

**U.S. Department of the Interior
Bureau of Land Management**

Environmental Assessment

**Blackburn # 22 Oil and Gas Exploration Project
Federal Lease NVN-11348**

PREPARING OFFICE

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Federal Lease NVN-11348

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Chapter 1. Introduction

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1.1. Identifying Information

Grant Canyon Oil and Gas, LLC (Grant Canyon) submitted an Application for Permit to Drill (APD) to the United States Department of the Interior (DOI) Bureau of Land Management (BLM) on September 15, 2015. To accompany the APD, this Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA, and in accordance with the BLM NEPA Handbook H-1790-1. NEPA established a national policy for an environmental review process on actions undertaken by federal agencies or federally funded projects. The process is intended to assist public officials to make informed decisions based on environmental effects of proposed federal agency actions.

1.1.1. Project Location and Access

Grant Canyon proposes to drill a new oil well, Blackburn Federal #22, in their existing oil field in Pine Valley, Eureka County, Nevada. The proposed well location is within Section 8, Township 27 North, Range 52 East Mount Diablo Baseline and Meridian. The proposed well is located approximately 39.4 miles south of Carlin, Nevada. The Blackburn Unit project is included in a Federal lease, designated NVN – 11348, that consists of approximately 480 acres, of which approximately 2.7 acres are included in the APD for the Proposed Action. A copy of the Federal lease NVN-11348 is provided in Appendix A. Figure 1 shows the general location of Blackburn Federal #22.

The Blackburn Unit oil field is a mature oil field. The new development, Blackburn Federal #22, if found to be productive, would be the eighth producing well in the field. Within a one-mile radius of the new well location there are six dry holes, seven producing wells, one Class 2 water disposal well, and one gas injection well. Also within a one-mile radius is a tank battery, production facility, three oil gathering lines, two injection lines, and one disposal line. The central tank battery where the produced oil is put into merchantable condition stored in tanks and shipped to the purchaser via trucks is located approximately 1,000 feet south of the proposed well location (near the center of the field). The seven existing producing oil wells in the field are pumped using pump jacks with electric motors as the prime movers. Electrical services are provided to the wells and central production battery through an existing transmission line system.

Blackburn Federal #22 is approximately 39.4 miles south of Carlin, Nevada. From Carlin proceed west on I-80 for six-tenths of a mile to the junction of State Route (SR) 278, turn south on SR 278 for 37 miles, then east for approximately one mile towards Blackburn central tank battery along existing graveled road, then north along existing graveled road for approximately three-quarters of a mile, arriving at proposed well pad adjoining existing road on the east side. The Unit operator has applied for a transportation and utility right-of-way (ROW) from the Bureau of Land Management (BLM) Tuscarora Field Office for the portion of the road that extends from State Route 278 to the boundary of the Blackburn Unit.

1.1.2. Surface and Mineral Ownership

As stated above, the Blackburn Unit project area encompasses 480 acres and of that the Blackburn Federal #22 Oil Well encompasses 2.7 acres. Surface and mineral ownership within the project area is all Federal.

1.2. Purpose and Need for Action

The purpose of the Proposed Action is to determine the terms and conditions necessary to prevent undue or unnecessary degradation of public lands for issuing a permit to drill to Grants Canyon. The need for the Proposed Action is to respond to Grant Canyon's submitted APD under BLM's mandate to manage public lands according to the Federal Land Policy and Management Act (FLPMA) and the Mineral Leasing Act (MLA), as amended.

1.3. Scoping, Public Involvement and Issues

NEPA recognizes the importance of public involvement in the agency decision making process. The BLM Elko District Office (EDO), Tuscarora Field Office (TFO) posted Grant Canyon's APD on December 17, 2015. A copy of the APD is posted at the EDO. Staff from the TFO conducted an onsite review of the proposed oil well drill site and issued a news release for this visit, posted on the BLM website and published in the Elko Daily Free Press on November 21, 2015. A copy of the onsite inspection form is provided in Appendix B.

1.4. Decision to be Made

The BLM's authority for approving oil and gas exploration is listed in 43 Code of Federal Regulations (CFR) 3160. The BLM's approval of oil and gas activities is subject to conditions to prevent undue or unnecessary degradation of public lands and is consistent with the Elko Resource Management Plan (RMP) as amended, and the Programmatic EA for the December 2005 Oil & Gas Lease Sale (BLM, 2005).

The BLM Authorized Officer (AO) will decide, based on the analysis contained in this EA, whether or not to authorize the Proposed Action with Conditions of Approval (COAs). The decision record associated with this EA may not constitute the final approval for all actions but does provide information upon which to consider approving individual components, such as approval of all individual APDs, Rights-of-Ways, and Sundry Notices associated with the Proposed Action.

1.5. Authorizing Actions

The BLM is the lead agency for this EA, and the BLM TFO Field Manager is the authorized officer. Implementing the Proposed Action or alternatives would require authorizing actions from a variety of Federal, state, and local agencies. Grant Canyon is responsible for applying for any permits required.

Chapter 2. Proposed Action and Alternatives

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2.1. Description of the Proposed Action

The Proposed Action is the construction of a ten-foot deep reserve pit, construction of a well pad, drilling of the proposed well, a ROW for commercial use and maintenance of an existing access route, construction of a product pipeline connecting the well to the central production facility, and construction of a temporary water supply line from the production facility into the well pad for make-up water during drilling. See Figure 1 for the proposed site layout.

The reserve pit would be approximately 100 by 75 feet in area. The reserve pit would be fenced on three sides while the drilling rig is on location; when the drilling rig is removed from the site the reserve pit would then be fenced on all four sides. The reserve pit may be stipulated to contain a wildlife escape ramp if determined necessary at the time the APD is approved, although it is not anticipated that an escape ramp will be required at this time. The pit would be earthen with bentonite liner as the drilling mud would be a fresh water, low solids-based mud with no chemicals added. The reserve pit reclamation is initiated by drying out typically within one year after drilling and completion of the well depending on the natural moisture cycle. During the pit closure time period the pit will be fenced on all four sides.

The construction of the well pad would include clearing and grading an area of approximately 200 by 250 feet. The well would be drilled using a licensed drilling contractor. The drilling rig would be a rotary rig rated to drill to 7,500 feet or greater and use diesel engines to provide power to the rotary table and mud pumps. As listed on the APD, the location of the proposed well is approximately 2,050 feet from the nearest property lease line and 1,050 feet from the nearest well completed on this lease. The location of the proposed well at the surface is 1,875 feet from the south line and 861 feet from the west line and is anticipated to be drilled to an approximate depth of 7,400 feet. No new production facilities would be necessary to treat, store, and ship the oil from the new well should it be productive. If the well is found to be non productive or reaches end of its useful production life cycle, it would be permanently plugged and abandoned in accordance with the regulations at Title 43 CFR part 3162.3-4. Well abandonment would also be in accordance with a plan first approved in writing or prescribed by the AO. The AO can approve the use of the well as a service well for injection to recover additional oil or gas upon application by the operator.

In addition to the oil well, well pad and reserve pit, a product pipeline would connect the well to the central production facility and a parallel water supply line would provide makeup water from the production facility to the well. The product and water supply pipelines would each be approximately 850 feet in length.

A gravel pit, located to the west of the Project Area, would be used as the gravel source for construction and drilling activities (see Figure 1). The gravel pit would be certified weed free or have a COA to treat weed infestations after reclamation.

During the drilling operation there would be approximately 15 to 25 staff on site per day for approximately 8 to 12 days. The crews consist of personnel to operate the drill rig, a toolpusher, mud logger, geologist, company man, mud man, and water hauler, and when necessary, additional staff including a pipe transporter, diesel truck driver, logging truck driver, and casing crew as applicable. Clearing and grading activities are expected to take between 6 to 8 days with an additional 12 to 16 days for drilling. Between 8 to 12 days after construction completion, it is estimated to have between 6 to 8 staff on location during daylight hours. Based on the remote location of the Proposed Action, crews are assumed to travel to/from the site once per day.

The Proposed Action would comply with all applicable Federal Onshore Oil and Gas Orders and all other applicable permits and approvals. Grant Canyon would be required to adhere to stipulations protecting sensitive resources that are included on Federal leases.

The Blackburn Federal Unit Agreement's (Serial Number N-30440X) boundary originally covered a larger area which encompassed the entire existing access road. The Blackburn Unit authorized occupancy of the entire access road until the unit boundary was contracted to the Unit Participating Area (Serial Number N-30440A). The Unit operator applied for a transportation and utility right-of-way (ROW) from the Bureau of Land Management (BLM) Tuscarora Field Office for the portion of existing access road that is now outside the unit boundary. The road extends from State Route 278 to the boundary of the Blackburn Unit. The road is a graveled roadway that crosses both public and private land and is 1.45 miles in length and 16 feet in width. The ROW would be issued for a 30-year term for year round access.

Table 2.1. Proposed Surface Area Disturbance as a Result of Oil and Gas Exploration

Name	Quantity	Short-term Surface Disturbance (acres)	Long-term Surface Disturbance (acres)
Reserve Pit	1	0.1	0.11
Oil Well Pad	1	1.15	0.86
Pipelines	2	0.7	0.0
Roads	0.16 miles	0.75	0.53
Gravel Pit	1	N/A	N/A
Total		2.7	1.5

Table 2.2. Existing Surface Area Disturbance as a Result of Oil and Gas Exploration

Feature	Width (Ft)	Length (Ft)	Area (FT ²)	Acres
From 278 to Unit Boundary	19	7768	147592	3.39
Unit Boundary to Prod Header	19	1340	25460	0.58
Prod Header to 1st Well's turn	19	396	7524	0.17
1st Well turn to well pad	15	472	7080	0.16
1st Well pad			0	2.89
1st Well to 2nd Well Road	19	737	14003	0.32
2nd Well's turn to well pad	15	876	13140	0.30
Road to Well #3	15	639	9585	0.22
Well #3 Pad			0	1.26
Road to Well #4	15	447	6705	0.15
Well #4 Pad			0	2.42
Road to Well #5	15	148	2220	0.05
Well #5 Pad			0	5.50
Well #6 Pad				2.40
Old Seismic Line	5	1409	7045	0.16
2 Old Seismic lines	5	3809	19045	0.44
Central Prod Facility				3.74
West Well #1 Pad				2.83
West Well #2 Pad				2.77
Total Existing Disturbed Acreage =				29.75

The total existing acreage disturbance for pads is 20.07 acres, 5.34 for roads, 0.60 for seismic and pipelines and 3.74 acres of disturbance for central production pad.

2.2. No Action Alternative

A No Action Alternative is analyzed in this EA in accordance with NEPA and CEQ regulations that require a No Action Alternative be presented in all environmental analyses in order to serve as a baseline from which to compare the Proposed Action to. Under the No Action Alternative, the Proposed Action would not be implemented and the 2.7 acres associated with the Proposed Action would remain undisturbed, however the activities associated with the existing oil field operations would continue to have impacts on various resource categories.

2.3. Alternatives Considered but not Analyzed in Detail

If an alternative is considered during the EA process but the agency decides not to analyze the alternative in detail, the agency must identify those alternatives and briefly explain why they were eliminated from detailed analysis (40 CFR 1502.14). However, for this EA no additional alternatives were considered.

2.4. Conformance

The project is in conformance with the Elko RMP, as approved March 11, 1987 (BLM, 1986a and 1987), and the Nevada and Northeastern California Greater Sage-Grouse Approved RMP Amendment, as approved September 2015. The Record of Decision (ROD) for the Elko RMP provides “Maintain public lands open for exploration, development, and production of mineral resources while mitigating conflicts with wildlife, wild horses, recreation, and wilderness resources.” The ROD also provides that the public lands will be managed under four designations. The Project Area is within the area designated as “Open- subject to standard leasing stipulations”. The Proposed Action is consistent with other applicable Federal, state, and local land use plans and policies.

Environmental effects were based on available data from state and Federal agencies, scientific literature, and resource studies conducted in the project area. Analysis of effects is intended to provide an impartial assessment to help inform the decision maker and the public. For each element analyzed environmental consequences include direct and indirect effects, as well as cumulative effects. The predicted effects from implementation of the Proposed Action for each element category were evaluated to determine how these effects would be avoided or reduced through Best Management Practices (BMPs) and considered in the COA.

Compliance with regulations and control measures will be implemented during the construction and operation of this Proposed Action to address negative environmental impacts. A summary of the impacts and proposed BMPs and COAs are summarized below for each resource category.

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Chapter 3. Affected Environment and Environmental Effects

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3.1. Effects Summary

A detailed assessment of the effect of the Proposed Action for critical elements of the human environment specified by statute, regulation, or Executive Order (EO) are described and analyzed in this Chapter. For each resource category, the Proposed Action is compared to the No Action Alternative. The impacts of the Proposed Action will be compared to the current conditions as well as future conditions in the absence of the project.

Environmental effects were based on available data from state and Federal agencies, scientific literature, and resource studies conducted in the project area. Analysis of effects is intended to provide an impartial assessment to help inform the decision maker and the public. For each element analyzed environmental consequences include direct and indirect effects, as well as cumulative effects. The predicted effects from implementation of the Proposed Action for each element category were evaluated to determine how these effects would be avoided or reduced through Best Management Practices (BMPs) and considered in the COA.

Compliance with regulations and control measures will be implemented during the construction and operation of this Proposed Action to address negative environmental impacts. A summary of the impacts and proposed BMPs and COAs are summarized below for each resource category.

