial photographs, and no wetland or riparian vegetation was noted in the project area during the TES species survey conducted by JBR (2005b).

3.1.4 Noxious Weeds/Invasive Non-Native Species

During the initial scoping meeting, the BLM requested that a review of noxious weeds/invasive non-native species be conducted during the TES survey. No noxious weeds from the Nevada State List were found during the survey, but JBR did note invasive species such as cheatgrass (*Bromus tectorum*) and bur buttercup (*Ceratocephala testiculata*) along roads as well as scattered throughout the Project area (JBR, 2005b).

3.1.5 Migratory Birds

Migratory birds are protected under the MBTA. Destruction of individual birds, their nests, eggs, or young are prohibited under the Act. Most of the bird species occurring in habitats within the Project area (with the exception of the house sparrow and the European starling) are

protected as migratory birds under the MBTA. These species include the numerous species of songbirds and all raptor species that may use habitat within the Project area or adjacent areas.

On January 11, 2001, the President of the United States signed the Migratory Bird Executive order 13186. A list of migratory birds affected by the President's executive order is contained in 43 CFR 10.13. References to "species of concern" pertain to those species listed in the periodic report "Migratory Nongame Birds of Management Concern in the United States"; priority migratory bird species as documented by established plans, such as Bird Conservation Regions in the North American Bird Conservation Initiative or Partners in Flight physiographic areas; and those species listed in 50 CFR 17.11.

3.1.6 Cultural and Paleontological Resources

The entire Project area has been surveyed at the Class III level for cultural resources (Summit Envirosolutions, 2006). Within the Project area, a total of 42 new archaeological sites, 24 isolated artifacts, and one previously recorded site were located and recorded. Of the 42 newly recorded sites, 36 are prehistoric, five are historic, and one has both prehistoric and historic components (Summit Envirosolutions, 2006). Of the 43 sites recorded or revisited, 10 are recommended eligible for inclusion to the National Register of Historic Places (NRHP). All other sites or components lack sufficient information that can be used to address research questions posed in the historic context. Of the 24 isolates, 14 are prehistoric and 10 are historic; however, all are ineligible for the NRHP. Due to the steep terrain (slopes in excess of 40 percent) within the project area, 541 acres of the 720-acre parcel was surveyed. All drainages and ridge tops that were safely accessible were surveyed, as per approval by the BLM.

The BLM reviewed the final field report and determined two drill hole locations lie "very close" to a site boundary and therefore, the site near proposed exploration activities will need to be flagged for avoidance with a 50-meter buffer, prior to conducting activities (BLM, 2006b).

3.1.7 Native American Religious Concerns

Located within the traditional territory of the Western Shoshone, the BLM Battle Mountain Field Office administrative boundary contains spiritual/traditional/cultural resources, sites, and social practices that aid in maintaining and strengthening social, cultural, and spiritual integrity. Recognized tribes with known interests within the BLM Battle Mountain Field Office administrative boundary are the Te-Moak Tribe of Western Shoshone (Elko, South Fork, Wells, and Battle Mountain Bands), Duck Valley Sho-Pai Tribes of Idaho and Nevada, Duckwater Shoshone Tribe, Ely Shoshone Tribe, Yomba Shoshone Tribe, Timbisha Shoshone Tribe, and various other community members and individuals.

Resources, sites, and social practices of importance include, but are not limited to: existing antelope traps; certain mountain tops used for prayer; medicinal and edible plant gathering locations; prehistoric and historic village sites and gravesites; sites associated with creation stories; hot and cold springs; material used for basketry and cradle board making; locations of stone tools such as points and grinding stones (mono and matate); chert and obsidian quarries; hunting sites; sweat lodge locations; locations of pine nut ceremonies, traditional gathering and camping; boulders used for offerings and medicine gathering; tribally identified Traditional Cultural Properties (TCP's); TCP's found eligible to the NRHP; rock shelters; "rock art" locations; lands that are near, within, or bordering current reservation boundaries; lands that conflict with tribal land acquisition efforts that involve the Nevada Congressional Delegation; and water sources (hot and cold springs, etc) in general that appear to be considered the "life blood of the Earth and all who dwell upon it."

Specifically within Mill Creek Canyon, this area has long been known as the major pine nut gathering or harvesting area for the Battle Mountain Band. This area contains the most local, accessible, and abundant pinyon pine stands for the Battle Mountain Band. Prehistoric and historic pine nut gathering camps and associated family pine nutting pinyon stands are said to exist throughout Mill Creek Canyon.

3.1.8 Soil Resources

The soils described are mapping units designated from the Natural Resources Conservation Service soil surveys of Lander County, Nevada (NRCS, 1983). A total of three soil mapping units occur within the proposed project area (Figure 4). Each association has three soil series. Appendix B presents the soil associations, geomorphic positions, soil and geologic properties and suitability for soils in the Project area.

In general, soil in the Project area forms on two geomorphic positions including fan piedmonts and mountain slopes. The northeast quarter of the Project area consists of shallow to moderately deep, well-drained soils formed from colluvium derived from dolostone, dolomite, calcareous shales, and extrusive volcanic rocks with additions of loess. The central and eastern half of the Project area consists of shallow to deeply, well-drained soils. The western, southwestern portion of the Project area consists of moderate to very deep, well-drained soils.

The following provides general characteristics of each soil associations, with Appendix B providing additional information.

- Atella-Xine-Kram association – the series consist of very shallow to moderately deep, well-drained soils that formed in residuum and colluvium on the side slopes (15 to 50 percent) of mountains. Parent material is extrusive volcanic rocks,

limestone, dolostone, dolomite and calcareous shales with additions of loess. Textures range from very gravelly, very fine sandy loam, very gravelly loam to very cobbly loam or very cobbly sandy loam texture with 45 to 65 percent pebbles, and 5 to 60 percent cobbles. The clay content is 8 to 60 percent, and is moderately alkaline or strongly alkaline. The predominant vegetation species include pinyon pine (*Pinus monophylla*), Utah juniper (*Juniperus osteosperma*), bluebunch wheatgrass (*Pseudoroegneria spicata ssp. spicata*), big sagebrush (*Artemisia tridentata*), Idaho fesque (*Festuca idahoensis*), basin wildrye (*Leymus cinereus*), Thurber's needlegrass (*Achnatherum thurberianum*), black sagebrush (*Artemisia nova var. nova*), and downy rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *puberulus*), with some arrowleaf balsamroot (*Balsamorhiza sagittata*) and tapertip hawksbeard (*Crepis acuminata*).

- Locane-Sumine-Gleam association – the series consists of shallow to deep, well-drained soils that formed in residuum derived from metamorphic rocks, quartzite, breccia, sandstone, shales, basalt, andesite, and tuffaceous or siliceous conglomerates, on the side slopes of mountains at 15 to 75 percent slopes. The association has granular, platy, or subangular blocky structure, with a very gravelly sandy loam or very cobble loam texture. The Sumine series has a dominate clay loam, with thin horizons of loam or clay texture. The association has 40 to 70 percent pebbles, 35 to 50 percent clay and 35 to 60 percent rock fragments. The predominant vegetation species include pinyon pine, Utah juniper, big sagebrush, snowberry (*Symphoricarpos*), currant (*Ribes*), bluebunch wheatgrass, basin wildrye, Idaho fesque, Nevada bluegrass, Thurber's needlegrass, arrowleaf balsamroot, and tapertip hawksbeard.

- Humdun-Havingdon-Bucan association – the series consists of moderately to very deep, well-drained soils formed in residuum derived from chert and shale with influence from loess and volcanic ash, on the side slopes (15 to 50 percent) of mountains and foothills. The association has a very gravelly sandy clay loam or very gravelly clay loam or extremely gravelly clay with varying 35 to 80 percent rock fragments throughout the horizons. The Bucan series typically has a clay content of 45 to 60 percent and as much as 15 percent of rock fragments when mixed. The predominant vegetation species include Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), basin big sagebrush (*Artemisia tridentata* ssp. t*ridentata*), mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), Thurber's needlegrass, basin wildrye, Idaho fesque, bluebunch wheatgrass, balsamroot, tapertip hawksbeard, arrowleaf balsamroot, and downy rabbitbrush.

3.1.9 Forestry

The majority of the Project area is a woodland vegetation community, consisting equitably of both Utah juniper and pinyon pine. Some mountain mahogany (*Cercocarpus*) may occur as an associate species through the higher elevation pinyon/juniper stands. The pinyon and juniper stands are denser within the ephemeral drainages in the Project area (TerraServer, 2006).

3.1.10 Vegetation

Vegetation in the region consists of Utah juniper, pinyon pine, minor amounts of Wyoming big sagebrush and a bunchgrass community, consisting predominately of Secund's bluegrass (*Poa secunda*) as understory species (JBR, 2005b). The Wyoming big sagebrush/bunchgrass is interspersed on the lower mountain slopes. Utah juniper and pinyon pine occurs as the dominate vegetation community throughout the Project area, with denser concentrations of vegetation in the drainages.

3.1.11 Wildlife

The Project area habitat would be anticipated to support mule deer (NDOW, 2005). There is no crucial deer or antelope habitat identified within the Project area (NDOW, 2005). Mule deer seasonal movements are latitudinal with many deer moving south in the fall and winter and north again in the summer. Mountain lions in the area generally follow the seasonal movements of mule deer in the range.

According to NDOW (2005), there are no sage grouse leks within three miles of the Project area. Sage grouse, listed as a Sensitive Species by the BLM, may use the riparian corridor along Mill Creek, outside of the Project area and to the south, as brood habitat. Waterfowl and shorebird habitat in the Project area is extremely limited.

Common raptor species noted to occur in the area include red-tailed hawks and great-horned owls (Lamp, 2005). Most raptors utilize cliffs, outcrops, and larger trees as nest sites. The bald eagle is a winter resident in northern Nevada and may forage in the area.

Two sensitive species, the Juniper titmouse and the Pinyon jay, have been noted by the BLM (Crimmins, 2005) in the project area. The Juniper titmouse was formerly known as the plain titmouse, but has been identified as a separate species from the titmouse which inhabit primarily oak forests, west of the Sierra Nevada crest. The Juniper titmouse occurs year-round in juniper and pinyon-juniper habitats east of the Sierra Nevada crest. They are a resident from southern Oregon to Idaho, southward to New Mexico and Arizona (Cornell Lab of Ornithology, 2006). The birds forage on insects and seeds, are cavity nesters, and may utilize either natural cavities or abandoned woodpecker holes.

The Pinyon jay is a common resident of the Great Basin, where it occupies pinyon and juniper habitat (Ryser, 1985). The species is a resident from Oregon to South Dakota, southward to Baja California, Arizona, and New Mexico. It occasionally occurs far out of normal range when pine crops fail (Cornell Lab of Ornithology, 2006). Pinyon jays forage on pine nuts and juniper berries, and practice caching behavior, which involves "storing" seeds in the ground. The Pinyon jay also feeds on berries, small seeds, cultivated grains, larvae, nymphs, beetles, lizards,

snakes, and small mammals. The Pinyon jay is a highly social species, and is typically seen in flocks of various sizes. The birds nest in loose colonies, with nesting beginning in the early spring (Alcorn, 1988; Ryser, 1985).

Furbearers occurring in the project area include coyote, bobcat, badger, and other mustelids throughout the area.

There are no fisheries in the Project area. The closest perennial creek, Mill Creek, is outside of the Project area.

3.1.12 Special Status Species

The USFWS database, NNHP database, USFS, and BLM have been queried for the presence of special status species and species of concern for the region (Appendix C). The BLM sensitive species include some or all of the former USFWS Category 2 species, which occur in Nevada. Under current BLM policy, the agency must ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered. Twelve rare plant species were identified in the literature as having the potential to occur within the Project area, but were not currently listed as threatened or endangered.

The USFWS did not identify any listed, proposed, candidate species or critical habitat of concern to occur in the Project area (Appendix C).

NNHP (2005) identified one plant species, Tiehm beardtongue, as potentially having habitat within the Project area, and is listed as a sensitive species by the BLM. The Tiehm beardtongue is known to occur on steep south-facing volcanic talus and scree slopes with sandy-loam soil pockets. The species exists at elevations between 7,500 and 9,600 feet AMSL. The 11 other rare plant species that have the potential to occur are Beatley's buckwheat (*Eriogonum beatleyae*), dwarf pepperweed (*Lepidium nanum*), Elko rockcress (*Arabis falcifructa*), Eastwood's milkweed (*Asclepias uncialis* ssp. *ruthiae)*, low feverfew (*Parthenium ligulatum*), Reese River phacelia (*Phacelia glaberrima*), scorpion milkvetch (*Astragalus lentiginosus* var. *scorpionis*), Stylose rockcress (*Arbis fernaldiana* var. *stylosa*), Watson's goldenbush (*Ericameria watsonii*), Watson's spinecup (*Oxytheca watsonii*), and windloving buckwheat (*Eriogonum anemophilum*). The 11 species were identified through a review of the NNHP Lander County Rare Species List (NNHP, 2005). All 12 species and habitat for these species were investigated during the TES survey conducted by JBR, and no species were found in the Project area (JBR, 2005b).

The juniper woodland throughout the Project area is suitable foraging habitat for the pale Townsend's big-eared bat (*Corynorhinus townsendii pallscens*) and western (Pacific)

Townsend's big-eared bat (*Corynorhinus townsendii townsendii*). However, no roosting habitat or hibernacula for this species are known to occur within the Project area (NDOW, 2005). Similarly, the small-footed myotis (*Myotis ciliolabrum*), long-eared myotis (*M. evotis*), fringed myotis (*M. thysanodes*), and long-legged myotis (*M. volans*) may occur within the Project area, but suitable roosting and winter hibernacula, such as historic mining features or natural caves, are not found within the project area. NDOW has documented several bat species (long-eared myotis, long-legged myotis, and small-footed myotis) in the Hill Top area, which is approximately seven to eight miles northeast, outside of the Project area (NDOW, 2005).

3.1.13 Livestock/Rangeland Resources

The proposed Project area lies entirely within the Argenta Grazing Allotment (BLM, 1988b). The BLM has determined the management of this grazing allotment through a planning process referred to as selective management categorization. The process assigns extent and priorities for activity planning within an allotment including range improvement facilities, which would be required to accomplish management objectives. The Argenta Grazing Allotment has been classified by the BLM as "Improve" (I) allotment where the objective is to improve current unsatisfactory conditions (BLM, 1988b).

Livestock grazing is authorized for different seasons of use depending on the allotment and permittee, with all months of the year receiving some grazing use. However, use of the higher elevations by livestock is dictated by seasonal weather patterns.

3.1.14 Land Use and Access

The Project area is located in Lander County and consists of 640 acres of public lands administered by the BLM Battle Mountain Field Office. The Project is accessed via Nevada State Route 305 that leads south from Battle Mountain, then to the graveled Mill Creek Road, southeast into the Shoshone Mountain Range. The only transportation routes within the Project area are county roads and unimproved gravel roads.

The major land uses within the area surrounding and including the Project area are livestock grazing, wildlife habitat, and dispersed recreation such as off-highway vehicle (OHV) use, dirt bike riding, hunting, and camping.

There are no utility corridors within the Project area, according to the master title plat information. There are no proposed power lines or planning corridors for future development within the Project area (Lander County, 2006).

There are no BLM Wilderness Study Areas within the proposed Project area (BLM, 2006a). This is not a designated Christmas Tree Harvest Area or Fuel & Posts Harvest Area (BLM, 1986a). There are also no designated pine nut harvest areas within the Project area.

3.1.15 Visual Resources

The Project is located in the northern Great Basin section of the Basin and Range Physiographic Province. The Great Basin is characterized by a rhythmic pattern of isolated mountain ranges and broad sweeping basins, clear skies and broad open vistas. The Mill Creek area is on the western side of the Shoshone Mountain Range next to Reese River Valley and includes rolling to angular hills and ridges with steep side slopes. The overall area is covered with a homogeneous pattern of sagebrush/grasses and greasewood at lower elevations and juniper/pinyon and mixed shrubs at higher elevations. Vegetation colors include tawny gray, brown, dark green, gray-green, and green. Soil colors range from beige to a chalky off-white which, when exposed, contrast highly with the surrounding vegetation. Rock colors vary from light to dark brown.

Man-made features in the overall Project area are linear and predominately consist of roads. The strong horizontal lines of existing roads in the area create weak to moderate contrasts with the gentle sloping and angular lines of the Shoshone Mountain Range and Reese River Valley. Horizontal and shallow diagonal lines from the drill roads and exploration trails would create moderate line contrasts with the characteristic landscape. Moderate color contrasts would result from the vegetation removal associated with these linear activities. The presence of the drill rigs would also result in a minor temporary contrast in color in relation to the natural environment. Form and texture contrasts would be weak to none.

The Project is within Visual Resource Management Class III (Perrin, 2006). Class III allows for activities that involve moderate changes of the existing character of the landscape. The level of contrast can be moderate, partially maintaining the landscape and the focus of view attention. However, every attempt should be made to reduce the impact of these activities through careful location, minimal disturbance, and repeating the basic elements of the characteristic landscape.

3.1.16 Recreation

The proposed Project area is generally isolated and undeveloped with no facilities. A maintained graveled access road leading into Mill Creek Canyon is utilized by ranchers, hunters, and other recreationalists.

General public recreation in the area of the proposed exploration activities primarily includes OHV use, dirt bike riding, hunting, and camping. Other recreational activities include mountain biking, horseback riding, sightseeing, outdoor photography, nature study, wildlife viewing, bird watching, and rockhounding.

No annual commercial or competitive Special Recreation Permit events occur within this area, so there would be no conflicts between organized recreation events and drilling activities.

There are no developed recreation facilities or sites in the Project area. The proposed exploration area is located in an area "open" to OHV use under the Shoshone-Eureka RMP (BLM, 1986a).

The access roads to the areas of the proposed drill sites are open to the public, so individuals have been able to visit the area for recreational purposes. At this time, the proposed drilling would not involve restrictions on access to the drill site areas.

3.2 NO ACTION ALTERNATIVE

The affected environment described for the Proposed Action would be the same for the No Action Alternative.

4.0 ENVIRONMENTAL CONSEQUENCES AND MITIGATION

4.1 PROPOSED ACTION

X-Cal has incorporated environmental protection measures into the Proposed Action to reduce potential impacts to the environment. Proposed environmental protection and reclamation measures are presented in Section 2.1.2. This section describes the impacts (direct, indirect, and residual) and mitigation measures associated with the proposed Project.

4.1.1 Air Quality

Surface disturbance related to construction of roads and pads would result in short-term increases in particulate emissions as a result of fugitive dust generation. Dust would also be generated by traffic on the roads throughout the Project area. Environmental protection measures incorporated into the Proposed Action (Section 2.1.3) include measures to reduce and control fugitive emissions, primarily by watering roads.

4.1.2 Water Resources

Surface waters are not noted in the Project area, but ephemeral drainages are present. X-Cal would utilize environmental protection measures as presented in Section 2.1.3; therefore, direct impacts to surface waters are not anticipated. When drainages must be crossed with a road, environmental protection measures would be followed to reduce the surface disturbance and erosion potential.

Because depth to groundwater is approximately 600 feet in the Project area and X-Cal would utilize standard operating procedures and environmental protection measures as discussed in Section 2.1.3, any potential impacts to groundwater resources would be eliminated.