Table 3.1. Proposed Action Impacts, BMPs and COAs

Resource Category	Proposed Action Impacts	Proposed Best Management Practices and Conditions of Approval
Air Quality and Climate	<p>Short term increases in emissions are anticipated during the construction phase of the project due to earthwork, welding, surface coating, and construction equipment.</p> <p>Emissions of criteria pollutants from combustion equipment will be minimal.</p> <p>Effects would be negligible.</p>	<p>Control measures include watering the site during construction activities. At the completion of construction surfaces will be stabilized by re-contouring and seeding with a BLM approved seed mix. If this hole goes into production, a portion of the site will be reseeded to reduce the footprint. If this is a dry hole, equipment will be removed, the site will be re-contoured and reseeded.</p>
Cultural Resources	<p>The Proposed Action has the potential to directly impact currently unknown subsurface cultural resources during ground disturbing activities.</p> <p>Effects would be negligible.</p>	<p>Grant Canyon will complete a cultural survey and provide a cultural report to the BLM which must be approved by the BLM prior to any surface disturbing activity. If no cultural sites are found then BLM can allow construction to occur. If cultural sites are found then BLM will work with Grant Canyon to avoid the sites by 30 meters. If previously undocumented cultural resources are discovered during construction activities, all ground-disturbing activities would be halted in the area of discovery and the BLM Authorized Officer would be contacted to evaluate the finding and develop mitigation measures within the Notice to Proceed.</p>

Resource Category	Proposed Action Impacts	Proposed Best Management Practices and Conditions of Approval
Fire Management	Vehicular travel, equipment use, and dry conditions combined with flammable vegetation types could pose the risk of friction fires. Effects would be negligible.	Grant Canyon will prepare and implement a Health and Safety Plan that will include a Fire Management Plan.
Geology	Implementation of the Proposed Action could result in production of approximately 50 barrels of oil per day or 18,300 barrels in the first year. If an economic resource is proven, this project would contribute to the depletion of the resource over time.	No mitigation measure for geologic resources have been identified.
Hazardous and Solid Wastes	A variety of wastes would be generated during drilling, well completion, and post-completion operations including drill cuttings, drilling fluids, product development, sanitary waste, and garbage. Effects would be negligible.	Grant Canyon will modify their existing Spill Prevention Control and Countermeasures Plan to include the oil well and associated piping included in the Proposed Action.
Hydrology	No water discharges to the environment are anticipated. The construction and operation of the Proposed Action are not anticipated to significantly impact hydrological resources.	Erosion from well pads and other disturbed areas would be prevented through BMPs used for stormwater and sediment control.
Livestock Grazing/ Rangeland Health	A potential maximum of 2.7 acres of surface land within grazing allotments is identified for construction of the reserve pit, well pad, and associated pipelines. No direct or indirect effects are anticipated.	BMPs to be implemented to limit livestock casualties include limiting driving speeds to 20 mph. Reseeding will occur in disturbed areas to provide new forage for livestock.
Migratory Birds	A significant effect is not anticipated for this resource.	If construction activities are proposed during nesting season, March 1 to July 31, a qualified biologist will conduct a migratory bird survey prior to land clearing. Construction must be initiated within 14 days of bird survey. Buffers should be placed around nesting areas that may be discovered. BLM will determine the buffer areas.
Native American Concerns	The Proposed Action would avoid areas of concern to the Western Shoshone Indians. Effects would be negligible.	Grant Canyon shall not disturb, alter, injure or destroy any NRHP eligible and/or scientifically important historic or archaeological site, cultural site, structure, building, object or artifact within the Project Area.

Resource Category	Proposed Action Impacts	Proposed Best Management Practices and Conditions of Approval
<p>Noxious and Non-native Invasive Plant Species</p>	<p>Ground disturbance and construction activities associated with the Proposed Action could affect abundance and diversity of noxious and non-native invasive species.</p> <p>Effects would be negligible.</p>	<p>All restoration/reclamation will meet Federal Seed Act regulations. All vehicles, heavy/construction equipment, and transport trailers shall be cleaned of mud, dirt, and plant parts with high-pressure water spray prior to entering the project area to minimize new introductions. Cleaning efforts shall concentrate on tracks, feet, or tires, and the undercarriage, with special emphasis on axles, frames, running boards, and front bumper/brush guard assemblies. Access routes to the project site shall be monitored and treated to prevent weed establishment and spread.</p> <p>Location reclamation would occur after the well abandonment. The location will be re-contoured and seeded using a seed mixture prescribed by the Elko BLM.</p> <p>If the well is productive the pad will not be reduced in size as the location is necessary for future access to the well for remedial well work which typically requires the use of work over drilling equipment and trucks that need access to the wellhead.</p>
<p>Paleontological Resources</p>	<p>It is not anticipated that surface disturbing activities associated with the Proposed Action would unearth scientifically important fossils.</p> <p>Direct and indirect effects are not anticipated.</p>	<p>Should paleontological resources be discovered during any phase of the Proposed Action, Grant Canyon shall cease operations and notify the BLM AO.</p>
<p>Sensitive and Special Status Species</p>	<p>The USFWS identified three species listed as threatened or endangered under the ESA as occurring within Eureka County. They include Columbia spotted frog, Greater sage-grouse, and Lahontan cutthroat trout.</p> <p>For this Project Area, the greater-grouse habitat has been classified as general habitat.</p> <p>There is no habitat for spotted frog and cutthroat in the project area.</p> <p>A significant effect is not anticipated for this resource.</p>	<p>A qualified biologist will be on-site during construction activities.</p>

Resource Category	Proposed Action Impacts	Proposed Best Management Practices and Conditions of Approval
Socioeconomics	<p>Potential workforce requirements and socioeconomic impacts, especially those related to employment, income, and housing, would be greatest during the construction phase. Fiscal impacts would be greatest during the operations phase.</p> <p>Effects would be negligible.</p>	<p>No mitigation measures for socioeconomic impacts have been identified.</p>
Soils	<p>During site development and construction activities, minimal and short-term soil erosion and sedimentation impacts may occur as the well and pipeline are constructed.</p> <p>A significant effect is not anticipated for this resource.</p>	<p>Grant Canyon will prepare and implement a Stormwater Pollution Prevention Plan.</p>
Transportation and Access	<p>Direct impacts on transportation include increasing traffic volumes, increasing opportunities for vehicle collisions with wildlife, cattle, and other vehicles, and contributing to roadway deterioration and dust creation on unpaved roads.</p> <p>A significant effect is not anticipated for this resource.</p>	<p>Reduced driving speeds will be required during construction and operation activities. Any wildlife mortalities resulting from the Proposed Action will be reported to NDOW/BLM at the time of incident.</p>
Visual Resource Management	<p>Visual resources would be impacted by surface disturbing activities, fugitive dust, and the presence of the Blackburn Federal #22 pump jack well within the Project Area.</p> <p>A significant effect is not anticipated for this resource.</p>	<p>Lighting during construction would follow “dark sky” lighting practices.</p> <p>Production equipment will be painted covert green.</p>
Vegetation	<p>The proposed action would directly affect the vegetation by removal of vegetation during clearing and grading activities.</p> <p>A significant effect is not anticipated for this resource.</p>	<p>The BMPs and COAs identified for effected vegetation in the Project Area includes reclamation.</p>
Wildlife	<p>Construction and operation of the Proposed Action could directly affect terrestrial wildlife present in the Project Area.</p> <p>Effects would be negligible.</p>	<p>Garbage shall be removed on a frequent basis. The use of hunting equipment shall be prohibited on-site.</p>

Summarized below in Table 3.2, “Resources Not Present or Present and Not Affected” is a list of resource categories that were considered but were found to be not present or present but not affected.

Table 3.2. Resources Not Present or Present and Not Affected

Resource Category	Effected Environment
Environmental Justice	Overall, Eureka County contains lower portions of minority and low-income populations than the State of Nevada as a whole. Therefore, the Proposed Action would not result in disproportionately high and adverse human health or environmental impacts on minority or low income populations
National Historic Trails	The California National Historic Trail is approximately 30 miles to the north and the Pony Express is located approximately 30 miles to the south of the Blackburn Unit.
Recreation	People visit Eureka County to engage in dispersed recreation, including fishing and hunting. The Project Area is located within Game Management Unit 065.
Big Game	Mule deer and pronghorn antelope are present but not effected by the Proposed Action. The site is summer habitat.
Wilderness Study Areas and Lands with Wilderness Characteristics	There are two Wilderness Study Areas in Eureka County: Roberts Mountain and Simpson Park which are 23 and 35 miles southwest, respectively, from the Project Area. There are two Wilderness Study Areas in Elko County: Cedar Ridge & Red Springs that are 22 and 27 miles to the northeast, respectively, from the Project Area. These areas are separated from the project area by mountain ranges and will not be affected by the Proposed Action. Lands with Wilderness Characteristics (LWCs) resources are not present in the project area due to the abundance of man-made improvements pertaining to oil and gas development. Furthermore, the proposed project area does not meet the size, naturalness and solitude criteria for possessing wilderness character or suitability.

Cumulative effects are defined in the CEQ regulations (40 CFR 1508.7) as “...the impact on the environment that results from the incremental impact of the action when added to other past, present and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions.” The cumulative effects analysis includes impacts on the environment that result from the incremental effect of the action when added to other past, present, and reasonable foreseeable future actions. The cumulative effects analysis typically encompasses broader areas and timeframes than the analysis of direct and indirect effects. The actions and effects selected for analysis depend on access to reasonably available data. For the cumulative analysis, levels of surface disturbance are used as best estimates for total impacts to the human environment. The rationale is that levels of surface disturbance are among the most comprehensive and readily determined impacts and because disturbance to the surface results in direct and indirect effects to many analyzed resources. The areas to be analyzed for cumulative effects have been selected based on several criteria and are listed in Table 3.3, “Cumulative Effects Study Areas” below and Cumulative Effect Study Areas (CESA) identified in Figures 2 and 3.

Table 3.3. Cumulative Effects Study Areas

Resource Category	CESA Boundary	Acres
Air Quality and Climate	Pine Valley Basin	641,280
Cultural Resources	Project Boundary plus buffer	4.8

Resource Category	CESA Boundary	Acres
Fire Management	Project Boundary	2.7
Geology	Pine Valley Basin	641,280
Hazardous and Solid Waste	Eureka County	2,675,200
Hydrology	Pine Valley Basin	641,280
Livestock Grazing/Rangeland Health	Grazing Allotment Area	321,408 (combined)
Migratory Birds	Pine Valley Basin	641,280
Native American Concerns	Pine Valley Basin	641,280
Noxious and Non-native Invasive Plant Species	Pine Valley Basin	641,280
Paleontological Resources	Project Boundary	2.7
Sage-Grouse	Sage-Grouse Three Bar and Cortez PMUs	1,390,957.5
Sensitive and Special Status Species	Pine Valley Basin	641,280
Socioeconomics	Eureka County	2,675,200
Soils	Pine Valley Basin	641,280
Transportation and Access	Eureka County	2,675,200
Visual Resource Management	Pine Valley Basin	641,280
Vegetation	Pine Valley Basin	641,280
Wildlife	Pine Valley Basin	641,280

The rationale for the appointed CESA boundaries is based on the existing extent of the resource category with respect to the Proposed Action and the potential area encompassing each resource category. The CESA boundaries listed above are the appropriate scale for each resource category including project footprint, air shed, watershed, and county limits.

The Past, Present and Reasonable Foreseeable Future Actions (PPRFFA) describe proposed projects which may be constructed in the CESAs in the reasonable foreseeable future. To be included, a proposed future action must have a high probability of occurrence and be defined well enough to consider any cumulative effects analysis. Surface disturbance for the past and present actions have been quantified and included in the cumulative analyses where those actions were or are located within a resource's CESA boundary. The acreages are conservative, using the total area of the project boundaries to calculate the surface disturbance rather than the areas within the projects that were actually disturbed by the specific activities.

Table 3.4. Past, Present, and Reasonably Foreseeable Future Actions

CESA	Total Acres	Proposed Action	Existing Oil & Gas	Rights of way	Sand and Gravel	Mines	Fire	Total Disturbance
Pine Valley Basin	641,280	2.7	29.76	7,676.49	103	0	60,592.70	68,401.95
Greater Sage-grouse PMU(s)	1,390,809	2.7	29.76	14,611.41	130.50	29,744.65	262,358.34	306,874.66
Project Boundary	2.7	2.7	0	0	0	0	0	0.00
Grazing Allotment	321,408	2.7	29.76	813	0	0	75,859.88	76,702.64
Eureka County	2,675,200	2.7	29.76	23,000.39	18,916.35	52,820.72	373,299.55	468,066.76

3.2. Air Quality and Climate

Regional air quality is influenced by climate, meteorology, air pollution sources, and emissions. The provisions in the Federal Clean Air Act (CAA) and subsequent amendments have been implemented as detailed regulations codified in Title 40 of the CFR Parts 50 through 97. The source of the regulations is the U.S. Environmental Protection Agency (EPA), which has delegated authority to individual states and local agencies to administer and enforce these regulations. Individual states may write equivalent or more stringent requirements into their own rules. Air quality is characterized by the concentrations of various pollutants, the climate conditions that influence atmospheric stability, and pollutant dispersion.

The CAA established the National Ambient Air Quality Standards (NAAQS) which are applied to the following criteria pollutants: sulfur dioxide (SO₂), carbon monoxide (CO), nitrogen dioxide (NO₂), particulate matter equal to or less than 10 microns in diameter (PM₁₀), particulate matter equal to or less than 2.5 microns in diameter (PM_{2.5}), ozone (O₃), 8-hour average ozone concentrations, and lead (Pb). These standards are defined in terms of threshold concentrations.

Geographic areas are designated as attainment, non-attainment, or unclassified for each criteria pollutant with respect to the NAAQS. If monitoring data meets the NAAQS, the EPA may designate an area as “attainment”, whereas areas in which pollutant concentrations exceed the NAAQS are designated as “non-attainment” for those pollutants.

The Prevention of Significant Deterioration (PSD) program is designed to limit the incremental increase of specific air pollutant concentrations above a legally defined baseline level. All areas of the country are assigned a classification which describes the degree of degradation to the existing air quality that is allowed to occur within the area under the PSD permitting rules. PSD Class I areas are areas of special national value and very little degradation in air quality is allowed.