If groundwater is encountered, the indirect impacts created could include surface erosion as the water is discharged. However, by following the environmental protection measures, including the construction of sumps, both the direct and indirect impacts to groundwater resources would be reduced. X-Cal is required to plug all drill holes in accordance with NAC 534.4371 as administered by the NDWR, State Engineers Office. Direct, indirect, cumulative, and residual impacts to water resources would be eliminated or reduced through the implementation of environmental protective measures. No residual impacts would remain if operating procedures and environmental protections measures are applied.

4.1.3 Wetlands and Riparian Zones

Due to the lack of wetland and riparian habitat within the Project area, avoidance should not be an issue, and no impacts to wetlands or riparian zones from the Project are anticipated.

4.1.4 Noxious Weeds/Invasive Non-Native Species

The proposed exploration disturbance has the potential to create conditions favorable for the invasion of invasive, non-native weeds and other undesirable plants. The use of suitable seed mixes with only certified and tested seed, combined with implementation of prompt and appropriate revegetation techniques would reduce the potential for invasive, non-native weed invasion. X-Cal would implement BLM protocol for the proposed Project area regarding invasive, non-native weed (such as the washing of the undercarriage of vehicles prior to entering exploration areas to remove seeds from invasive, non-native weeds that may be attached to equipment). The procedures (NDEP, 1994) of actively treating invasive, non-native weed upon discovery would also prevent these weed species from spreading and dominating the site.

4.1.5 Migratory Birds

The majority of the birds within the Project area are considered migratory and are protected by the MBTA and the migratory bird Executive Order 13186. There is potential for destruction of migratory birds, nest, and young if vegetation clearing is conducted during the nesting season. In addition, 50 acres of bird habitat would be temporarily removed during the life of the Proposed Action.

X-Cal would avoid, to the extent possible, conducting land clearing activities during the nesting season. If it becomes necessary to clear any areas during the breeding season, a survey for active nest would be conducted by a qualified biologist. If active nest are located, a protective buffer would be established around the nest. The size of the buffer zone would be determined based on the specific species by a qualified biologist and approved by the BLM. Vegetation clearing within the buffer zone would be delayed until the nests are no longer active. With appropriate implementation of measures proposed by X-Cal the effects to migratory birds is expected to be short-term for the length of the Project.

4.1.6 Cultural Resources

X-Cal would conduct all exploration activities in accordance with applicable state and federal regulations as administered by the BLM. On an annual basis, X-Cal would provide maps showing proposed phased drilling disturbance within the Project area. Since all areas proposed for exploration disturbance have been inventoried to a Class III level, X-Cal's proposed activities would avoid all known eligible and unevaluated cultural resource sites identified within the Project area. For drilling locations near cultural sites, X-Cal will establish a 50-meter flagged buffer around the sites, as determined by BLM resource archaeologist. There is no potential for impacts to cultural resources from surface disturbance exploration activities.

A short-term effect is the possibility of artifact collection by workers or other individuals using exploration roads as access. This effect would be reduced through worker training that emphasizes the adverse results to the proponent if such collection takes place.

4.1.7 Native American Religious Concerns

In accordance with the National Historic Preservation Act (P.L. 89-665), the NEPA (P.L. 91-190), the Federal Land Policy and Management Act (P. L.94-579), the American Indian Religious Freedom Act (P.L. 95-341), the Native American Graves Protection and Repatriation Act (P.L. 101-601), and Executive Order 13007, the BLM must also provide affected tribes an opportunity to comment and consult on the proposed Project. BLM must attempt to identify locations having traditional, cultural, or spiritual importance and limit, reduce, or possibly eliminate any negative impacts to identified traditional, cultural, spiritual sites, activities, and resources.

In December 2005, the BLM sent a "consultation initiation" letter to tribal entities interested in the Project area (Te-Moak Tribe of Western Shoshone, Battle Mountain Band, Duckwater Shoshone, Yomba Shoshone), with the Battle Mountain Band being the most active. In January 2006, the Battle Mountain Band of the Western Shoshone requested a tour of the Project area. Once weather and road conditions allowed, a tour of the project area was conducted on May 11, 2006 for the Battle Mountain Band, by the BLM, with an invited X-Cal representative in attendance. On August 14, 2006, another field tour was conducted leading to an August 31, 2006 invite to attend the Battle Mountain Band regularly scheduled Council Meeting. The meeting was attended by BLM management and staff.

The major issues discussed to date with Battle Mountain Band representatives and tribal members include: Mill Creek Canyon containing the most northern distribution of pinyon pine stands and the most easily accessible area for pine nut harvesting for members of the Battle Mountain Band; possible pre-historic and historic pine nut picking camps located within the canyon; possible future impacts to the pinyon pine resource and Mill Creek itself, if phased exploration activities warrant the submittal of a mining POO (open pit and/or underground mine); and the continued availability of wood products (fire wood & posts) to Battle Mountain Band tribal members.

At this time, given current information from BLM resource specialists and Battle Mountain Band representatives and tribal members, BLM offers the following as possible mitigation measures (pending Battle Mountain Band leadership agreement):

- Identified and known archaeological sites (historic and prehistoric) will be avoided;

- BLM will provide a special wood harvesting permit to Battle Mountain Band Tribal members to collect fire wood/posts within the permitted disturbance area (details pending);
- All downed trees associated with said disturbance will be cut by the proponent into manageable portions to allow for collection by tribal members; and
- During all exploration phases, the proponent will provide for one tribal monitor/observer to be present during access route and drill pad construction. The Tribal monitor will be selected from a list already provided by Battle Mountain Band.

The BLM is currently in the process of coming to an agreement regarding the continued tribal involvement in the project and the acceptance of the above mitigation measures.

It has also been stated that the creation of a network of roads (access to drill pads) may allow for increased accessibility to previous inaccessible pinyon pine stands. However, a proposed POO for production, resulting from this phased drilling, may change the level and type of impacts (increased disturbance) and therefore, the above mitigation measures may not apply. If results of the phased exploration lead to a POO for production, the Tribes will again be contacted to review and respond to this elevated action.

Also, during project implementation, if any cultural properties, items, or artifacts (stone tools, projectile points, etc.) are encountered, it must be stressed to those involved in the proposed Project activities that such items are not to be collected. Cultural and Archaeological resources are protected under the Archaeological Resources Protection Act (16 U.S.C 470ii) and the Federal Land Management Policy Act (43 U.S.C. 1701).

Though the possibility of disturbing Native American gravesites within most project areas is extremely low, inadvertent discovery procedures must be noted. Under the Native American Graves Protection and Repatriation Act, section (3)(d)(1), it states that the discovering individual must notify the land manager in writing of such a discovery. If the discovery occurs in connection with an authorized use, the activity, which caused the discovery, is to cease and the materials are to be protected until the land manager can respond to the situation.

4.1.8 Soil Resources

Direct impacts to 20 acres of surface soils would result from the construction of proposed drill pads and sumps, and from the development of access roads during Phase I and up to a total of 50 acres for the Project. Drill road construction would consist of blading and salvaging the soil in berms along the side of the road. An estimated salvageable topsoil/growth medium depth for the construction of access roads is 12 inches. The estimated excavation volumes for each phase of exploration are presented in Table 4.

Table 4 Estimated Excavation Volumes for the Mill Creek Exploration Project

Phase	Number of Drill Sites	Volume Excavated (cubic yards)	Access Road (acres)	Volume Excavated (cubic yards)
Phase I	30	14,655	2	2,188.70
Phase II	50	23,112	4	4,377.44
Total	**80**	**37,767**	**6**	**6,566.14**

X-Cal would implement reasonable measures that are deemed necessary to reduce adverse impacts and prevent unnecessary surface disturbance within the designated target areas, during the proposed exploration activities. Erosion and runoff control measures, such as waterbars, ditching, and other water control structures would be implemented in areas of surface disturbance. After areas of surface disturbance are regraded, contoured, and available topsoil/growth medium replaced, the area would be seeded with an appropriate and approved seed mixture in order to establish a ground cover and reduce potential erosion effects. Revegetation activities would be commenced at the earliest feasible time following reclamation activities.

In general, with removal of vegetation and surface soil disturbance, soils would experience increased wind and water erosion. Disturbance would result in loss of soil structure therefore decreasing water holding capacity and infiltration in the surface horizons. Soil microbial activity and soil productivity would also decrease. However, the total acreage of disturbance and distribution would limit the amount of soil loss, and disturbance would be incremental and not occur at one time. Impacts to the soil could consist of up to 50 acres of surface disturbance and approximately 6,566 cubic yards of material.

The soil disturbance would be dispersed spatially as drill sites and roads are developed during each phase of exploration. Environmental protection measures are proposed such as water-barring of access roads to reduce erosion and placement of certified weed-free straw bales at sumps, when necessary to filter cuttings. Residual impacts to soils are not anticipated, since the soils would be returned to disturbed areas upon completion of the exploration activities at each site. Reclamation and revegetation activities would commence at the earliest feasible time (fall or early spring) following cessation of exploration activities.

4.1.9 Forest Resources

Direct impacts to woodlands may include removal of some trees during construction of the access roads, drill pads, and sumps. Where practicable, exploration roads would be routed to avoid impacts to trees. The dispersed nature of the disturbance would result in minimal impacts. Successful reclamation and soil stabilization will promote woodland reestablishment on disturbed areas over time. Mountain mahogany, a protected species within the Shoshone-Eureka planning area would be avoided to ensure that none would be disturbed or destroyed. Efforts

would be made to avoid any serviceberry, current, and elderberry species found within the Project area. X-Cal would conduct environmental protection measures outlined in Section 2.1.3; therefore, no indirect or residual impacts are projected.

4.1.10 Vegetation

The direct impact to vegetation would be the removal of up to 50 acres of vegetation, representing approximately seven percent of the Project area. The maximum of 50 acres of disturbance would occur if Phase I results warrant Phase II drilling. Vegetation types that would be disturbed include pinyon pine/juniper community. X-Cal would conduct environmental protection measures discussed in Section 2.1.3 in order to reduce or eliminate impacts.