3.2.1. Affected Environment

The proposed project area is located in Eureka County, Nevada. The Nevada Division of Environmental Protection (NDEP) Bureau of Air Pollution Control (BAPC) has jurisdiction over the air quality program for Eureka County. The mission of the BAPC is to achieve and maintain levels of air quality which will protect human health and safety, prevent injury to plant and animal life, prevent damage to property, and preserve visibility and the scenic, esthetic, and historic values of the State. The area is classified as in-attainment for all criteria pollutants.

The climate for the project area is arid and characterized by warm, dry summers and cold, wet winters. The annual high temperature is 58.9°Fahrenheit (F) and the annual low temperature is 32.9°F. The average annual precipitation in rainfall is 11.4 inches and average annual snowfall is 29.0 inches. The warmest month is July (85°F) and the coldest months are December and January (37°F). The nearest long-term meteorological measurements were collected at Pine Valley Carlin 20S (1982-2015). This site is located at an elevation of 5,050 feet above mean sea level (WRCC 2015).

One PSD Class I area is located approximately 25 miles north of the project site: Boulder Flat – Lower Portion.

3.2.2. Environmental Effects

Some impact on air quality is anticipated during the construction phase of the project due to dust generated from earthwork and construction equipment emissions. Construction of the proposed Blackburn Federal #22 well would include grading approximately 2.7 acres resulting in localized, short-term increases in fugitive dust. Exhaust emissions from construction equipment and other vehicles would also result in localized short term increases in CO, nitric oxide, and nitrogen dioxide (NO_x). BMPs that would be implemented during construction activities to reduce fugitive dust include watering the site and/or applying soil stabilizers, installing track-out BMP at the point of construction site access/egress, and stabilizing surfaces with gravel and reseeding with a BLM approved seed mix at the completion of construction. The use of water trucks would focus on the areas of main travel and activity. The NDEP BAPC regulates particulate matter emissions from construction projects disturbing areas greater than 5 acres. Since the area of disturbance for the Proposed Action is less than 5 acres a Surface Area Disturbance (SAD) application and a dust control plan would not be required.

Table 3.5. Emissions During Construction/Drilling Phase

Activity	PM ₁₀	PM _{2.5}	NO _x	CO	SO ₂	VOC
	Tons Per Year					
Well Pad/Road Construction	0.16	0.07	0.14	0.05	0.01	0.01
Rig-Up and Drilling	3.87	0.47	3.30	3.57	0.00	0.41
Completion	8.95	0.89	0.54	0.83	0.01	0.25
Water Well and Misc Traffic	3.54	0.35	0.10	0.12	0.00	0.01
Total	16.52	1.78	4.08	4.57	0.02	0.68

During normal operations, criteria pollutant emissions would occur from stationary and mobile sources. PM₁₀ and PM_{2.5} emissions in the Project Area would be generated from equipment and vehicles travelling on unpaved roads and natural causes such as wind and fire. Emissions of NO_x, CO, and VOCs would occur from fuel combustion sources including engines, heaters, heavy equipment and vehicles. VOC emissions are also produced from oil and water tanks located on the well pad. Additionally, small quantities of HAP emissions would occur from the well completion and fuel combustion.

Table 3.6. Emissions During Construction/Drilling Phase

Activity	PM ₁₀	PM _{2.5}	NO _x	CO	SO ₂	VOC
	Tons Per Year					
Oil Tank						17.11
Water Tank						0.02
Diesel Generator						0.24
Pumping Unit	0.11	0.11	0.48	0.96		0.24
Line Heater			0.73	0.61		0.04
Flare			3.60	3.02		0.20
Truck Loading						2.58
Production Traffic	6.62	0.66	0.11	0.09	0.00	0.01
Wind Erosion	0.16	0.02				
Total	7.31	1.21	5.64	5.31	0.00	20.44

Ambient air quality impacts associated with emissions during construction would be localized and temporary in nature, and dissipating at distances away from the activity. Additionally, impacts to the air quality in excess of NAAQS are not anticipated during normal operations and therefore the Proposed Action would have a negligible adverse effect.

The BLM's Instruction Memorandum No. 2008-171 mentions climate change considerations should be acknowledged in EA documents. Due to the nature and scales of the Proposed Action, effects on climate change are not anticipated.

Under the No Action Alternative, there would be no additional effects to air quality or climate in the project area. Emissions will continue to be expected from existing equipment and activities associated with the Blackburn Unit.

3.2.3. Cumulative Effects

Air quality in the CESA is affected by natural conditions such as fire, wind, and anthropogenic effects. The minimal emissions of criteria pollutants added to the existing air data from surrounding activities including vehicle emissions, natural weather conditions (e.g. wind), and other point source impacts would not be high enough to classify affected basins and as a result, air quality is generally considered to be good.

Table 3.7. Emission Sources Within Air Quality CESA

Site Name	Permit ID	Facility ID	Permit Type
Canyon Construction	FIN A0041	ID 128	Class II General Air Permit
Lone Tree USA	FIN A1479	ID 2598	Class II SAD Permit AP1542-3160
Barrick Gold Exploration (The Lodge at Pine Valley)	FIN A1479		Class II General Air Permit AP1041-3334
Barrick Gold Exploration (Cortez Mountains and Horse Creek Valley)	FIN A1447	ID 2775	Class II General Air Permit AP1041-3336
McEwen Mining	FIN A0902	ID 1306	Class II SAD Air Permit AP1041-2416.02
Jim Wilkin Trucking	FIN A0038	ID 124	Class II General Air Permit
Ames Construction	FIN A0039	ID 125	Class II General Air Permit

Lone Tree USA and McEwen Mining have SAD permits but have no estimated or permitted emissions. SAD permits are limited to fugitive dust emissions which are mitigated through each Source's Dust Control Permit. Canyon Construction, Jim Wilkin Trucking, and Ames Construction have had no recent (within the last 2 years) activity at the mentioned site. The two permitted Barrick Gold Exploration sources have annual tons per year (tpy) emissions in their Class II permits which are summarized in Table 3.8, "Permitted Annual Emission Summary" below.

Table 3.8. Permitted Annual Emission Summary

Site Name	Source ID	Permitted Emissions (tpy)					
		CO	NO _x	SO ₂	VOC	PM ₁₀	PM _{2.5}

Barrick Gold Exploration (The Lodge at Pine Valley)	2598	1.80	3.12	0.29	0.19	0.16	0.16
Barrick Gold Exploration (Cortez Mountains and Horse Creek Valley)	2775	2.62	8.53	0.51	4.37	0.32	0.32
Total		4.42	11.65	0.80	4.56	0.48	0.48

Short-term increases in criteria pollutant emissions from the Proposed Action would be very minimal and when added to existing air quality in the Pine Valley Basin would not be enough to require classification of the basins. There are no cumulative impacts of concern for the Proposed Action or the No Action Alternative.

3.3. Cultural Resources

Federal law and regulation provide the framework by which historic properties are identified, evaluated for their significance, and protected. NEPA mandates that “federal or federally-assisted projects (federal undertakings) must take into account effects on historic and cultural resources” (40 CFR 1500-1508). The National Historic Preservation Act (NHPA) requires that federal agencies consider a project’s effects on historic properties, which are defined as prehistoric or historic sites, districts, buildings, structures, or objects that are included on or eligible for inclusion on the National Register of Historic Places (NRHP). A property does not need to be formally listed on the NRHP to warrant consideration. Consideration is granted if the property meets the National Register criteria. NHPA’s implementing regulations (36 CFR 800) define the procedures by which historic properties are identified, documented, and evaluated for the NRHP, and how the effects to historic properties posed by federal undertakings are mitigated.

The NRHP is maintained by the National Park Service (NPS), which has established the criteria necessary for a property to be listed or eligible for listing on the NRHP. Properties must be at least 50 years old, they must adhere to at least one of the four criteria of significance, and they must retain integrity. “The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- That are associated with events that have made a significant contribution to the broad patterns of our history (Criterion A); or
- That are associated with the lives of significant persons in our past (Criterion B); or
- That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C); or
- That has yielded or may be likely to yield, information important in history or prehistory (Criterion D).”

3.3.1. Affected Environment

Out of twenty previous inventories conducted within a one-mile radius of the Project Area since 1980, there are five recorded sites, four of which are not eligible for recommendation. Based on previous inventories in the area, expectations for prehistoric or historic resources is very low. If found, historic resources would likely entail small, nondescript debris scatters or possible related to transportation. Prehistoric resources would likely be comprised of isolated artifacts or small discrete lithic reduction areas. Large or complex sites are not expected. No cultural resources were encountered during the Class III inventory.

3.3.2. Environmental Effects

The Proposed Action has the potential to directly impact unknown subsurface cultural resources during ground disturbing activities related to the Proposed Action construction. If previously undocumented cultural resources are discovered during or prior to construction activities, all ground-disturbing activities would be halted in the area of the discovery, and the BLM AO would be contacted to evaluate the finding. If the site is eligible to the NRHP, impacts would be mitigated through avoidance or an appropriate treatment plan developed and implemented prior to additional ground disturbance. Construction activities would not resume in the area of the discovery until the BLM AO has issued a notice to proceed.

If construction workers or other project personnel discover what may be human remains, funerary objects, or items of cultural patrimony, construction would cease within 50 feet of the discovery, and the BLM AO would be notified of the finding. Any discovered Native American human remains, funerary objects, or items of cultural patrimony would be handled in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA). Non-Native American human remains would be handled in accordance with Nevada law. Construction activities would not resume in the area of the discovery until the BLM AO has issued a notice to proceed.

Under the No Action Alternative, the Proposed Action would not occur and, therefore, no direct or indirect impacts to cultural resources would result from increased access. Illegal collection and vandalism could still occur although access would not be increased.

3.3.3. Conditions of Approval

In the event previously unidentified cultural resources are discovered, work in the area would stop, the finding would be evaluated, and a management plan would be developed between the BLM and SHPO. The following BMPs are designed to minimize the potential for direct effects to accidental finds or previously unrecorded sites within the Project Area.

- Prior to ground disturbing activities, Grant Canyon would have a third-party qualified archaeological conduct a cultural survey and prepare a report which will be approved by BLM prior to the issuance of an authorization to proceed. An archeological and/or Tribal monitor would be required to monitor active construction at any found historic properties located within close proximity to ground disturbing activities. BLM would make determinations regarding monitoring needs. If any cultural resources are discovered, the location of the drill pad or effected disturbance area would be moved or offset a minimum of 30 meters to avoid the discovered cultural area.

- Grant Canyon shall not disturb, alter, injure or destroy any NRHP eligible and/or scientifically important historic or archaeological site, structure, building, object or artifact within the Project Area. Grant Canyon shall be responsible for ensuring that its employees, contractors or any others associated with the Proposed Action do not collect artifacts, or damage or vandalize archaeological, historical or paleontological sites or the artifacts within them.
- Grant Canyon shall provide training to ensure that all its personnel and all the personnel of its contractors and subcontractors are directed not to engage in the illegal collection of historic and prehistoric materials. Subsequent hires shall also be required to have similar training. Grant Canyon shall cooperate with BLM to ensure compliance with the Archaeological Resources Protection Act of 1979 (16 USC 470) on Federal lands.
- When previously unidentified cultural resources are discovered or an unanticipated impact situation occurs, all project activities within 328 feet (100 meters) of the discovery/impact shall cease immediately and Grant Canyon or its authorized representative shall secure the location to prevent vandalism or other damage. Pursuant to 43 CFR §10.4(g), Grant Canyon shall notify the BLM AO, by telephone and with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR §10.2), and any previously undocumented archaeological or historic sites. Activity at the location shall be suspended until after the discovery has been evaluated, any necessary mitigation measures completed and the BLM AO has issued a written Notice to Proceed. Human remains, funerary objects, sacred objects, or objects of cultural patrimony found on federal land would be handled according to the provisions of NAGPRA and its implementing regulations (43 CFR §10). Human remains and funerary objects found on state land shall be handled according to the provisions of Nevada statute NRS 383.150 to 383.190.

3.3.4. Cumulative Effects

The project study area for cultural resources is the Area of Potential Effect (APE). The APE is defined as “the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties. The APE is influenced by the scale and nature of the undertaking and may be different for different kinds of effects caused by the undertaking” (36 CFR 800.16[d]). The APE for impacts is approximately 4.8 acres and includes those elements of the Proposed Action that would result in new or previously unauthorized ground disturbance. A finding of “no adverse effect” may be determined when the effects of the undertaking do not meet the criteria set forth in 36 CFR 800.5(a)(1).

As directed by law, cultural resources inventories are conducted for any actions involving federal lands, and adverse effects to historic properties avoided or mitigated as appropriate. Avoidance through project redesign is the preferred method of mitigation; however, when avoidance is not feasible, data recovery or other forms of mitigation are implemented prior to ground-disturbing activities. Previously unknown NRHP-eligible sites potentially discovered during construction activities would be addressed in accordance with the design features listed above in the Conditions of Approval. In following these measures, the Proposed Action is not expected to cumulatively contribute to direct effects to historic properties. In following these measures, the Proposed Action is not expected to have cumulative effects.

3.4. Fire Management

3.4.1. Affected Environment

Wildfire is an important issue on public and private lands in the Project Area. The BLM Elko District Office is considered to be one of the highest fire load district offices within the BLM nationwide. In 2003, the BLM Elko District Office prepared an amendment to the 1987 Elko RMP for fire management, providing an integrated approach for response to wildfires, rehabilitating burned areas, and reducing hazardous fuel loads (BLM, 2003). Fires in the sagebrush ecosystem have created opportunities for invasive species to change the vegetation type to cheatgrass or other species which can burn rapidly and spread at a high rate. Most fires are caused by summer lightning storms, generally during the months June through September.