Residual impacts to vegetation would be reduced or eliminated after the implementation of operating procedures described and the establishment of vegetation; therefore, no additional mitigation measures are necessary.

4.1.11 Wildlife

The disturbance would be dispersed both spatially and temporally, thereby minimizing the impact to wildlife and implementation of environmental protection measures discussed in Section 2.1.3 would reduce potential impacts to wildlife and species protected under the MBTA. Impacts to birds including raptors are not anticipated due to the dispersed nature of the disturbance.

Indirect impacts would include habitat disturbance (vegetation removal) and possible wildlife avoidance of the project area due to increase human activities and the operation of drilling equipment. These indirect impacts would occur as long as exploration activities take place. However, the limited amount of disturbance associated with each drill site and the distribution of the disturbance over a large area should result in minimal impacts to wildlife. No residual impacts to wildlife would result from the Proposed Action following reclamation and reestablishment of the vegetation.

4.1.12 Special Status Species

No endangered or threatened plant species are known to occur on or near the project area; therefore no impacts to plant species would be expected to occur from the Proposed Action. No residual impacts to special status species would result from the Proposed Action following reclamation and reestablishment of the vegetation. Environmental protection measures discussed in Section 2.1.3 would be implemented by X-Cal for the proposed activities.

4.1.13 Livestock/Rangeland Resources

The Proposed Action would involve a maximum of 50 acres of surface disturbance at any one time. Based on an average carrying capacity of 15 acres per animal unit month (AUM), a temporary loss of approximately three AUMs would occur in the short-term. No range improvements would be affected by the Proposed Action. Impacts to rangeland resources can be considered short-term due to planned reclamation activities. Impacts to rangeland resources would be seen through the life of the proposed project until vegetation has been reestablished through reclamation activities. Therefore, no reduction in the permittees' allotted AUMs would be necessary. Such reclamation would also enhance project area vegetation by increasing desirable species over the long-term. X-Cal would conduct reclamation as per Section 2.1.3, and the minimal acreage of disturbance, reclamation of disturbance, and spatial distribution of the disturbance would result in negligible impacts to livestock.

4.1.14 Land Use and Access

The exploration activities would not interfere with other land uses or prevent existing access to public lands. Reclamation of the access roads created as part of the exploration program would return access to the pre-exploration extent.

4.1.15 Visual Resources

The proposed Project would result in short-term visual impacts principally affecting the elements of line, texture, and color. With successful reclamation and revegetation of the exploration roads, as discussed in Section 2.1.3, long-term visual impacts would be reduced. Class III visual resource objectives would be met throughout proposed project activities.

4.1.16 Recreation

Drilling activities would create disturbances that may interfere with recreational pursuits in this area. Construction of access routes and drill pads could affect the abundance of wildlife species available in the area for viewing and/or hunting. Also the sight and sound of exploration activities would diminish the solitude, naturalness and primitive and unconfined recreation opportunities desired by many outdoor enthusiasts. The proposed exploration program would not change existing access to public lands within the project area for recreational uses. Construction of new roads could temporarily improve access for some types of recreational activities. However, all recreationalists would not necessarily benefit and some would temporarily avoid using certain areas due to drilling activities.

The exploration disturbance areas associated with the Project would result in a temporary reduction of recreation opportunities for hunters, OHV users, hikers, and rock collectors. This temporary reduction of recreation opportunities would last for the life of the exploration project

and would affect no more than 50 acres. In the long-term, the overland drill roads would be reclaimed and activities would be expected to return to the area at the conclusion of exploration.

Indirect impacts may occur as a result of the drilling activity due to an increased noise level during drilling activity that may decrease the quality of the recreational activity. Residual impacts to recreational land use are not anticipated.

4.2 ALTERNATIVES

4.2.1 No Action Alternative

The environmental consequences described in Section 4.0 would continue to occur under the No Action Alternative on a more limited basis under existing notice level authorization, for up to five acres of disturbance.

4.3 CUMULATIVE EFFECTS ASSESSMENT AREA

This section analyzes the potential cumulative impacts from past, present, and reasonably foreseeable future projects combined with the Proposed Action within cumulative effects assessment areas specific to the resources for which cumulative impacts may be anticipated. A cumulative impact has been defined as "the impact, which results from the incremental impact of the action, decision, or project 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" (BLM, 1990).

As related to the Proposed Action, cumulative impacts are possible for soils, vegetation, invasive non-native species and noxious weeds, woodland resources, water resources, wildlife, special status species, cultural resources, Native American Religious Concerns, visual resources, land use authorizations, and recreation. The cumulative effects assessment area for the majority of resources encompasses approximately 16,000 acres and generally includes a small portion of Reese River Valley and portions of the Shoshone Mountain Range, as shown in Figure 5. The reasonably foreseeable time frame for the cumulative assessment analysis assumes five to ten years, the life of the Proposed Action.

The following sections contain a description of interrelated activities that have occurred and may reasonably occur in the foreseeable future within the cumulative effects assessment areas, and an analysis of the impacts of these interrelated activities within a regional context.

4.3.1 Description of Interrelated Projects

The primary activities from the past, present, and reasonably foreseeable future that would contribute to cumulative impacts, include recreation, livestock grazing, fires and fire

rehabilitation, commercial or residential development, and mineral exploration and development activities combined with the proposed Project. Past, present, and reasonably foreseeable future projects are described in this section and in Table 5, with respect to the cumulative effects assessment area.

Table 5 Past, Present, and Reasonably Foreseeable Future Surface Disturbance for the Mill Creek Exploration Project Cumulative Effects Assessment Area

Activity	Surface Disturbance (acres)
Past, Present and Reasonably Foreseeable Future Disturbance[1]	
Mining-Related	
Notices of Intent	45
Plans of Operation	50
Non-Mining Related	
Mill Creek Road (assumes 25-foot right of way)	3
Mill Creek Campground	1
Housing Development	30
Total Cumulative Surface Disturbance	129

[1] Based on information provided by BLM

4.3.2 Past and Present Activities

Historic and present exploration activities within the cumulative effects assessment area total an estimated 45 acres on both private and public land. Information obtained for the activities sections were found by reviewing BLM provided information, Lander county assessor's maps, aerial photographs and USGS topographic maps.

4.3.3 Proposed Activities

Disturbance for the Proposed Action is encompassed within the 640-acre project area and during any one time disturbance from Phases I and II of the Project would account for a cumulative total of 50 acres. A detailed description of the Proposed Action is presented in Section 2.0 of this EA.

4.3.4 Reasonably Foreseeable Future Activities

X-Cal submitted a POO for the exploration activity at Mill Creek in summer 2005. Current livestock, grazing, ranching, and recreation activities would continue to occur in the reasonably foreseeable future within the cumulative effects assessment area, subject to allotment management strategies of the BLM field offices. The Mill Creek access road is being utilized by MI, LLC, currently hauling barite material from the Greystone Mine (located in the Shoshone Mountain Range) to the Reese River Valley, outside the project area. Continued use of this access road within the cumulative effects assessment area is a reasonably foreseeable future activity, subject to MI, LLC's permitted activity, not associated with this Project.

The privately owned section (640 acres) immediately south of the project area (Section 31, T29N, R45E) has recently been divided into 15 parcels of 40 acres or more for a housing development. Each parcel has the potential for a single-family home with a well and septic system. Any further division of this property would have to be presented to the planning commission. With an estimated two acres of disturbance for each parcel the total reasonably foreseeable future disturbance associated with this development is 30 acres.

4.4 CUMULATIVE EFFECTS

The following sections discuss the cumulative effects of the Proposed Action when combined with past, present, and reasonably foreseeable future activities (i.e., exploration development, livestock grazing and ranching, administrative land uses, etc.) within the respective cumulative effects assessment area. Estimated disturbance acreage associated with past, present, and reasonably foreseeable future activities within the cumulative impacts is 129 acres.

Activities outlined under the Proposed Action are consistent with the cumulative analysis and reasonably foreseeable future actions. Impacts to the following elements are analyzed in the cumulative effects assessment section:

- Air;
- Water Resources;
- Wetlands and Riparian Zones;
- Noxious Weeds/Invasive Species
- Migratory Birds
- Cultural Resources;
- Native American Religious Concerns;
- Soil Resources;
- Forestry;
- Vegetation;
- Wildlife;
- Special Status Species/Threatened or Endangered Species;
- Livestock;
- Land Use and Access;
- Visual Resources; and
- Recreation.

4.4.1 Air

With the approval of the Proposed Action, approximately 129 acres of disturbance would occur within the cumulative effects assessment area. These activities would result in additional degradation of air quality, primarily through increases in fugitive dust emissions. These

increases in dust emissions are not expected to significantly degrade air quality because of the spatial and temporal nature of the disturbances and use of roads in the area. Emissions of air pollutants other than fugitive dust are not expected to increase significantly during the cumulative assessment time frame. The cumulative effects to air quality within the cumulative effects assessment area would be reduced by the implementation of Best Management Practices such as watering gravel and dirt roads and keeping all equipment in proper working condition. In most cases, impacts to air quality would be short-term lasting only through the life of the proposed project.

4.4.2 Water Resources

Past, present, and reasonably foreseeable activities may result in impacts to water resources, primarily due to clearing of vegetation. Impacts to water resources resulting from the Proposed Action and reasonably foreseeable activities may include increased sedimentation from erosion; however, X-Cal would implement environmental protection measures (Section 2.1.3). With the implementation of these environmental protection measures for the Proposed Action as well as for other activities within the cumulative effects assessment area, impacts to water quality would be reduced. Present and reasonably foreseeable activities that result in increased sedimentation or erosion would be required to comply with regulations set forth by the BLM and the NDEP.

Other reasonably foreseeable future activities may result from installation and use of groundwater production wells for residential or mining activities. It is not anticipated that these activities would significantly reduce the water availability in the cumulative effects assessment area.