Two BLM Fire Management Units (FMUs) occur within the Project Area; the Cortez FMU and the Carlin Wildland Urban Interface FMU. The BLM Elko District along with cooperating agencies has declared that both the Carlin WUI and Cortez FMUs are designed to be full suppression FMUs. All detected wildland fires will be suppressed. BLM fire management has been aggressively attacking and suppressing fires to prevent the establishment of invasive species. BLM Elko's operations include a total of 11 Engines, 1 Dozer, 1 Helitack Crew, 1 Air Attack Platform, and 1 Interagency Hotshot Crew on staff throughout the fire season to address wildfires.

The Carlin WUI FMU primarily lies within and near the city of Carlin, as well as ranching communities along portions of State Route 278, 306, and 766 in the western portion of the NEN FPU. This FMU lies generally within the Rock Creek, Pine Valley, Upper and Middle Humboldt sub basins. The Carlin WUI FMU encompasses 326,930 acres. Starting in 1980 the Bureau of Land Management began collecting data on wildland fires, 300 acres and larger, occurring within the Elko District. In 1999 the BLM Elko District began collecting data on all wildland fires, 10 acres and larger, occurring within the Elko District. Current data shows that 164,331 acres (50.2%) of the Carlin WUI FMU have burned since 1980. Of this total fire occurrence, a total of 17,400 acres (5.3%) have burned twice, 229 acres (0.07%) have burned three times, and 22 acres (0.006%) have burned four times since 1999.

The Cortez FMU primarily lies south of Interstate 80, located in the southeastern portion of the Northeastern Nevada Fire Planning Unit (FPU). This FMU lies generally within the Central, South Fork Humboldt, Pine Valley, and Middle Humboldt sub basins. The Cortez FMU encompasses 1,051,375 acres, of which 55,745 acres. Current data shows that 576,432 acres (54%) of the Cortez FMU have been burned since 1980. A total of 22,902 acres (2.2%) have burned twice, 748 acres (0.07%) have burned three times, and 271 acres (0.03%) have burned four times since 1999.

According to the data of fire impacted areas in Eureka County, there have not been any fire incidents within the Project Area.

3.4.2. Environmental Effects

Proposed well pad and pipeline construction would result in 2.7 acres of new surface disturbance within the FMU. Personal vehicles and those used for land grading and clearing have the potential to spark accidental ignitions during dry conditions. Additionally, workers smoking on-site can potentially be the source of a fire. Vehicular travel, equipment use, and dry conditions combined with flammable vegetation types could pose the risk of friction fires that develop into larger scale

fires. Wildfires from other areas could also spread into the Project Area, leaving equipment, structures, and project equipment vulnerable to damage and/or destruction.

Cheatgrass is prevalent in the Project Area and provides a large fuel load that can contribute to wildland fires. Once started, the fires tend to burn fast, cover large areas, and increase the frequency of fires in an area (Wildland Fire Associates, 2008). Based on the volume of cheatgrass present and the high risk of fire potential in the Project Area, the Proposed Action could either ignite a fire or be susceptible to potential wildland fires, especially in dry conditions during the summer and fall.

Under the No Action Alternative, there would be no impacts from activities related to the Proposed Action; however fires could still occur from natural causes, in particular summer lightning storms.

3.4.3. Conditions of Approval

Grant Canyon would update as necessary, and implement, the company Health and Safety Plan (HASP) to address fire prevention and management. The fire plan applies to oil and gas pipeline construction, access road construction and maintenance, drilling, completion, workover, and testing and maintenance operations authorized by the Federal lease. Grant Canyon would assure that workers are aware of the fire prevention and safety procedures, evacuation routes and procedures, and emergency shutdown procedures. All fires would be reported immediately in accordance with BLM Fire Prevention Order CRV-12-03 by contacting the Elko Interagency Dispatch Center at 775-748-4000.

3.4.4. Cumulative Effects

Past, present and reasonably foreseeable future actions in the CESA that could have a cumulative effect on fire management include: wildland fire, oil and gas exploration, dispersed recreation (i.e. hunting, camping, etc.), grazing, and Off Highway Vehicle (OHV) use. Additional risks associated with fire from the Proposed Action, in combination with all other actions, are not expected to increase over what is already occurring due to the design features that would be implemented to address fire management and safety; therefore, cumulative effects would be minimal. These described cumulative effects would continue at the current level under the No Action Alternative.

3.5. Geology

3.5.1. Affected Environment

The geology underlying the proposed Blackburn Federal #22, located in Pine Valley, is within Nevada's Basin and Range Province. Blackburn Unit oil field is a structural trap above a Tertiary low-angle extensional fault, designated the Blackburn Detachment Fault (BBDF).

Two oil seeps are present in the general area including the Bruffey oil seep located along the range-bounding fault (the Blackburn detachment fault) and the McCoy Spring oil seep located along the surface of a normal fault that may have resulted from oil migration out of Pine Valley basin. The producing formations include Devonian Telegraph Canyon and Mississippian Dale Canyon formations. Other formations present include the Oligocene Indian Well Tuffaceous

Clastics and Devonian Oxyoke Canyon Sandstone. Oil generated by the Dale Canyon Formation has migrated into the trap since Pliocene time.

Table 3.9. Formation Depths and Geologic Markers

Formation	Depth (feet)	Product Anticipated
Miocene Basalt	3,370	
Humboldt	3,670	
Indian Wells	5,300	Oil, Water, Gas
Mississippian Chainman Shale	6,650	Oil, Water, Gas
Devonian Guilmette	7,250	Oil, Water, Gas
TD	7,400	

Six strong earthquakes (magnitude greater than 5) have occurred within the State of Nevada in a 56-year period, including a magnitude 6 quake near Wells in 2008 which damaged some older buildings. Magnitude 6 is felt by everyone, in or outside; windows break, books fall, and dishes and glassware are broken; damage is slight to moderate to poorly designed buildings. Magnitude 6 events should not damage modern buildings, and magnitude 7 events cause some damage to even well-built buildings or possibly steel construction. Eureka County has a high earthquake risk classification. The United States Geologic Society (USGS) database shows an approximate 40% chance of a major earthquake within the next 50 years. Eureka County has had 37 earthquakes since 1931 with the largest earthquake in Eureka County measuring at 4.3 (USGS). The two largest earthquakes with proximity to Blackburn Unit include one approximately 12 miles to the north of the Project Area that measured 4.3 on 04/17/1997 and another earthquake approximately 12 miles to the southwest of the Project Area that measured 3.5 on 02/23/2007. Earthquakes in Nevada from 1932 to 2016 are depicted on Figure 4.

In-field drilling of additional exploration wells typically occurs when initial drilling has located oil or gas, to define the limits of the oil or gas reservoir. The process of in-field drilling is the same as that employed for initial exploratory drilling, although new roads and pads may not be required in every instance.

Production begins only if oil or gas can be transported to a market and sold at a profit. In the EDO, because of limited infrastructure, pumped oil is generally piped a short distance for temporary storage, then trucked to a refinery for processing. That is not likely to change because of the small quantity of resource estimated to be present in the Blackburn Field. Production facilities may include one or more of the following: a well head; pumping equipment; a separation system; pipelines; a metering system; storage facilities; water treatment and injection facilities; cathodic protection systems; electrical distribution lines; compressor stations; communication sites; roads; salt water disposal systems; dehydration sites; and, fresh and salt water plant sites.

Well abandonment may be temporary or permanent. Wells are sometimes shut-in because pipelines or roads needed for production and marketing don't exist and the cost for construction is not justified by the quantity of oil discovered. These wells may later be reentered when their production can be marketed. The permanent abandonment of a well occurs when the well is determined to no longer have a potential for economic production, or when the well cannot be used for other purposes.

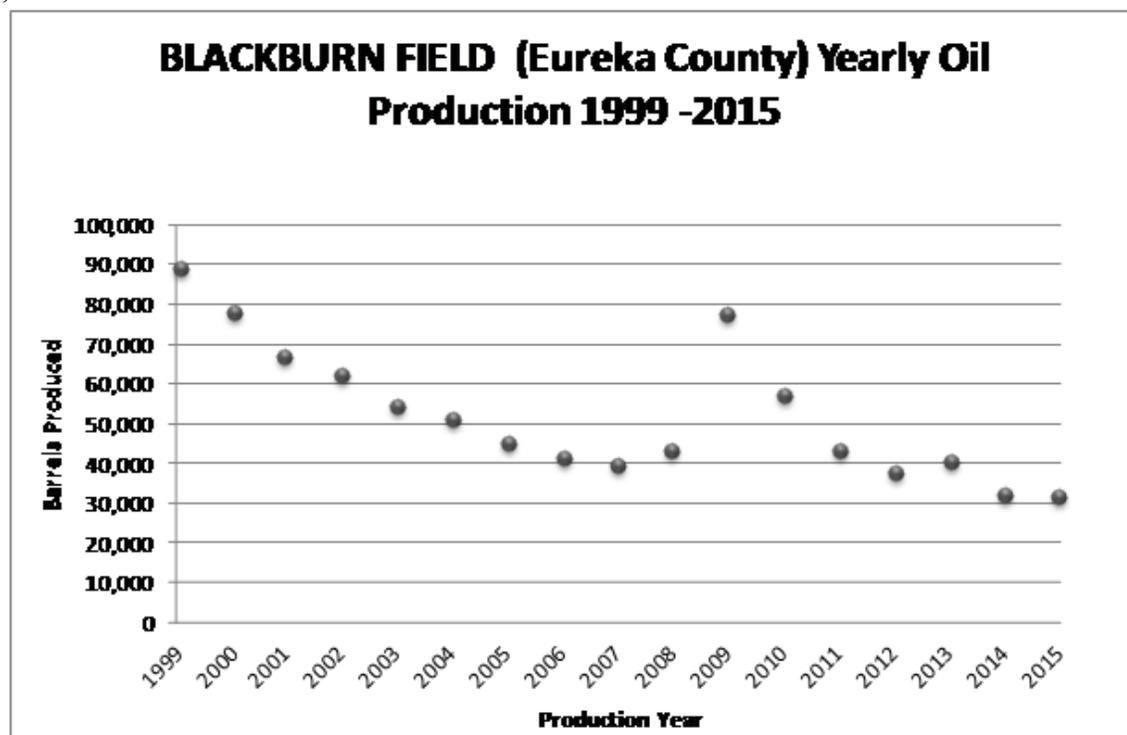
3.5.2. Environmental Effects

Implementation of the Proposed Action could result in production of approximately 50 barrels of oil per day or 18,300 barrels in the first year. If an economic resource is proven, the Proposed Action would contribute to the reduction of the resource over the life of the well. Under the No Action Alternative no new impacts to geology would occur from the Proposed Action, however the productive wells associated with Blackburn Unit would still be active.

Fluid injection either associated with routine oil and gas development and production has the potential to induce seismic activity. Nevada is the 3rd most tectonically active state in the union. Since the 1850s there have been 63 earthquakes with a magnitude greater than 5.5, the cutoff for a destructive earthquake. Geologic mapping and 2-D and 3-D seismic data can locate faults within the project boundary but current science may not be able to differentiate a “natural” earthquake in this tectonically active region as opposed to those induced by fluid injection. Any destructive earthquake has the potential to induce liquefaction in saturated soils and to cause landslides. Modern buildings in Nevada are built to code and if property owners practice earthquake preparedness, damage would be kept to a minimum.

3.5.3. Cumulative Effects

The CESA for geology is the Pine Valley basin. Below is a graph documenting well production at the Blackburn Unit on a yearly basis. The total production at Blackburn from 1999 to 2015 is 893,186 barrels.



In addition to Blackburn Unit, Wesco Operating Inc. (Wesco) has assembled a large block of leases in Pine Valley that they reference as Neptune Prospect. Wesco is planning on drilling a wildcat exploration well and filed a Notice of Staking for the Neptune 33-30 proposed well

dated September 9, 2015 that was posted in the Elko public room on December 17, 2015. The initial test well will be located in NW1/4 SeE1/4 of Section 30, Township 27 North, Range 52 East, Eureka County, Nevada. The well will be drilled to a depth of 4,000 feet or a depth sufficient to adequately test the Devonian Formation, whichever is the lesser depth. This well is in the planning stage at this time and has not been permitted by the regulatory authorities. This wildcat well is not located with the Blackburn Unit oil field and is not anticipated to have any communication or impact on the reservoir associated with the Blackburn Federal #22 well. The reservoir limits of the Blackburn oil field were approved by the Nevada State office and are delineated by the boundary of the Blackburn Unit Participating area boundary. Long-term cumulative impacts to geology are anticipated. Fluid injection induced seismicity is a very low but real possibility that cannot accurately be quantified.

3.6. Hazardous and Solid Wastes

Solid and hazardous materials are substances that present a danger to public health and safety and the environment based on quantity, concentration, and characteristic. Solid and hazardous materials are governed by the US EPA Resource Conservation and Recovery Act of 1976 (RCRA). The objective of RCRA is to protect human health and the environment. Solid waste is defined as any garbage or refuse. Solid waste can include both hazardous and nonhazardous waste. A waste is considered hazardous if it is ignitable, corrosive, reactive, or toxic. Regulations promulgated pursuant to 40 CFR Parts 260-299 Subtitle C establish a “cradle-to-grave” system governing hazardous waste from the point of generation to disposal. Facilities that treat, store or dispose of hazardous waste must obtain a permit from EPA or a state agency that EPA has authorized to implement the permitting program

EPA Toxic Substance Control Act (TSCA) and EPA Medical Waste Tracking Act (MWTa) provide continued regulations for waste disposal. Furthermore, BLM IM WO-93-344 and CO-97-023 require that all NEPA documents list and describe any hazardous and/or extremely hazardous materials that would be produced, used, stored, transported, or disposed as a result of a proposed project.

3.6.1. Affected Environment

Hazardous and solid wastes are not a part of the natural environment, but could be introduced into the environment from implementation of the Proposed Action.

At the existing wells for the Blackburn Unit, a combination of crude oil and water flows under formation pressure and/or is pumped from the production wells, is treated with emulsion breaker (Emulsotron) and scale treatment (Gyptron) at the wellheads, and is transferred through a series of belowground conveyance pipelines to a location proximal to the tank battery. There, the oil/water mixture is separated using knockout tanks and pretreatment units (Tank IDs T1 – T4), a process that reduces the water content to approximately 2% or less. The separated water is transferred to a series of aboveground storage tanks (ASTs) that are located within the tank battery containment (Tank IDs W1 – W5). The water is then pumped to Blackburn Well #12, where it is injected back into the formation pursuant to underground injection control permit # UNEV96200.

The separated crude oil is pumped into the ASTs at the tank battery, each of which has a capacity of 300 barrels (12,600 gallons). Earthen berms act as containment devices for the ASTs. Crude

oil is transferred from the ASTs to tanker trucks by a series of LACT valves, which are located on the east side of the tank battery. The crude oil is then trucked to a refinery located in Utah.

Table 3.10. Existing Oil Containers Subject to SPCC

Tank No.	Capacity	Product Stored	Location
T1 – Main Treater	7,500 gal	Oil/water emulsion	Northwest portion of facility
T2 – Test Treater	2,000 gal	Oil/water emulsion	Northwest portion of facility
T3 – Gas Buster	2,000 gal	Oil/water emulsion	Northwest portion of facility
T4 – Recycle Treater	2,000 gal	Oil/water emulsion	Northwest portion of facility
P1 – Production	300 bbl (12,600 gal)	Crude Oil	Tank Battery
P2 – Production	300 bbl (12,600 gal)	Crude Oil	Tank Battery
P3 – Production	300 bbl (12,600 gal)	Crude Oil	Tank Battery
P4 – Production	300 bbl (12,600 gal)	Crude Oil	Tank Battery
P5 – Production	300 bbl (12,600 gal)	Crude Oil	Tank Battery
W1 – Water Tank	400 bbl (16,800 gal)	Separated water/brine	Northeast portion of facility
W2 – Water Tank	400 bbl (16,800 gal)	Separated water/brine	Northeast portion of facility
W3 – Water Tank	400 bbl (16,800 gal)	Separated water/brine	Northeast portion of facility
W4 – Water Tank	400 bbl (16,800 gal)	Separated water/brine	Northeast portion of facility
W5 – Water Tank	3,000 bbl (126,000 gal)	Separated water/brine	Northeast portion of facility
A1 – Emulsion Breaker	130 gal	Emulsotron XA-1169	Northwest portion of facility
A2 – Scale Treatment	130 gal	Gypton T-106	Northwest portion of facility
Drums	165 gal (55-gal x 3)	Gypton T-106	Northwest portion of facility

3.6.2. Environmental Effects

A variety of wastes would be generated during drilling, well completion, and post-completion operations. Hazardous materials would also be used on site. These wastes and hazardous materials are described below.

During drilling operations, drill cuttings from the well bore and drilling fluids would be generated. Drilling muds may contain small concentrations of a variety of contaminants, including mercury, cadmium, arsenic, and hydrocarbons, which could adversely affect soil and water resources if released into the environment. Drill cuttings from the well bore are exempt from regulation under Subtitle C of RCRA but are still subject to other portions of the Rule.

A variety of materials typical of oil and gas development could be at the site during construction and operations including lubricants, diesel fuel, gasoline, solvents, and hydraulic fluids. Hazardous materials which may be found at the site may include drilling mud and cementing products that are primarily inhalation hazards and materials that may be necessary for well completion/stimulation such as flammable or combustible substances and acids/gels (corrosives). Hazardous materials stored on site could adversely affect soil and water resources if released to the environment; however, no hazardous substances or wastes would be stored on the location after completion of a well. All hazardous substances brought to the location would have a Safety Data Sheet (SDS) and would be properly handled so as to not cause harm to the environment or human health.

Other solid wastes associated with drilling and well completion would include human waste and trash. Portable, self-contained chemical toilets at worksites would be used for human waste disposal, and would be pumped and the contents hauled away for disposal at an approved sewage disposal facility on a timely basis. All garbage and non-flammable waste material would be disposed of at an approved, off-site facility.

Produced water and oil would be stored on-site in tanks until it would be removed by truck. Produced water is typically high in salinity and typically contains some petroleum hydrocarbons and benzene, toluene, ethylbenzene, and xylenes (BTEX) constituents. The aboveground tanks would remain on site for the life of the well. Long-term, undetected leaks from tank batteries are a potential source of groundwater contamination. Corrosion of steel tanks over the long term is quite likely. The high salt content of the produced water could very likely contribute to this process. Potential releases of produced water could occur from tanking, piping, and transport trucks. This could be the result of an accident, or tank/piping failure; however, all tanks and processing equipment would be surrounded by secondary containment adequate to retain at least 100 % of the volume of the largest tank plus the volume of a 24-hour rainfall as determined by a 25-year storm event. Implementation of the Spill Prevention Control and Countermeasure (SPCC) Plan and compliance with the conditions and provisions in the plan combined with the design features of the Proposed Action would negate potential impacts.

Under the No Action Alternative there would be no additional impacts associated with hazardous or solid wastes. Waste would still be accrued from current operations of the other productive wells within the Blackburn Unit.

3.6.3. Conditions of Approval

Grant Canyon will modify their existing SPCC Plan to include the Proposed Action.

3.6.4. Cumulative Effects

The CESA for hazardous wastes is Eureka County. Cumulative effects would be from industrial development, mines, oil and gas exploration, and utility projects. Since the Proposed Action consists of only one well pad the amount of hazardous waste potentially delivered to the refinery in Utah would be relatively small compared to other projects resulting in a small incremental contribution. Through implementation of industry BMPs (i.e., proper disposal of drill cuttings, produced water, solid wastes, etc.) and a SPCC, cumulative effects are not anticipated from the Proposed Action.

3.7. Hydrology

3.7.1. Affected Environment

The Project Area is located within the Pine Valley Hydrographic Area (Area 53) of the Humboldt River Hydrographic Basin (Basin 04) in addition to the Middle Pine Creek watershed (HUC 1604010403). The basin consists of approximately 16,843 square miles and contains the largest river (Humboldt River) wholly contained within Nevada. This basin contains 34 hydrographic areas and one hydrographic sub-area, and is one of only two that are wholly contained within the State of Nevada. It originates in the Ruby, Jarbidge, Independence, and East Humboldt Mountain ranges (Elko County) and terminates in the Humboldt Lake and Sink (Pershing and Churchill counties). During particularly wet years, the Humboldt Sink may drain into the Carson Sink by means of the Humboldt Slough.

There are ten Areas located in Eureka County within the Humboldt River Basin. Eight of the Areas are designated groundwater basins (see Table 3.11, "Humboldt River Basin Sub-areas in

Eureka County” below). Designated groundwater basins are basins where permitted ground water rights approach or exceed the estimated average annual recharge and the water resources are being depleted or require additional administration. Under such conditions, a state's water officials will so designate a groundwater basin and, in the interest of public welfare, declare preferred uses (e.g., municipal and industrial, domestic, agriculture, etc.). The Nevada State Engineer, Division of Water Resources, Department of Conservation and Natural Resources (DWR) is authorized by statute (Nevada Revised Statute 534.120) and directed to designate a groundwater basin and declare preferred uses within such designated basin. The State Engineer has additional authority in the administration of the water resources within a designated groundwater basin.

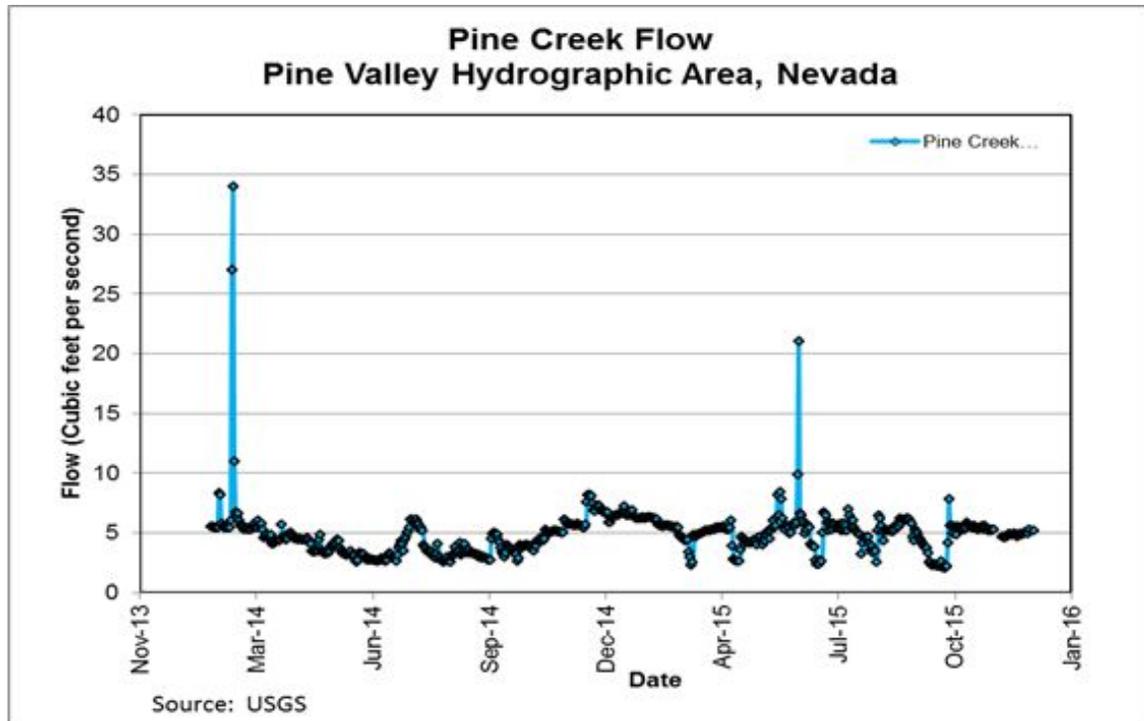
Table 3.11. Humboldt River Basin Sub-areas in Eureka County

Sub-Area Number	Size (sq mi)	Hydrographic Area/ Sub-Area name	Nearest City	Designated Groundwater Basin
49	314	Elko Segment	Elko	Yes
50	223	Susie Creek Area	Carlin	Yes
51	396	Maggie Creek Area	Carlin	Yes
52	61	Marys Creek Area	Palisade, Carlin	Yes
53	1,002	Pine Valley	Carlin	Yes
54	752	Crescent Valley	Beowawe, Crescent Valley	Yes
59	588	Lower Reese River Valley	Austin, Ione	No
60	94	Whirlwind Valley	Beowawe, Dunphy	Yes
61	544	Boulder Flat	Beowawe, Battle Mountain	Yes
62	444	Rock Creek Valley	Battle Mountain	No

Based on DWR records for the Pine Valley Hydrographic Area, there are 16,478 acre feet annually (AFA) permitted from underground sources and 8,815 AFA permitted from surface sources. Manner of use for underground sources consist primarily of irrigation but also includes mining and milling, stockwater, and quasi-municipal uses. Surface water use consists primarily of stockwater but also includes mining and milling, and irrigation uses.

The Pine Valley Hydrographic Area drains from south to north. It is bounded on the south by the Simpson Park, Roberts, and Sulfur Springs mountain ranges, on the west by the Cortez Mountains, and the east by the Sulfur Springs and Pinion mountain ranges. The arterial drainage of the hydrographic area is the Pine Creek, the lower portions of which are perennial. Pine Creek flows through the topographic low of the Pine Valley toward the north where it empties into the Humboldt River approximately nine miles southwest of Carlin, Nevada.

The USGS maintains a stream gauge on Pine Creek located at Modarelli Mine Road near Hay Ranch, Nevada. Mean daily flows over the period of record (2014 through 2015) are provided in the graph below.



The nearest surface water to the Project Area is Edwards Creek, which is an ephemeral tributary to Pine Creek fed primarily by a seasonal runoff.

The State of Nevada has completed some analyses of water quality which apply to the Project Area. The Clean Water Act of 1972 (CWA) requires that all states conduct a comprehensive analysis of water quality data associated with surface waters every two years to determine whether state surface water quality standards are being met and designated uses are being supported. The NDEP-Bureau of Water Quality Planning (BWQP), with oversight from the EPA, implements the CWA in Nevada. According to the 2012 water quality assessment for Nevada, the beneficial uses for the Humboldt River are aquatic life, industrial supply, irrigation, municipal, and domestic supply, propagation of wildlife, contact and non-contact recreation, and watering of livestock (NDEP, 2013).

In 2012 Pine Creek was reported as an impaired waterbody from its confluence with Dry Creek to its confluence with the Humboldt River. Causes of impairment included elevated levels of total phosphorous and total dissolved solids. There is currently no total maximum daily load (TMDL) specified for Pine Creek.

Based on precipitation normals (1981 through 2010) from the Pine Valley Carlin 20S weather station operated by the National Climatic Data Center (NCDC), the mean annual precipitation is 10.59 inches. A minimum mean monthly precipitation of 0.44 inches occurs in August and a maximum of 1.3 inches occurs in May. Typical precipitation events do not result in runoff due low soil moisture conditions. When precipitation volume and intensity are such that soil moisture capacity is reached (resulting in runoff), surface flows through the proposed Project Area are limited due to a low topographic gradient and well defined natural drainage channels located up gradient of the proposed project.

Precipitation generally percolates into the vadose zone or flows across land surface as sheet flow. Storm flows generally follow topography and flow to the west where they eventually concentrate into natural drainage channels. Stormwater runoff typically infiltrates into the ground or evaporates prior to reaching Pine Creek but can reach the creek during high precipitation events.