4.4.3 Wetlands and Riparian Zones

Wetlands and riparian zones were absent within the project area and likely limited in the cumulative effects assessment area (JBR, 2005b). Past, present, and reasonably foreseeable future activities would disturb approximately 129 acres within the cumulative effects assessment area. BLM and state management practices would apply to any reasonably foreseeable future activities within the cumulative effects assessment area. No modification or sedimentation of wetland or riparian resources has occurred and is not expected to occur as a result of cumulative activities.

4.4.4 Noxious Weeds/Invasive Non-Native Species

The combined past, present, and reasonably foreseeable surface disturbance within the cumulative effects assessment area has the potential to create conditions favorable for the invasion of invasive non-native species and noxious weeds, and other undesirable plants. The use of suitable reclamation seed mixes with only certified and tested seed, combined with implementation of prompt and appropriate revegetation techniques would reduce the potential

for invasive, non-native weed invasion. There is the potential for the establishment of noxious weed/invasive non-native species within the cumulative effects assessment area, especially on private lands where regulatory oversight is limited.

The Best Management Practices (NDEP, 1994) of actively treating invasive non-native species and noxious weed invasion upon discovery would also prevent these weed species from spreading and dominating the site. X-Cal would ensure exploration activities and any future activities conducted by X-Cal follow proper BLM protocol regarding invasive non-native species and noxious weeds (i.e., cleaning the undercarriage of vehicles prior to entering exploration areas).

4.4.5 Migratory Birds

Approximately 129 acres of disturbance from past, present, and reasonably foreseeable future activities is anticipated in the cumulative effects assessment area. Impacts to migratory birds would be temporary displacement or loss of individuals during the Proposed Action and other past, present, and reasonable foreseeable future activities. Affects to migratory birds would be reduced by reclamation, therefore taking place just for the life of the projects.

To reduce disturbance to migratory birds during construction activities, land clearing on public land within the cumulative effects assessment area would take place outside of the avian nesting season or in consultation with a qualified biologist. Due to reduced regulatory oversight on private lands, impacts to migratory birds during reasonably foreseeable future activities may be increased.

4.4.6 Cultural Resources

X-Cal operates under applicable laws and regulations relative to cultural resources. The project area was surveyed as a Class III inventory. Proposed drilling activities would avoid all eligible and unevaluated sites. X-Cal would relocate the access and/or drill pads to avoid potential impacts. As such, no direct, indirect, or residual impacts are predicted.

The past, present, and reasonably foreseeable future projects have been or would be approved by the BLM prior to Project initiation, thereby avoiding or mitigating adverse effects on identified cultural sites. Past, present, and reasonably foreseeable future activities would avoid or mitigate, to the extent possible, all known and discovered resources. No incremental cumulative effects would occur to cultural resources as a result of the proposed Project. Cumulative effects outside the project area are expected to be minimal, primarily consisting of slightly increased vehicular traffic along the road system through the cumulative effects assessment area and bringing more people in contact with archaeological sites along those roads.

An indirect cumulative effect is the removal of artifacts by public individuals using an expanded road system to access previously inaccessible areas and on land that is privately owned. Reclamation of exploration roads and unauthorized roads can reduce impacts from expanded access to the area.

4.4.7 Native American Religious Concerns

BLM and the tribes have witnessed a recent increase in the use of lands, administered by BLM, by various groups, organizations, and individuals. New ways to utilize the land are also on the rise. Grazing; pursuit of recreation opportunities; hunting/fishing; Oil, Gas, Geothermal, and mining leasing, exploration and development; along with relatively "newer" uses such as OHV, interpretive, and "mountain biking" trials, are among many activities that are on the rise within the BLM Battle Mountain Field Office Administration Boundary. In addition to all the existing, growing, and developing uses of the public lands, mineral exploration activities and any subsequent development (mine plan) may contribute to the general decline in sites and associated activities of a cultural, traditional, and spiritual nature (depending on location and proposed exploration/mining methods).

It is believed that cultural resources, including tribal resources and sites of cultural, traditional, spiritual use and associated activities are increasingly in danger of losing their physical and spiritual integrity. As populations grow, public interest in utilizing lands administered by the BLM (which operates under a "multiple use mandate") increases and thus the potential for the decline of culturally sensitive areas also increases. Different world views, methods of resource utilization, and social and spiritual practices and beliefs often conflict with each other. Because the traditional lands of the Western Shoshone encompass the majority of the State of Nevada, including the Battle Mountain BLM Field Office administrative boundary, it is imperative that BLM and affected Tribes remain flexible and open to productive and proactive communication in order to assist each other in making decisions that may significantly reduce or eliminate any adverse affects to all party's' interests, resources, and/or activities.

The affects of the activities to be conducted under the Proposed Action is expected to be minimal and relatively short-term due to the nature and complexity of the specific exploration activities. Access to the area would be maintained (or increased) and use throughout the area would continue. However, as stated above, any subsequent POOs (or continued/expanded exploration activities) may increase the level and type of impacts in the Mill Creek Canyon area and therefore, should be presented to the affected tribal entities for further analysis when or if a POO (or a new or expanded exploration plan) is submitted to BLM.

4.4.8 Soil Resources

Approximately 129 acres of soils would be disturbed within the cumulative effects assessment area, representing 0.6 percent (or less than one percent) of the total cumulative effects assessment area. This estimated disturbance would result from past, present, and reasonably foreseeable activities consisting of exploration activities and non-mining related actions. Since the average salvageable soil depth varies with each soil type throughout the cumulative effects assessment area, and the quantity of salvaged soil for each type of activity also varies considerably, the cumulative impact to soil resources is an approximation. Assuming an average salvageable soil depth of 12 inches, approximately 158,100 cubic yards of growth media may be disturbed within the cumulative effects assessment area. The 50 acres associated with the Proposed Action represents less than one percent of the total cumulative effects assessment area, and 38.75 percent of the disturbance estimated within the cumulative effects assessment area.

Cumulative impacts to soil resources would not occur all at once, nor would they occur at one location, but would occur sporadically throughout the foreseeable future time period (five to ten years) and would be dispersed over the cumulative effects assessment area. Non-mining activities, specifically disturbance associated with roadways, power lines, and the possible development of structures associated with Mill Creek Road maintenance are less than one percent of total cumulative impact to soils.

Range improvement and wildfire activities would also be anticipated to cause soil disturbance. A few privately held ranches are within the cumulative effects assessment area. Overall, administrative land use activities represent less than one percent of total cumulative impacts to soils within the cumulative effects assessment area.

4.4.9 Forest Resources

The greatest impact to woodland products from the past, present, and reasonably foreseeable future activities would be the loss of woodland products from public lands due to land clearing activities and wildfires. The approximately 129 acres of anticipated cumulative disturbance, representing less than one percent of the cumulative effects assessment area is expected to occur within a woodland vegetation community. Approximately 12,160 acres within the 16,000 acre cumulative effects assessment area consists of a pinyon-juniper vegetation community, which represents approximately 76 percent of the total cumulative effects assessment area.

Past, present, and reasonably foreseeable activities total 129 acres within the overall 16,000 acre cumulative effects assessment area, which could be within the 12,160 acres of woodland vegetation. Therefore, 129 acres could be within the 12,160 acres of woodland, equating to 1.1 percent of the woodland portion of the cumulative effects assessment area. As proposed in Section 2.1.2, disturbances to woodland resources would be reduced through environmental

protection measures, to the extent possible. The 50 acres associated with the Proposed Action would represent less than one percent of the total cumulative effects assessment area, with the Proposed Action representing 38.75 percent of the total disturbance to forest resources within the cumulative effects assessment area.

4.4.10 Vegetation

The combined past, present, and reasonably foreseeable surface disturbance within the cumulative effects assessment area has or would impact vegetation resources. A total of approximately 129 acres of vegetation could be disturbed within the cumulative effects assessment area over the next five to ten years, representing less than one percent of the entire cumulative effects assessment area. Disturbance to vegetation would primarily be from removal of vegetation for construction of roads, drill pads, and residential structures.

Reclamation of disturbed areas would reduce the long-term impact to vegetation. The use of the proposed reclamation seed mixes and the spread of desirable plant species from surrounding undisturbed lands through natural colonization would enhance the revegetation of disturbed areas. Some areas may remain barren until vegetation becomes established, thus temporarily impacting wildlife and livestock forage. The 50 acres associated with the Proposed Action would represent less than one percent of the total cumulative effects assessment area. The disturbance associated with the Proposed Action represents 38.75 percent of the impacts to vegetation within the cumulative effects assessment area.

4.4.11 Wildlife

Past, present, and reasonably foreseeable future activities would disturb approximately 129 acres of wildlife habitat within the cumulative effects assessment area. Direct and indirect impacts to wildlife would be short-term for the duration of activities, although some long-term impacts could be realized around permanent structures such as houses. The impact would be dispersed throughout the cumulative effects assessment area since all activities would not occur in the same location nor during the same time period. Once all activities cease, wildlife species typical of the area are likely to re-inhabit the reclaimed areas as the vegetation returns to pre-activity composition and structure. In addition, wildlife will become acclimated to permanent structures and long-term human activity. The 50 acres associated with the Proposed Action would represent less than one percent of the total cumulative effects assessment area. The disturbance associated with the Proposed Action represents 38.75 percent of the impacts to wildlife within the cumulative effects assessment area.

4.4.12 Special Status Species

Seeps, springs, and riparian areas are important habitat to special status species potentially occurring within the cumulative effects assessment area. Activities occurring on public land in

the reasonably foreseeable future would be designed to the extent possible, to avoid impacts to riparian areas and special status species habitat. Due to reduced agency oversight, increased impacts to special status species may occur on private lands within the cumulative effects assessment area. Implementation of the proposed Project would not contribute cumulatively to an effect on any special status species.

4.4.13 Livestock/Rangeland Resources

Past, present, and reasonably foreseeable future activities may result in short-term impacts to livestock and grazing. These impacts would be realized for the life of the activities until reclamation has been completed and vegetation reestablished. Impacts to livestock/grazing from the Proposed Action and reasonably foreseeable future activities may include a short-term reduction in AUMs. Reclamation and revegetation practices associated with activities would reduce the impact to livestock and grazing, thereby reducing the short-term reduction in AUMs.

4.4.14 Land Use and Access

Past, present, and reasonably foreseeable future land use authorizations include exploration projects, possible range improvements associated with private land owners, construction of residential structures, and road maintenance for Mill Creek access. Exploration activities on public land would have a short-term impact on land use and access. Construction of residential structures on private lands would also significantly reduce land use activities, if those lands are currently open to public use or access. The 50 acres associated with the Proposed Action would represent less than one percent of the total cumulative effects assessment area. The disturbance associated with the Proposed Action represents 38.75 percent of the past, present, and reasonably foreseeable future land use authorizations within the cumulative effects assessment area. No direct, indirect or residual impacts are anticipated.

4.4.15 Visual Resources

The past, present, and reasonably foreseeable future surface disturbance within the cumulative effects assessment area has the potential to result in short- and long-term visual impacts, representing approximately 129 acres (less than one percent of the total cumulative effects assessment area) principally affecting the elements of line and color. Interim reclamation and revegetation efforts of the exploration roads and drill sites on public lands may result in short-term visual impacts until vegetation becomes established. Construction of permanent structures on private land could significantly impact the visual resources within the cumulative effects assessment area.

4.4.16 Recreation

Exploration activities at the Mill Creek Project would generate new disturbance. This disturbance, along with reasonably foreseeable future activities, would continue to decrease the

amount of land and access available for dispersed recreation (such as hunting) within the area. The Proposed Action represents less than one percent of the total cumulative effects assessment area. The disturbance associated with the Proposed Action represents 38.75 percent of the impacts to recreation within the cumulative effects assessment area that would result in decreased recreational accessibility to public lands.

5.0 CONSULTATION AND COORDINATION

This EA was prepared by JBR Environmental Consultants, Inc. under the technical direction of the BLM Battle Mountain Field Office, Battle Mountain, Nevada. Assistance was provided by BLM resource specialists (meetings and subsequent conversations); consultation with other local, state, and federal agency resource personnel; review of company and agency files; field reconnaissance; and review of supporting documentation.

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5.3 PUBLIC NOTICE AND AVAILABILITY

The BLM Battle Mountain Field Office held an initial internal scoping meeting in October 2005, and copies of the Project POO and EA can be obtained at the BLM Battle Mountain Field Office, or on the web at http://www.nv.blm.gov

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FIGURES

APPENDIX A

Reclamation Seed Mix
Battle Mountain Field Office

APPENDIX B

Soils Information

Suitability for Reclamation: Restrictive Features

Specific soil properties contribute to a soil's suitability for reclamation. A restrictive feature is a physical or chemical property that makes a soil unsuitable for plant growth or causes structural instability. Restrictive features can be used to determine appropriate soil use and limitations for reclamation activities. Some of the soils in the project area have one or more limitations for topsoil reclamation. The following soil and geologic properties are discussed below: soil depth, slope, excess gravel, sodic horizons, erosion, and pH.

Soil Depth

Depth to bedrock: The depth of soil available for root growth and exploration is significant in semi-arid to arid regions where vegetation depends on water stored in soil for survival during long periods without precipitation. Shallow soils do not provide significant soil volume and water holding capacity for deep-rooted plants.

Depth to duripan: Duripans are subsurface horizons densely packed or cemented by silica and create an impermeable layer. Duripans constrain plant growth and promote water runoff and erosion because rainwater cannot penetrate through the cemented material.

Slope

Steep slopes promote soil loss by erosion. Wind or water erosion removes surface soils, organic matter and initiates or contributes to soil aggregate destabilization. Long lasting erosion can result in propagation of gullies, exposure of subsurface soils, and poor plant growth. Steep slopes do not allow for rapid water infiltration. Generally, soil profiles on steep slopes are shallow and poorly developed.

Excess Gravel

Excess gravel reduces the water holding capacity of a soil in direct proportion to their volume. A soil containing 35 percent or more gravel 3 inches in diameter is considered excessive.

Sodic Horizons

Sodic soils contain significant amounts of salt and sodium. Plant growth is restricted on these soils due to toxicities of Na^+, OH^-, and HCO_3^- ions.

Erosion

Erosion by wind or water removes surface soils, organic matter and initiates or contributes to soil aggregate destabilization. Long lasting erosion can result in propagation of gullies, exposure of subsurface soils, and poor plant growth.

pH

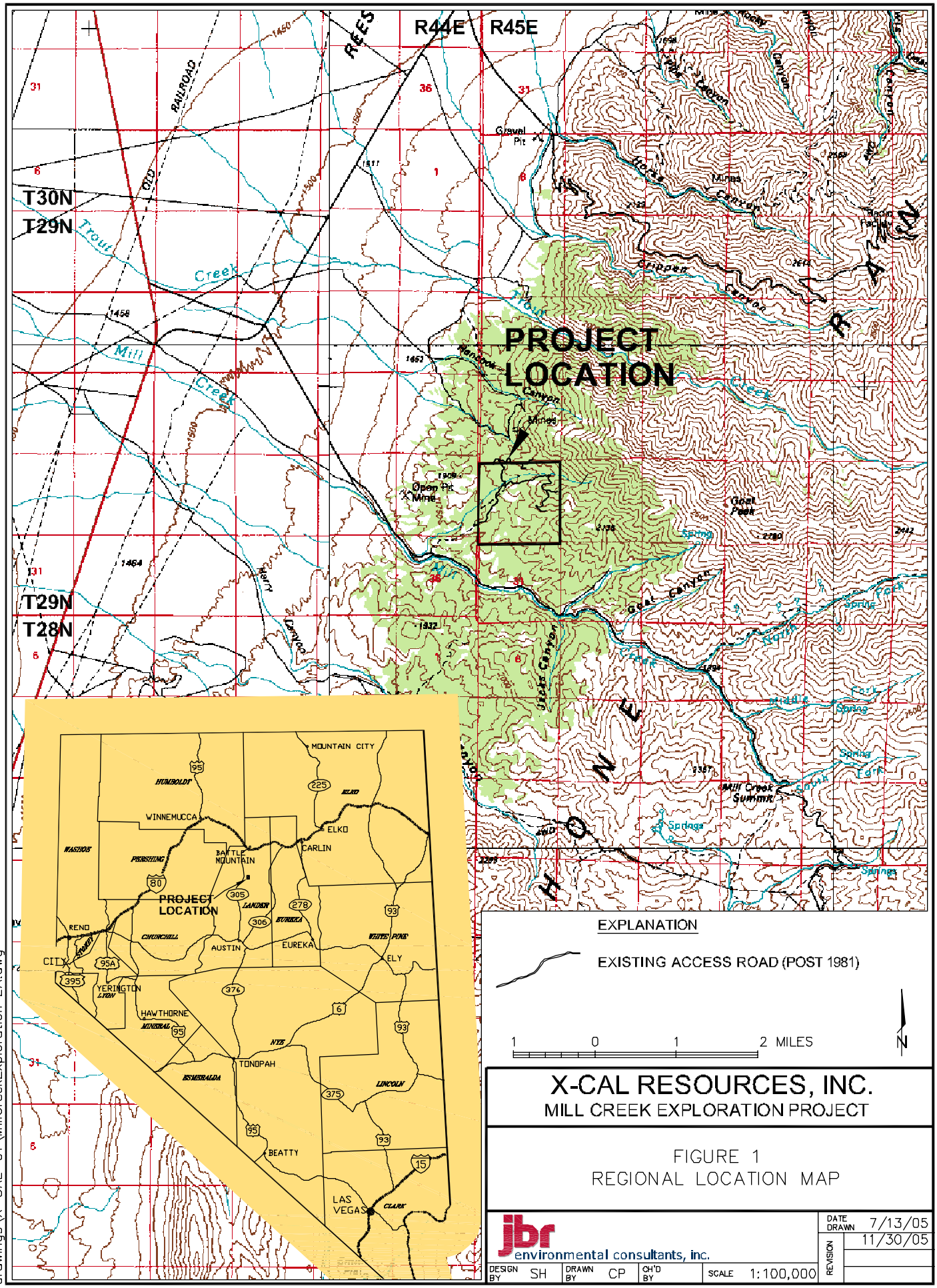
Soil pH, the measurement of soil acidity or alkalinity, influences nutrient availability and microorganism activity. Soil pH influences the types of vegetation that can survive within a particular soil. Tolerance to acid and/or alkaline conditions varies depending on plant species. Soils with high pH values (7.8 or greater) contain elevated amounts of calcium and magnesium and insufficient amounts of iron, manganese, copper, zinc, phosphorus and boron.

Guide to Determining Reclamation Suitability			
Characteristic	**Good**	**Fair**	**Poor**
Depth to Bedrock (in)	>40	20-40	<20
Depth to Restrictive Layer (in)	>40	20-40	<20
Slope (%)	<8	8-15	>15
Rock Fragments (%)	<5	5-25	>25
pH	6.1-7.8	>5.5-<6.1, >7.8-<8.4	<5.5, >8.4

Modified from NRCS topsoil suitability table 603-24 (USDA-NRCS, 1989)

APPENDIX C

Threatened, Endangered, and Sensitive Species Correspondence



X-CAL RESOURCES, INC.