A 100-year floodplain is defined by the Federal Emergency Management Agency (FEMA) as the area adjacent to a watercourse that has a 1 % chance of becoming wet in any single year (FEMA, 1992). A 100-year floodplain has not been delineated for this area.

According to available data in the well log database with the Nevada State Engineer, groundwater was found at a depth of 47 feet below ground surface (bgs) in 1997 and 25 feet bgs in 1998. Groundwater flow direction at the site is estimated to be generally towards the west-northwest. Groundwater below the proposed project area occurs within Quaternary age basin-fill deposits such as glacial outwash (e.g. silt, sand, gravel, and boulders).

Source water will be used as drilling make-up fluid to mix with drilling mud, and for well pad construction compaction and dust abatement as necessary.

The source water for construction activities will be water that is separated from produced oil at the Blackburn Field central tank battery; oil is produced from existing oil production wells located in the Devonian Guilmette Formation from an approximate depth of 7,300 feet below ground surface; the source water is pumped to the surface as an emulsion with the produced oil, and is separated from the oil at existing facilities located proximal to the Project Area.

A review of the DWR well log database indicates there are no water supply wells within a one-mile radius of the Project Area boundary however, there are six dry holes, one water disposal well, one gas injection well, and six producing wells within the one-mile Project Area radius. These existing wells are identified on Figure 1.

3.7.2. Environmental Effects

Potential impacts of Proposed Action to Edwards Creek and/or Pine Creek may include erosion and sedimentation from disturbed areas. Erosion and deposition are naturally occurring processes in the watershed and the Proposed Action would contribute a small amount to these affects.

Potential impacts to groundwater from industrial activity may include introduction of contaminants to the aquifer during drilling or well construction activities. Estimated water required for the Proposed Action is summarized in Table 3.12, “Estimated Water Required”. Because the source water is not being produced from an aquifer, impacts to area groundwater levels are not anticipated.

Table 3.12. Estimated Water Required

Activity	Barrels	Gallons
Drilling	10,000	420,000
Completion	20,000	840,000
Dust Control	12,000	504,000
Total	42,000	1,764,000

Under the No Action Alternative there would be no additional impacts to surface water, groundwater, or wetlands/riparian/floodplains required for operation of the Blackburn Unit than already utilized.

3.7.3. Conditions of Approval

Erosion from well pads and other disturbed areas would be prevented through BMPs used for stormwater and sediment control. Fugitive dust will be mitigated through application of water when necessary and use of a temporary source water conveyance line to minimize vehicular traffic. Soil and surface water contamination by spills and leaks would be prevented through the use of containment berms where necessary, and compliance with the existing site SPCC Plan, in addition to utilization of the temporary source water conveyance line.

Groundwater contamination during drilling and well construction activities would be mitigated through the use of drill fluid management and well construction best management practices. Contamination is also mitigated by limited connectivity between area aquifers (BLM, 2015).

3.7.4. Cumulative Effects

The CESA is Pine Valley. The Proposed Action will use approximately 1.8 million gallons of water. The required water is available from existing site operations and no new aquifer or surface water use is proposed.

Barrick Gold Exploration, Inc. conducted recent groundwater studies in the Pine Valley in support of their Horse Canyon/Cortez Unified Exploration Project (HC/CUEP) EA. The EA concludes that there is limited hydraulic connectivity between the two principal hydrogeological units (basin fill unit and the carbonate bedrock lower plate unit) in the area. The EA also states that limited connectivity between aquifers minimizes the potential for contamination by drilling fluids (BLM, 2015).

The Proposed Action is located approximately 20 miles northeast the HC/CUEP. The water source for the proposed action will come from formation water located at an approximate elevation of 1990 feet below mean sea level from an oil bearing formation. It is not anticipated that the HC/CUEP will have any impacts on the Proposed Action. In addition, the proposed action will not use groundwater as a water supply source. There are no cumulative affects to groundwater anticipated.

The impact of the Proposed Action on this resource is very small (*de minimus*) combined with existing uses, cumulative impacts are anticipated to be minimal.

3.8. Livestock Grazing / Rangeland Health

3.8.1. Affected Environment

There are two BLM grazing allotments that coincide with the Project Area: Mineral Hill and South Buckhorn. The allotment boundaries are included on Figure 1. Animal Unit Month (AUM) is the amount of forage needed to sustain one cow, five sheep, or five goats for a month with daily forage consumption of 26 pounds of dry matter.

Table 3.13. Grazing Allotments

Allotment	Number	Permitted Active AUM	BLM (Acres)	Private (Acres)
Mineral Hill	05439	1,555	24,907	1,039
South Buckhorn	05465	19,094	222,822	73,491

3.8.2. Environmental Effects

The construction phase of Proposed Action would take place during a period when cattle are expected to be present on the grazing allotments; the facilities constructed and associated activities would then persist year round for the life of the well if found to be productive. Increased vehicle traffic could raise the risk of injury or death to grazing cattle in the area, and potentially startle and scatter livestock; to address this risk there would be a speed limit of 20 miles per hour (mph) implement. Therefore, effects to livestock would be negligible.

A potential maximum of 2.7 acres of surface land within grazing allotments is identified for construction of the well pad, associated pipeline, and access routes. The effects on forage grasses and other herbaceous vegetation in this area are expected to minimal. The surface distribution of approximately 2.7 acres is not going to have any substantive impact on the number of AUMs due to the minimal amount of dry forage available on the 2.7 acres and the fact that the disturbance area is in the middle of the existing oil field where livestock do not graze due to access conflicts with existing roads, fences, wells, pipelines, and production facilities. After construction, disturbed areas would be reseeded to provide new forage for livestock.

Considering the location of the Blackburn Unit within the two grazing allotments, under the No Action Alternative, current impacts to grazing and rangeland resources would continue as current levels.

3.8.3. Cumulative Effects

The combination of all past, present and reasonable foreseeable future actions with the above mentioned conditions of approval, there are no direct or indirect impacts, therefore there is no need to analyze cumulative effects.

3.9. Migratory Birds

The Migratory Bird Treaty Act (MBTA) of 1918, as amended, implements treaties for the protection of migratory birds. EO 13186, issued in 2001, directed actions that would further implement the MBTA. As required by MBTA and EO 13186, BLM signed a MOU with the USFWS in April 2010, which is intended to strengthen migratory bird conservation efforts by identifying and implementing strategies to promote conservation and reduce or eliminate adverse effects to migratory birds.

The USFWS has primary responsibility for administering the MBTA, which prohibits taking, killing, or possessing migratory birds, their parts (feathers, talons), nests or eggs. EO 13186 directed federal agencies to avoid take under the MBTA, whether intentional or unintentional, and implementing conservation measures to restore and enhance habitat for migratory birds, including the development of surface operating standards for oil and gas developments, management of

invasive species to benefit migratory birds, minimizing/preventing pollution, or detrimental alteration of habitats utilized by migratory birds, among other commitments.

The area was assessed by the Nevada Department of Wildlife (NDOW) to determine the potential occurrence of wildlife based on resource databases and other available information. The project could potentially impact many bird species that are under the protection of the MBTA and the Bald and Golden Eagle Protection Act (BGEPA). Twelve species listed as Birds of Conservation Concern (BCC) are listed in Table 3.14, “Great Basin Region 9 Birds of Conservation Concern” below that have the potential to occur within the Project Area based on their known distribution and habitat associations in the Great Basin Region 9.

Table 3.14. Great Basin Region 9 Birds of Conservation Concern

Common Name Scientific Name	Habitat	BCR Trend	Local Trend
Bald eagle <i>Haliaeetus leucocephalus</i>	Forested areas adjacent to large bodies of water. Winter foraging includes big game winter ranges	Increasing	No data
Ferruginous hawk <i>Buteo regalis</i>	Nests in isolated trees, rock outcrops, artificial structures, and ground near prey base.	No Trend	Insufficient Data
Golden eagle <i>Aquila chrysaetos</i>	Nest on open cliffs and in canyons or in tall trees (cottonwoods) in open country and riparian zones.	No Trend	Insufficient Data
Long-billed curlew <i>Numenius americanus</i>	Nests in grassy areas close to marshes but also dry upland areas, alkali flats.	No Trend	Insufficient Data
Lewis' Woodpecker <i>Melanerpes lewis</i>	Often associated with burned pine forests, pinyon pine and juniper woodlands	No Trend	Insufficient Data
Willow Flycatcher <i>Empidonax traillii</i>	Moist, shrubby areas often with standing or running water, including streams in broad valleys	Declining	Insufficient Data
Loggerhead shrike <i>Lanius ludovicianus</i>	Present in desert shrublands, juniper woodlands; hunts over bare ground or short vegetation.	No Trend	Declining
Pinyon jay <i>Gymnorhinus cyanocephalus</i>	Pinyon-juniper woodland most but also in sagebrush and scrub oak in foothills and mid elevations	Declining	Declining
Sage thrasher <i>Oreoscoptes montanus</i>	Valleys, foothills, mesas in big sagebrush shrublands; nests in shrub or ground beneath shrub.	No Trend	Declining
Green-tailed towhee <i>Pipilo chlorurus</i>	Open pinyon-juniper woodlands with shrub-dominated under stories, primarily sagebrush	No Trend	Insufficient Data

Common Name	Habitat	BCR Trend	Local Trend
Scientific Name Brewer's sparrow <i>Spizella breweri</i>	Closely associated with big sagebrush shrublands; nests in sagebrush, forages on ground.	No Trend	Declining
Sage sparrow <i>Amphispiza belli</i>	Close associate of big sagebrush shrublands; nests in shrub close to ground, forages on ground.	No Trend	No Trend

3.9.1. Environmental Effects

The USFWS has primary responsibility for administering the MBTA, which prohibits taking, killing, or possessing migratory birds, their parts (feathers, talons), nests or eggs. EO 13186 directed federal agencies to avoid take under the MBTA, whether intentional or unintentional (with BCC as priorities), and implementing conservation measures to restore and enhance habitat for migratory birds, including the development of surface operating standards for oil and gas developments, management of invasive species to benefit migratory birds, minimizing/preventing pollution, or detrimental alteration of habitats utilized by migratory birds, among other commitments.

Effects to migratory birds could result from one or more of the following:

- Removal of nesting and foraging habitat during the core nesting season (March 1 – July 31);
- Potential mortality from displacement into areas already at carrying capacity;
- Active nest abandonment and nestling mortality resulting from disturbances (noise, human activity);
- Permanent loss of shrub cover reducing nesting cover and substrate for birds;
- Degradation of nesting habitats due to invasive and noxious weed infestations that could alter native vegetation cover and plant species composition.
- Collisions with project vehicles along project access roads as well as highways leading to the area; and
- Poisoning resulting from the ingestion of toxic chemicals.

Construction activities and other disturbances (i.e. noise, etc) during nesting season could result in abandonment of active nests.

Under the No Action Alternative, there would be no change from the Proposed Action to habitats used for nesting and shelter by birds of conservation concern and other migratory birds within the Project Area. No potential take of migratory birds, eggs, or nests or displacement of birds from otherwise suitable nesting habitats due to noise and human activities caused by the Proposed Action would occur. Consequently, activities and noise associated with operation of current oil producing wells would remain the same.

3.9.2. Conditions of Approval

If construction activities are to occur during migratory bird nesting season, March 1 to July 31, a qualified biologist will conduct a migratory bird survey prior to land clearing. Under the MBTA, nests with eggs or young of migratory birds may not be harmed, nor may migratory birds be killed. If nests are located, or if other evidence of nesting (i.e., mated pairs, territorial defense, carrying nesting material, transporting food) is observed, a protective buffer should be delineated and the entire area avoided to prevent destruction or disturbance to nests until they are no longer active. BLM will determine the protective buffers. Additional BMPs will include perching deterrents on tall structures, capped open pipes, screened exhaust pipes, noise reduction measures, mufflers on equipment, and buffers/baffles around noise makers. Baffling including hay bales, pre-fab shielding, etc will be erected at least on the south side of activities to reduce noise in the direction of sage-grouse priority habitat.

3.9.3. Cumulative Effects

The CESA for migratory birds encompasses 641,280 acres. No direct or indirect impacts would occur to migratory birds outside of this CESA boundary. The surface disturbance associated with the 2.7 acres of project disturbance is less than a fraction of a percent (4.2×10^{-6}). When this is combined to the past and present proposed actions is estimated to be less than 5 percent of the CESA.

Migratory birds (primarily passerine species plus waterfowl and shorebirds) are generally protected and/or avoided for any activities on public land but may not be protected for actions on private land. Past, present, and reasonably foreseeable activities within the CESA that could affect nesting habitats for migratory birds include: wildland fire, livestock grazing, noxious weed proliferation, oil and gas exploration, dispersed recreation (i.e., hunting, camping, etc.), and off-highway vehicle use. Impacts to migratory birds have or would result from the following: 1) destruction of habitat associated with road building; 2) disruption from human presence or noise such as construction equipment, four wheel drive pickups or OHVs; or 3) direct impacts/harm to migratory birds that would result if ground nests were destroyed by construction, ranching equipment or trampling by cattle. There are no specific data that quantify impacts to migratory birds as a result of grazing or recreation. However, impacts to migratory birds from recreation activities would include destruction of native vegetation or nesting areas from off road vehicles that traveled off of established roadways. Impacts to migratory birds from grazing include trampling and consumption of vegetation of nesting areas near streams, springs, or riparian areas. Impacts from wildland fire would include total destruction of the existing habitat and potential alteration of the habitat thereafter.

Cumulative impacts to migratory birds and their habitat from the Proposed Action would be mainly the removal of vegetation, or destruction of habitat, and noise. Regional data for three BBC that are sagebrush obligate species indicate their populations are declining. Cumulative effects of the Proposed Action and reasonably foreseeable actions, would contribute minimally to habitat loss and/or alteration with little affect to populations of sagebrush obligate species.