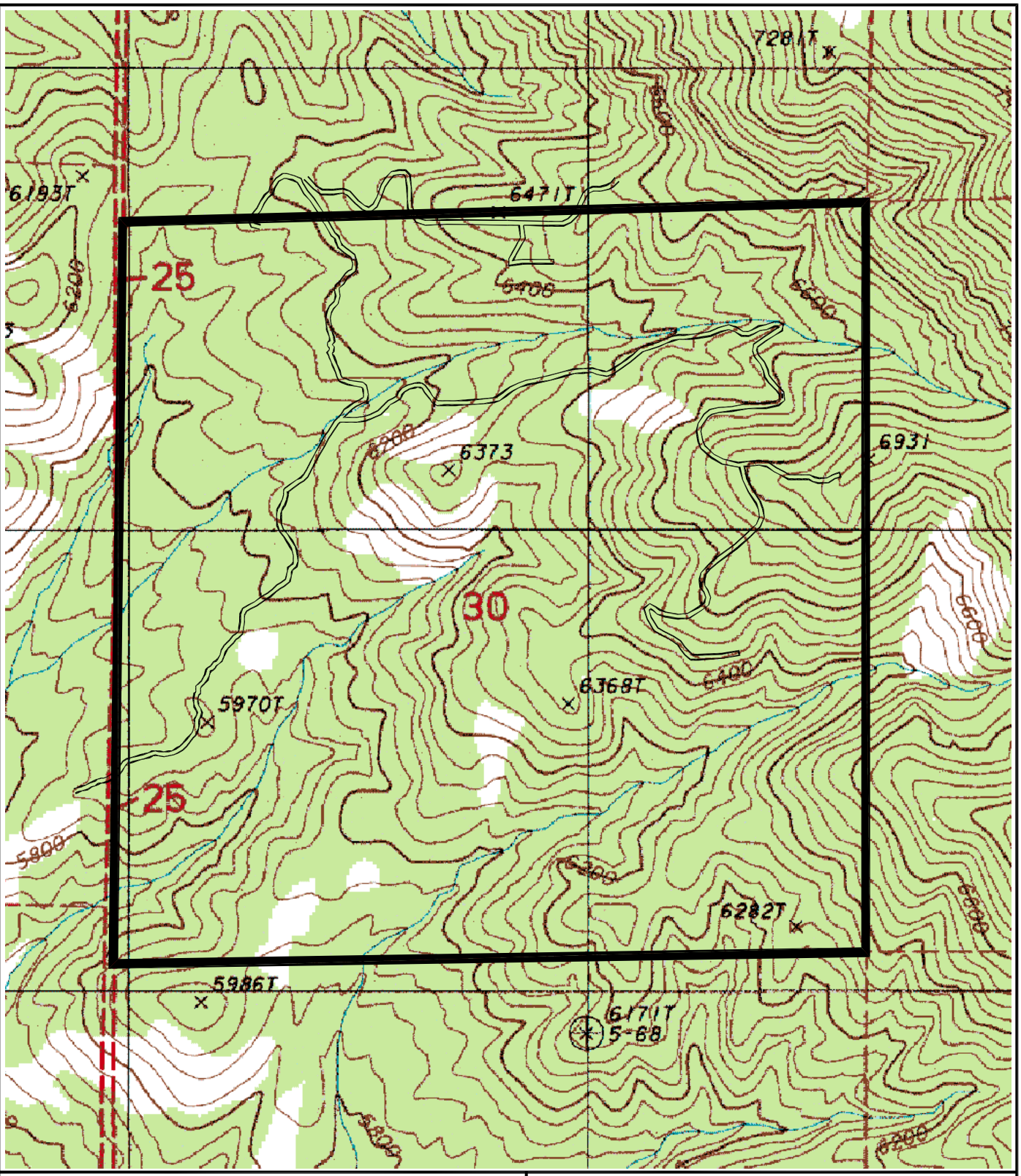
MILL CREEK EXPLORATION PROJECT

FIGURE 1
REGIONAL LOCATION MAP

jbr environmental consultants, inc.

DESIGN BY	DRAWN BY	CH'D BY	SCALE	DATE DRAWN	REVISION
SH	CP		1:100,000	7/13/05	11/30/05

drawings\X-CAL-01\MillCreekExploration EA.dwg



BASE FROM USGS 7.5' QUADRANGLE: GOAT PEAK, NV., PROVISIONAL EDITION 1985.

EXPLANATION

EXISTING ACCESS ROAD (POST 1981)

N

1000 0 1000 FEET

X-CAL RESOURCES, INC.

MILL CREEK EXPLORATION PROJECT

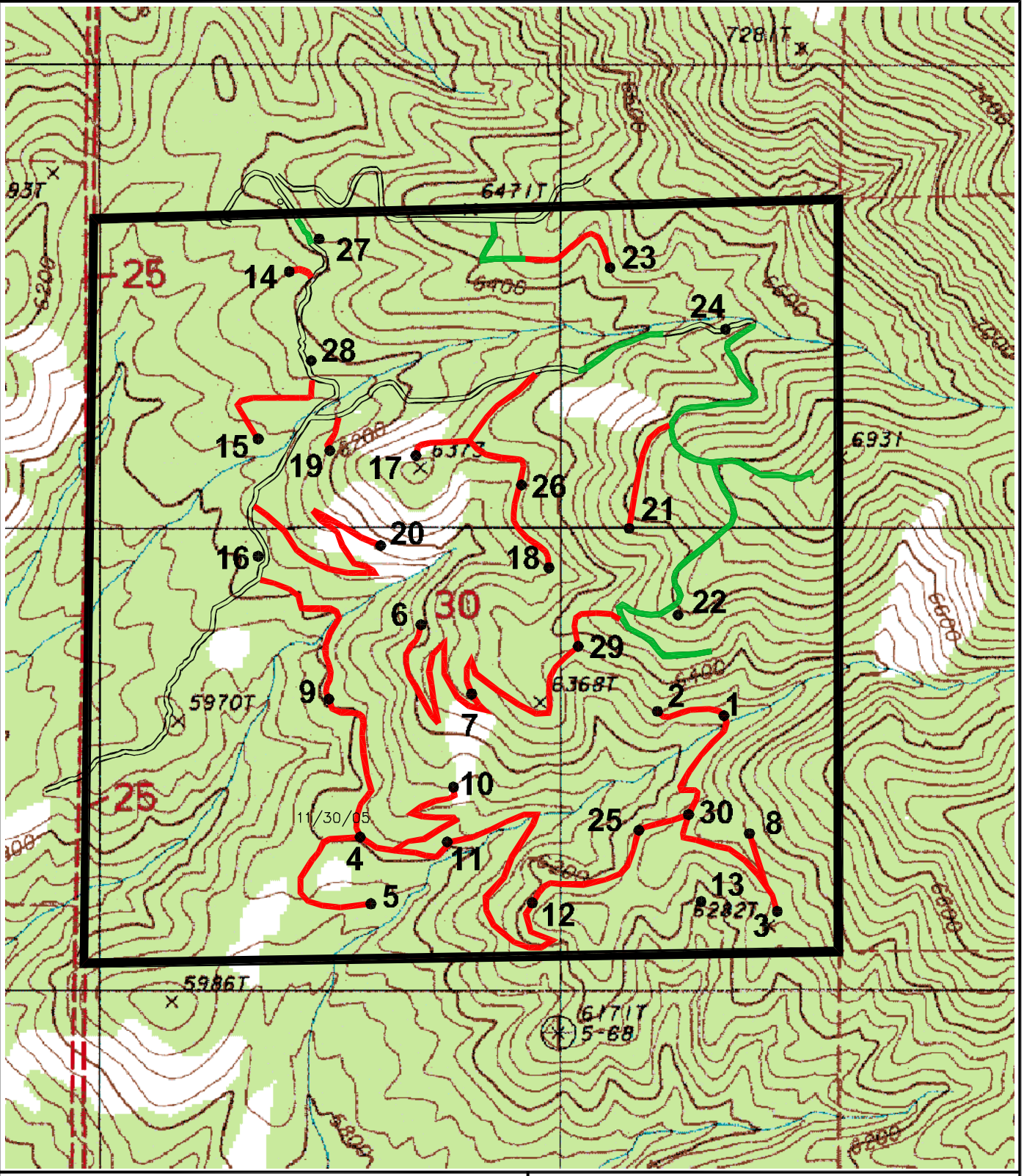
FIGURE 2
PROJECT LOCATION

jbr environmental consultants, inc.

DESIGN BY	SH	DRAWN BY	CP	CH'D BY		SCALE	1:12,000

DATE DRAWN	7/13/05
REVISION	9/29/05
	11/30/05

drawings\X-CAL-01\MillCreekExploration EA.dwg



BASE FROM USGS 7.5' QUADRANGLE: GOAT PEAK, NV., PROVISIONAL EDITION 1985.

EXPLANATION

- PROPOSED DRILL HOLE LOCATION
- EXISTING ACCESS ROAD (POST 1981)
- X-CAL DISTURBANCE (NOI)
- PROPOSED ROADS

1000 0 1000 FEET

N

X-CAL RESOURCES, INC.