3.10. Native American Concerns

3.10.1. Affected Environment

The project area is within the traditional territory of the Western Shoshone Indians, a group made up of numerous tribes and bands located throughout northern, central and southern Nevada. The project is located in an area of concern specifically to the Te-Moak Tribe and associated bands, the Duckwater, Yomba and Ely Shoshone tribes, and the Confederated Tribes of the Goshute Reservation and the Paiute-Shoshone Tribe of the Duck Valley reservation. The resources of concern to tribal communities are those generally associated with the cultural, spiritual and religious practices and beliefs of the community, as well as plants, animals, water and view sheds associated with traditional beliefs and contemporary use. A wide-range of resources has been cataloged through historic records, oral histories and contemporary testimony. Places of use can be large areas such as landscapes and view sheds; discrete sacred sites and places for religious practices; gathering areas for social events or plant gathering; natural resource sites for gathering medicinal and spiritual materials such as clay or stone; and places that show no human impact but are often used as trails or camping locations.

The NHPA and NEPA mandated tribal consultation and information sharing has occurred.

3.10.2. Environmental Effects

The BLM has undertaken Consultation and information sharing with the appropriate Tribal and Band governments as per the NHPA, NEPA, EO 13007 and other laws, Executive Orders and regulations. To date no tribal community or tribal members have responded to BLM efforts. Table 4.1, “Consultations” lists BLMs efforts to consult with and share information with the appropriate tribal communities. Consultation and information sharing will be ongoing for the life of the project.

The Proposed Action is within an operating oil field and would avoid areas of direct concern to the Western Shoshone.

Indirect effects may include an on-going heightened awareness, and therefore a possible impact on resources of concern within the Project Area after the termination of the Project.

Under the No Action Alternative, there would be no new effects to resources of Native American Concerns in the Project Area.

3.10.3. Conditions of Approval

The following BMPs to reduce potential effects to Native American Concerns include: Grant Canyon shall not disturb, alter, injure or destroy any NRHP eligible and/or scientifically important historic or archaeological site, structure, building, object or artifact within the Project Area. Grant Canyon shall be responsible for ensuring that its employees, contractors or any others associated with the Proposed Action do not collect artifacts, or damage or vandalize archaeological, historical or paleontological sites or the artifacts within them.

Under the No Action Alternative, there would be no effects to Native American Concerns in the Project Area. Effects to Native American Concerns would be continued natural environmental changes and resultant decay to organic elements and displacement of surface materials.

3.10.4. Cumulative Effects

The CESA is Pine Valley and the surrounding region. Sacred mountains such as Mount Tenabo, Pine Mountain, Roberts Mountain, and other regional peaks are of concern to the Tribal communities for their spiritual aspects. Increased human presence may affect resources of Native American concern in the form of greater exposure to illegal collection, vandalism, other illegal activities, and indirect effects from legal activities. Cumulative effects for Native American Concerns under the No Action Alternative would be limited to continued natural degradation. As described above, the Proposed Action would avoid items of Native American Concern. Therefore any cumulative effects would be minimal.

3.11. Noxious and Non-native Invasive Plant Species

3.11.1. Affected Environment

Noxious weeds are defined and managed in accordance with federal and state regulations. The Nevada Department of Agriculture (NDA) has responsibility for jurisdiction, management, and enforcement of the state's noxious weed law, while the Federal Noxious Weed Act provides regulation and guidance on federal lands. Species identified on Nevada's noxious weed list shall be controlled on both private and public lands. Additionally, under Invasive Species Executive Order 13112, it is the policy of the land management agencies to prevent introduction of noxious weeds, invasive and non-native species, and to control their impact. Elko District BLM is actively engaged with federal, state, and local partners and working groups to help control and minimize weed infestations through integrated pest management.

There are 47 noxious weed species included on Nevada's list of which 30 species are designated as Category A, nine species are Category B, and eight species are Category C weeds as defined under the Nevada Revised Statutes (NRS) (NRS Chapter 555 – Control of Insects, Pests and Noxious Weeds). Category A weeds include species that are not found or are limited in distribution within Nevada that must be eradicated. Successful treatment options generally exist for these species. Category B weeds are species that may be abundant in localized areas but generally are not well established in Nevada. Reasonable treatment options for these species exist and are generally required to be treated where possible, especially in areas where populations are not well established or previously unknown to occur. Category C weeds are generally widespread and established in many counties of the state, and treatment is done at the discretion of the state quarantine officer.

Noxious weeds and other non-native, invasive species occurring within the Project Area include cheatgrass and halogeton.

3.11.2. Environmental Effects

The Proposed Action could affect abundance and diversity of invasive non-native species and noxious weeds through one or more of the following:

- Clearing native vegetation and exposing bare ground surfaces;
- Introduction and translocation of weeds from established infestations to newly cleared ground by personnel vehicles and construction equipment; and
- Facilitating competition between weeds and native plants though adversely affecting native plant vigor and reproduction through dust deposition along roadsides.

Clearing vegetation and exposing bare ground surfaces, especially within closed canopy greasewood communities, allows invasive species, particularly annuals, to become established. The Proposed Action would clear approximately 2.7 acres of vegetation. Surface disturbance that would be revegetated within one growing season of construction would be less likely to be infested by weeds than if left as exposed soil for longer periods.

Surface disturbance, increased vehicle traffic, equipment placement and operation, foot traffic, and other activities associated with the Proposed Action could increase the distributions of established weed species and/or introduce new invasive species into areas that are not currently infested.

Under the No Action Alternative, impacts from invasive non-native species and noxious weeds associated with the Proposed Action would not occur. However, invasive species would continue to be found in the Project Area.

3.11.3. Conditions of Approval

Grant Canyon would revegetate/reclaim disturbance resulting from construction within one growing season after completion to minimize the potential for disturbed areas to be infested with invasive and noxious weeds. Revegetation will minimize the abundance, establishment and spread of invasive, non-native species by minimizing bare ground susceptible to invasion, ongoing monitoring, and timely treatment. All restoration/reclamation and road maintenance materials (i.e. seed and gravel) shall be certified weed free according to the Nevada Department of Agriculture and Federal Seed Act regulations. The spread of invasive species such as cheatgrass is expected to continue.

Project site shall be reclaimed according to revegetation standards appropriate to the ecological site, in coordination with the Restoration & Monitoring Coordinator. Weeds that interfere with achieving reclamation standards shall be treated, including non-native invasive species, in coordination with the District Weed Specialist. Treatments shall be performed by Grant Canyon via a Nevada licensed applicator and pesticide application records (PARs) shall be submitted in accordance with BLM standards.

Additional BMPs include: all vehicles, heavy/construction equipment, and transport trailers shall be cleaned of mud, dirt, and plant parts with high-pressure water spray prior to entering the project area to minimize new introductions. Cleaning efforts shall concentrate on tracks, feet, or tires, and the undercarriage, with special emphasis on axles, frames, running boards, and front bumper/brush guard assemblies. Access routes to the project site shall be monitored and treated to prevent weed establishment and spread."

Location reclamation would occur after the well abandonment. The location will be re-contoured and seeded using a seed mixture prescribed by the Elko BLM. The reclamation seeding mixture will include and comprise of inland saltgrass (5lbs/acre), basin wildrye (2lbs/acre), bottle brush squirreltail (2.5lbs/acre) and shadescale (1lb/acre).

If the well is productive the pad will not be reduced in size as the location is necessary for future access to the well for remedial well work which typically requires the use of work over drilling equipment and trucks that need access to the wellhead. Revegetation would minimize the abundance and spread of invasive, non-native species through prevention, monitoring, timely reclamation, and treatment. The spread of invasive species such as cheatgrass is expected to continue.

3.11.4. Cumulative Effects

The CESA boundary for noxious and non-native invasive plant species encompasses 641,280 acres. The surface disturbance associated with the 2.7 acres of project disturbance is less than a fraction of a percent (4.2×10^{-6}). When this is combined to the past and present proposed actions is estimated to be less than 5 percent of the CESA. The Proposed Action, combined with past, present, and reasonably foreseeable surface disturbance, has the potential to create long-term conditions for the establishment/invasion of non-native invasive species and noxious species. Disturbed sites and recently seeded areas are candidates for invasion by undesirable species. Due to the minimal total area of disturbed land, the cumulative effects are anticipated to be minimal.

3.12. Paleontological Resources

3.12.1. Affected Environment

Paleontological resources are the fossilized remains of invertebrate and vertebrate animals and plants, including casts and molds. This resource constitutes a fragile and nonrenewable scientific record of the history of life on earth. Once damaged, or improperly collected or recorded, their scientific value is greatly reduced or lost forever.

The BLM has adopted the Potential Fossil Yield Classification (PFYC) system to identify and classify fossil resources on federal lands. Paleontological resources depict a moment in geologic time that is definitively associated to the geologic strata that contain them. One might expect to find certain fossils of a specific age within appropriate strata of the same age; conversely, some designated fossils of abundant and wide-spread distribution serve as marker fossils to provide age correlation between strata. The PFYC system is a means by which to classify geologic units based upon the relative abundance of vertebrate fossils or scientifically significant (plant and invertebrate) fossils and their sensitivity to adverse impacts. A higher class number indicates higher potential for presence. The PFYC system is not intended to be applied to specific paleontological localities nor do a few widely scattered important fossils or localities necessarily indicate a higher class rating. The PFYC rating classification is intended to provide baseline guidance for predicting, assessing and mitigating paleontological resources.

Table 3.15. PYFC Descriptions

PFYC Class	Category	Description
1	Very Low	Geologic units are not likely to contain recognizable fossil remains.
2	Low	Sedimentary geologic units that are not likely to contain vertebrate fossils or scientifically significant nonvertebrate fossils (plant and invertebrate).

PFYC Class	Category	Description
3	Moderate or Unknown	Fossiliferous sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence; or sedimentary units of unknown fossil potential.
4	High	Geologic units containing a high occurrence of significant fossils. Vertebrate fossils or scientifically significant invertebrate or plant fossils are known to occur and have been documented, but may vary in occurrence and predictability. Surface disturbing activities may adversely affect these resources.
5	Very High	Highly fossiliferous geologic units that consistently and predictably produce vertebrate fossils of scientifically significant invertebrate or plant fossils, and that are at risk of human-caused adverse impacts or natural degradation.

Fossils found in Eureka County are indicative of an Early Cambrian age found in both the shales and the limestones of the Pioche Shale; the Secret Canyon shale contains fossils of Middle Cambrian age; fossils have been found in the basal limestone beds in the Hamburg dolomite.; fossils are fairly abundant throughout the Pogonip group; and fossils indicate a late Mississippian age for the Diamond Peak Formation (Nolan).

Most of the Project Area (Class 1 to Class 2) is overlain by thick alluvium, which is deposited by streams more conducive to dispersal and disintegration of animal or plant remains than to their burial and preservation.

3.12.2. Environmental Effects

It is not anticipated that surface disturbing activities associated with the Proposed Action would unearth Quaternary fossils.

Similarly, under the No Action Alternative no direct or indirect impacts to paleontological resources would result.

3.12.3. Conditions of Approval

Should paleontological resources be discovered during any phase of the Proposed Action, Grant Canyon shall cease operations within 100 meters and notify the BLM AO.

3.12.4. Cumulative Effects

Cumulative effects to paleontological resources are not anticipated because, as described above, neither the Proposed Action nor the No Action Alternative is expected to affect paleontological resources.

3.13. Sensitive and Special Status Species

3.13.1. Affected Environment

The BLM Manual defines special status species as 1) species that are listed or proposed for listing under the Endangered Species Act (ESA), 2) species listed by a state in a threatened or endangered category implying potential endangerment or extinction, and 3) BLM sensitive species as designated by the State Director. BLM sensitive species are species that are given special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. The State of Nevada classifies wildlife species under NAC 503 as endangered, protected, sensitive, or threatened.

The USFWS identified three species listed as threatened or endangered under the ESA as occurring within Eureka County. They include Columbia spotted frog (*Rana luteiventris*), Greater sage-grouse (*Centrocercus urophasianus*), and Lahontan cutthroat trout (LCT) (*Oncorhynchus clarkia henshawi*). Columbia spotted frogs were petitioned for listing under the ESA in 1989 and populations, including those in Nevada, were found to be declining due the extensive loss and alteration of wetland habitat. After a 12-month review, the USFWS found that listing the greater sage-grouse as threatened or endangered under the ESA throughout its range was warranted but precluded by higher priority listing actions. In 2010, the USFWS indicated that listing the greater sage-grouse under the ESA will be proposed in the future but for the present the species is a candidate for listing. In 2015, the BLM as the lead agency, together with the Forest Service as a cooperating agency, prepared and signed Environmental Impact Statement (EIS) for sage-grouse conservation measures. The Project Area falls within the Nevada and Northeastern California Greater Sage-Grouse EIS. LCT, a federally listed threatened species, occur in a number of streams within the larger area in the project vicinity. There is the potential for the species to occur in the Project Area in high water years; however, due to the nature of the drainage and current impacts from grazing and drought, any occurrence would be unlikely and temporary and LCT are not analyzed further.

The NDOW identified other wildlife species in the Pine Valley basin which have been further broken down to evaluated species and probably not occurring. The NDOW delineation of sage-grouse habitat is provided in Figure 5.