MILL CREEK EXPLORATION PROJECT

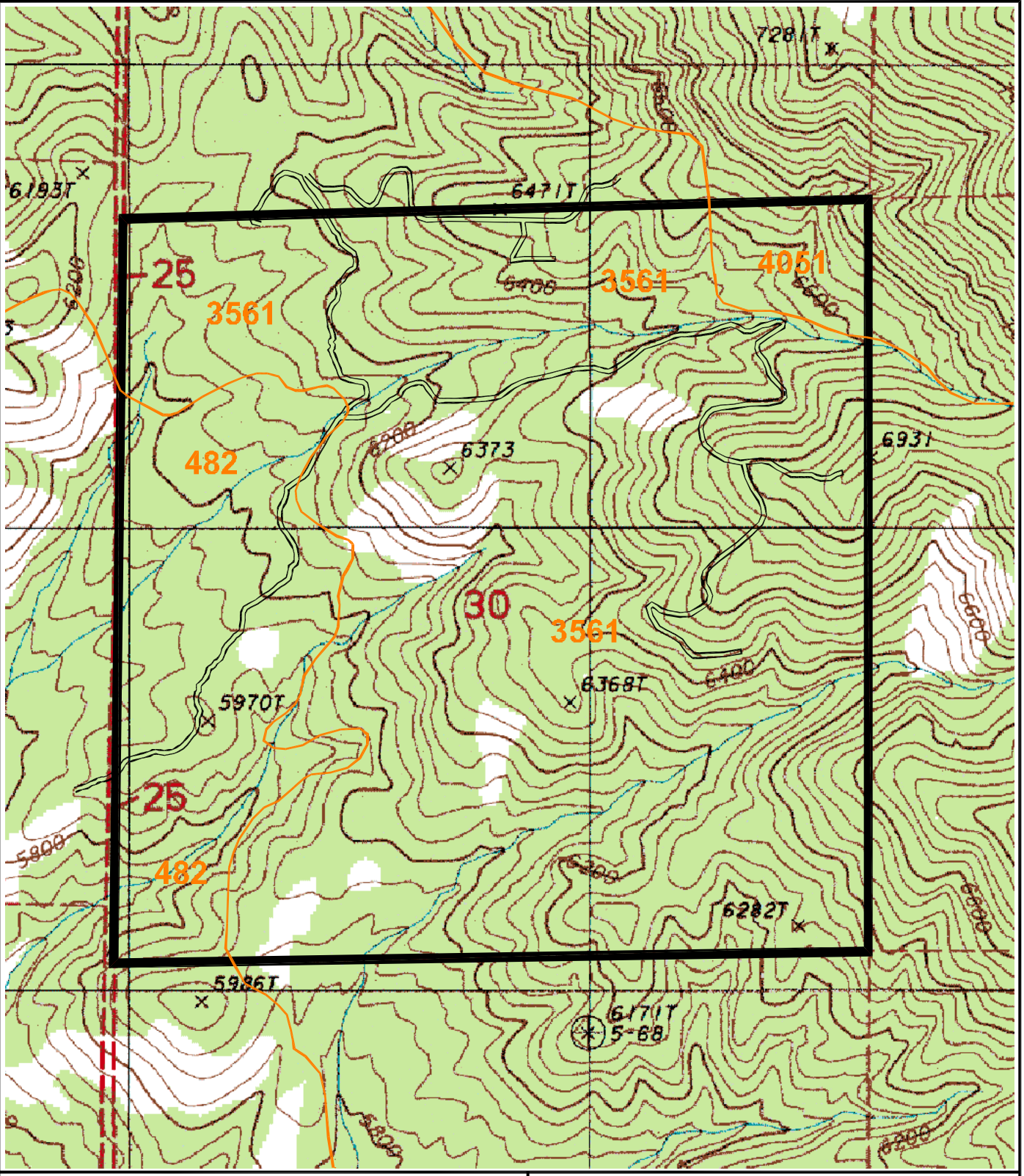
FIGURE 3
PROPOSED DRILLING LOCATION
AND ACCESS

jbr environmental consultants, inc.

DESIGN BY	SH	DRAWN BY	CP	CH'D BY		SCALE	1:12,000

DATE DRAWN	7/13/05
REVISION	9/29/05
	11/30/05

drawings\X-CAL-01\MillCreekExploration EA.dwg



BASE FROM USGS 7.5' QUADRANGLE: GOAT PEAK, NV., PROVISIONAL EDITION 1985.

EXPLANATION

EXISTING ACCESS ROAD (POST 1981)

SOILS

482 Humdun-Havingdon-Bucan association
3561 Locane-Sumine-Glean association
4051 Attella-Xine-Kram association

1000 0 1000 FEET

N

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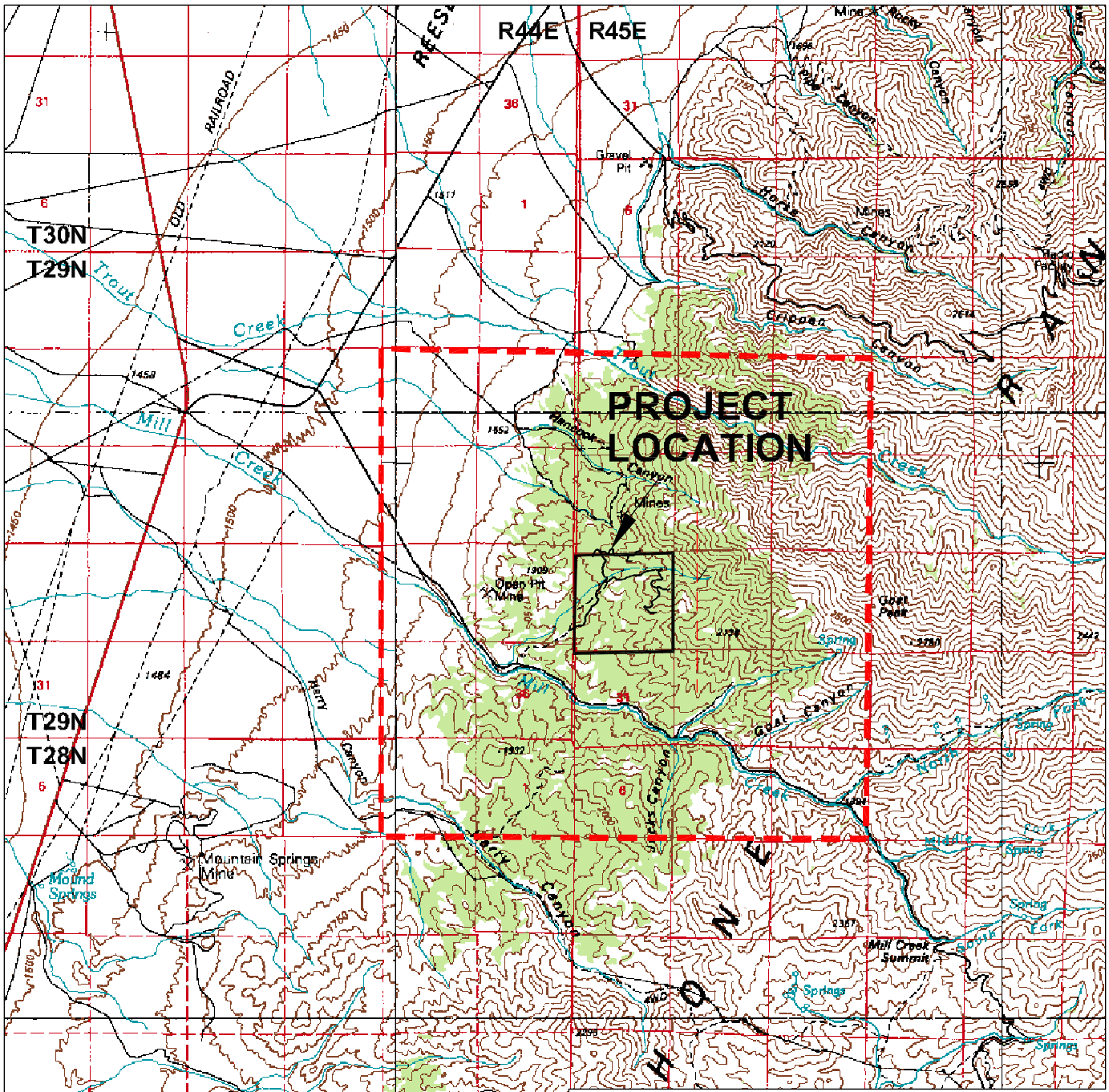
FIGURE 4
SOIL MAPPING UNITS

jbr environmental consultants, inc.

DESIGN BY	SH	DRAWN BY	CP	CH'D BY		SCALE	1:12,000

DATE DRAWN	7/13/05
REVISION	9/29/05
	11/30/05

drawings\X-CAL-01\MillCreekExploration EA.dwg



EXPLANATION

EXISTING ACCESS ROAD (POST 1981)

CUMULATIVE ASSESSMENT AREA

1 0 1 2 MILES

N

X-CAL RESOURCES, INC.

MILL CREEK EXPLORATION PROJECT

FIGURE 5
CUMULATIVE EFFECTS ASSESSMENT AREA

jbr environmental consultants, inc.

DESIGN BY	SH	DRAWN BY	CP	CH'D BY		SCALE	1:100,000	DATE DRAWN	4/24/06
								REVISION	

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Nevada Natural Heritage Program

Department of Conservation and Natural Resources
1550 East College Parkway, Suite 137 * Carson City, Nevada 89706-7921
voice: (775) 687-4245 fax: (775) 687-1288 web: www.heritage/nv.gov/

19 July 2005

Kristi McKinnon
JBR Environmental Consultants, Inc.
1053 Idaho St.
Elko, NV 89801

RE: Data request received 13 July 2005

Dear Ms. McKinnon:

We are pleased to provide the information you requested on endangered, threatened, candidate, and/orat risk plant and animal taxa recorded within or near the X-Cal-01 project area. We searched our database and maps for the following, a three mile radius around:

Township 29N Range 44E Sections 26 and 36
Township 29N Range 45E Sections 19, 20, 30-32, and 36

There are no at risk taxa recorded within the given area. However, habitat may be available for, the Tiehm beardtongue, *Penstemon tiehmii*, a Nevada Bureau of Land Management Sensitive Species. We do not have complete data on various raptors that may also occur in the area; for more information contact Ralph Phenix, Nevada Division of Wildlife at (775) 688-1565. Note that all cacti, yuccas, and Christmas trees are protected by Nevada state law (NRS 527.060-.120), including taxa not tracked by this office.

Please note that our data are dependent on the research and observations of many individuals and organizations, and in most cases are not the result of comprehensive or site-specific field surveys. Natural Heritage reports should never be regarded as final statements on the taxa or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.

Thank you for checking with our program. Please contact us for additional information or further assistance.

Sincerely,

Eric S. Miskow
Biologist III/Data Manager