Table 3.16. Special Status Species Evaluated

Common Name	State	Common Name	State
Big brown bat		Ord's kangaroo rat	
Loggerhead shrike	Sensitive	Pygmy rabbit	
Long-eared myotis		Spotted towhee	Protected
Long-legged myotis		Townsend's big-eared bat	Sensitive
Myotis (unknown)		Western small-footed myotis	

3.13.1.1. ESA Listed Species

Columbia spotted frogs were petitioned for listing under the ESA in 1989 and populations, including those in Nevada, were found to be declining due the extensive loss and alteration of wetland habitat. The USFWS (1993) found that listing the Great Basin population (and others) under the ESA was warranted but precluded by other priorities and designated the species as a

candidate. Most occupied habitats are within the Humboldt-Toiyabe National Forest, outside the Project Area. No records of occupied habitat within the Project Area were provided by the State of Nevada Department of Wildlife.

Greater sage-grouse historical habitat distribution data has been kept by NDOW. In March 2012, NDOW updated their greater sage-grouse habitat mapping to include five habitat categories. Habitats in Category 1 and 2 have the highest conservation value to maintaining sustainable greater sage-grouse populations (NDOW, 2012). NDOW has not established management directives based on their habitat categorization; they promote the habitat categories as the best available information for use in planning and decision-making by land management agencies (NDOW, 2012).

On March 15, 2012, the BLM issued a White Paper on greater sage-grouse habitat on lands managed by the BLM and the Forest Service (BLM, 2012a). The paper states that the BLM and the Forest Service will focus on two categories of greater sage-grouse habitat including Preliminary Priority Habitat (PPH) and Preliminary General Habitat (PGH). In the 2015 Sage-grouse EIS ROD PPH and PGH were identified as Priority Habitat Management Areas (PHMAs) and General Habitat Management Areas (GHMAs) to identify the management decisions that apply to those areas. The designated GRSG habitat management areas on BLM-administered lands in the decision area are as follows:

- PHMAs, which largely coincide with Priority Areas of Concern;
- GHMAs;
- Other Habitat Management Areas (OHMAs) (applicable only to the Nevada and Northeastern California); and
- Important Habitat Management Areas (IHMA) (applicable only to Idaho).

PHMAs, GHMAs, OHMAs, and IHMAs are defined below.

- PHMA—BLM-administered lands identified as having the highest habitat value for maintaining sustainable GRSG populations. The boundaries and management strategies for PHMAs are derived from and generally follow the PPH boundaries. PHMAs largely coincide with areas identified as PACs in the COT Report (except for PACs in Nevada and Utah, as specified on page 13 of the COT Report).
- GHMA—BLM-administered GRSG habitat that is occupied seasonally or year-round and is outside of PHMAs. It is where some special management would apply to sustain GRSG populations. The boundaries and management strategies for GHMAs are derived from and generally follow the PGH boundaries.
- OHMA—BLM-administered land in Nevada and Northeastern California, identified as unmapped habitat in the Proposed RMP/Final EIS, that is within the Planning Area and contains seasonal or connectivity habitat areas. With the generation of updated modeling data (Spatially Explicit Modeling of Greater Sage-Grouse Habitat in Nevada and Northeastern California; Coates et al. 2014) the areas containing characteristics of unmapped habitat were identified and are now referred to as OHMAs.

IHMA—BLM-administered land in Idaho that provides a management buffer for and that connect patches of PHMAs. IHMAs encompass areas of generally moderate to high habitat value habitat

or populations but that are not as important as PHMAs. These lands serve a critical role in the adaptive management strategy developed by the State of Idaho and adopted in the ARMPA.

Lahontan Cutthroat Trout. LCT, a federally listed threatened species, occur in a number of streams within the larger area in the project vicinity. There is the potential for the species to occur in the Project Area in high water years; however, due to the nature of the drainage and current impacts from grazing and drought, any occurrence would be unlikely and temporary, and LCT are not analyzed further.

3.13.1.2. BLM Sensitive Species

The list of BLM-Sensitive Species for Nevada is updated every 5 years and was last updated in 2011. Species are listed as sensitive within individual BLM district offices and for the entire state.

Seventeen species of bats have been designated as BLM Sensitive Species of which five occur in Eureka County (Bradley et al., 2006). Foraging land and potential roosting habitat are located within the Project Area and in the vicinity of the Project Area. The Proposed Action could adversely affect bats by disrupting bats' echolocation abilities and therefore disrupting foraging and other activities.

Pygmy rabbits are present as year-round residents in the Project Area. The USFS (2010c) reviewed a petition for listing pygmy rabbits under the ESA but determined that listing the species (outside of the Columbia Basin) was not warranted. The USFWS concluded that populations within the state appear to have expanded the known range of the species (USFWS, 2010c).

3.13.1.3. Other Sensitive Species

In addition to several bat species and pygmy rabbits, there are sensitive species that may occur in the vicinity of the Project Area including the chisel-toothed kangaroo rat, great basin pocket mouse, and loggerhead shrike. While these species have not been verified in the Project Area, they have the potential to occur in the Project Area due to present habitats, species' habitat associations, and species distributions.

Table 3.17. Sensitive Species that Could Appear in Pine Valley Basin

Common Name		
American pika	Lahontan redbird	Pallid bat
Himalayan snowcock	Long-billed curlew	Western red bat
Hoary bat		

The habitat around the Project Area is of low quality. Additionally, there are no sensitive plant species in the project area.

The BLM NSO concluded that the Proposed Action falls within the Other Habitat Management Areas (OHMA) which is open with standard stipulations, meaning a 3% disturbance cap does not need to be done. The sage-grouse habitat characterization from NDOW concurred with OHMA and is zero percent of the area included in the Proposed Action. Additionally, the BLM NSO concluded there are no leks within a four mile buffer of the Proposed Action. See Figures 6 and 7 for these delineations.

3.13.2. Environmental Effects

The Greater Sage-Grouse EIS provided a strategy to address sagebrush issues and addresses the impacts of amending all resource plans with the guidance. The Record of Decision amended the RMP to include the new management direction. These management tools are included in the Nevada and Northeastern California Greater Sage-Grouse sub-region EIS for managing uses on BLM-administered lands. Potential risks to greater sage-grouse from energy and mineral development include:

- Direct disturbance, displacement, or mortality of grouse:
- Direct loss of habitat, or loss of effective habitat through fragmentation and reduced habitat patch size and quality; and
- Cumulative landscape-level impact.

The proposed action is located within designated OHMA. NDOW habitat characterization and field visits did not identify any viable habitat at the project site. The access route goes through GHMA, but it is an existing right-of-way that will be maintained only and will not remove additional habitat.

The Proposed Action has the potential to attract raptors and corvids to the area that would effect on Special Status Species, however BMPs should alleviate this potential.

Oil exploration including pad construction, well drilling, well completion, oil production, and related activities would create noise and visual intrusion, and fragment habitat. New roads increase human access, increase human activity, fragment habitat, and increase the spread of invasive non-native species and noxious weeds. Oil exploration could potentially disturb sage-grouse during critical times such as lekking, nesting, brood rearing, and winter seasons. Specifically, energy development may impact sage-grouse in the following or more ways:

- Permanent loss of habitat due to vegetation removal and fragmentation;
- Displacement from occupied habitats (breeding, brood rearing, wintering) by human presence, traffic on nearby roads, and noise;
- Lek and nest abandonment due to disturbance by raptors and corvids perching on nearby structures; and
- Degradation of affected vegetation by invasive non-native species and noxious weeds.

Though habitat reduction is not a factor of this project, noise could have indirect impacts. Though the nearest lek is 6 miles from the project site and should have no direct or indirect impacts from the project, PHMA for nesting is only 2.7 miles from the site. Noise has the potential to cause hens to avoid the habitat nearest the site.

A baseline noise survey was not done, so attenuation into the management area is unknown.

In addition to direct effects, noise and human presence could decrease habitat functions of nesting, breeding, brood-rearing, and wintering habitats during well pad, gravel pit, road construction, drilling, and completions. During the Production/Operations Phase, pump units, generators,

heaters, and flares on well pads would generate noise when operative, and would decrease habitat effectiveness in undisturbed habitats surrounding each producing well pad.

Under the No Action Alternative, there would be no change to current conditions for Special Status Animal Species within the Project Area.

3.13.3. Conditions of Approval

A qualified biologist will be on site during construction activities. The Proposed Action does not include a fracking component, but if fracking is to be done a noise survey will be conducted to monitor noise impacts into PHMA.

3.13.4. Cumulative Effects

The CESA boundary for sensitive species is the Pine Valley basin for all species considered except the sage-grouse which has the Three Bar and Cortez PMUs as detailed in Table 3.4, “Past, Present, and Reasonably Foreseeable Future Actions”. No direct or indirect impacts would occur to the sensitive and special status species outside of this CESA boundary. Approximately 60,592.70 acres (or 9.4 percent) within the CESA have been impacted by fire. The surface disturbance associated with PPRFFAs (e.g. ROW, oil and gas, etc) is estimated to be 7,806.55 acres (excluding fires), and when combined with the 2.7 acres of surface disturbance of the Proposed Action the total is 68,401.95 acres, or 10.6 percent of the CESA.

The CESA boundary for sage-grouse encompasses the Three Bar and Cortex PMUs of approximately 1,390,957.49 acres (see Table 3.4, “Past, Present, and Reasonably Foreseeable Future Actions”). No direct or indirect impacts would occur to sage-grouse outside of this CESA boundary. Approximately 262,358.34 acres within the CESA were impacted by fire, or 18.8 percent of the CESA. The surface disturbance associated with PPRFFAs (e.g. ROW, oil and gas, etc) is estimated to be 44,516.32 acres (excluding fires), and when combined with the 2.7 acres of surface disturbance of the Proposed Action the total is 306,874.66 acres, or 22.1 percent of the CESA.

Nearly all sensitive species would be affected by the PPRFFAs (i.e., wildland fire, livestock grazing, noxious weed proliferation, oil and gas exploration, dispersed recreation, OHV use, etc.) unless effects are avoided or mitigated. Cumulative effects to Special Status Species would be limited and minimal.

3.14. Socioeconomics

3.14.1. Affected Environment

The Project Area is located in central Eureka County. Eureka County has a total land area of 4,180 square miles and as of the 2013 census, a population of 2,076. The unemployment rate in 2015 was 6.8%. Eureka is the county seat and located south of the Project Area. Mining jobs continue to surpass all other jobs combined in Eureka County. Employment rates and population levels are highly correlated to the mining business. Eureka County has more jobs than workers and therefore has many workers traveling from another county to Eureka County to work in the gold and oil industries.

Table 3.18. Population Estimates and Growth Rates

Year	Population		Average Annual Growth Rate Percentage	
	Nevada	Eureka County	Nevada	Eureka County
1980	800,493	7,086		
1990	1,201,833	1,547	4.2	29.1
2000	1,998,257	1,651	5.2	6.7
2010	2,700,552	1,987	3.1	201.4

Additionally, the per capita personal income in Eureka County is directly tied to the success of the mining industry. The median household income in 2013 was \$64,632. Gold and silver mining is the principal economic contributor to the county with oil production the second highest economic contributor. Other sources of income for Eureka County include geothermal energy because of the county's numerous warm and hot springs, and agricultural commodities including cattle and hay.

Table 3.19. Employment by Industry

Industry	Carlin	Nevada	Carlin	Nevada
	Males (%)		Females (%)	
Mining	56	2	23	.5
Construction	13	10	17	13
Utilities	7	1	16	17
Education	5	3	10	4
Manufacturing	5	6	6	9
Food Services	4	17	5	5
Transportation	3	6	5	4

Unemployment rate was 5.1% in 2014 for Carlin (nearest city to the Project Area) compared to 7.8% for the state of Nevada.

Table 3.20. Unemployment Rates

Year	United States	Nevada	Eureka County
2000	4.0%	4.2%	3.9%
2001	4.7%	5.4%	5.0%
2002	5.8%	5.9%	4.6%
2003	6.0%	5.4%	4.6%
2004	5.5%	4.4%	3.8%
2005	5.1%	4.5%	3.9%
2006	4.6%	4.2%	3.6%
2007	4.6%	4.7%	3.4%
2008	5.8%	7.0%	4.5%
2009	9.3%	11.6%	6.5%
2010	9.7%	13.7%	7.4%
2011	8.9%	13.6%	7.0%
2012	8.1%	11.1%	6.1%
2013	7.3	9.4%	5.9%
2014	6.2	7.6%	5.1%

3.14.2. Environmental Effects

Most socioeconomic impacts depend on the size of the workforce and the construction duration (including drilling and completions) and operations (production of the well). Potential workforce requirements and socioeconomic impacts, especially those related to employment, income, and

housing, would be greatest during the construction phase. Fiscal impacts would be greatest during the operations phase. The Proposed Action would also generate indirect economic benefits to local and regional businesses through the purchase of goods and services required for the project.

Under the No Action Alternative the Proposed Action Alternative would not be developed and there would be no short-term employment gains associated with construction and no long-term employment and fiscal gains associated with field production.

3.14.3. Cumulative Effects

Actions affecting socioeconomic resources in Eureka County include gold and silver mining, oil and gas exploration and developments, geothermal resources, and agricultural. These effects would continue under the No Action Alternative. The Proposed Action would provide an additional source of government revenues to the State of Nevada and Eureka County. To the extent that construction overlapped with the construction or development of other projects in the region, upward pressure on motel rates and occupancies could occur. Beneficial cumulative effects are expected for socioeconomic resources have been identified under the Proposed Action and No Action Alternative on a minimal level.

3.15. Soils

3.15.1. Affected Environment

The Soil Survey of Eureka County Area, Nevada was used to identify and describe the soil types and characteristics within the ground disturbance area. The Soil Survey was downloaded from the Web Soil Survey from the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). The soils underlying the proposed site have been mapped completely as Tulase silt loam with 0 to 2 % slopes. Tulase silt loam consists of well-drained soils that formed in alluvium developed from mixed rocks, loess, and volcanic ash. Tulase silt loam generally has a low water erosion hazard with no frequency of flooding or ponding. The capacity of the most limiting layer to transmit water is moderately high-to-high. The soils are typically non-saline to very slightly saline, and the relative runoff potential is moderate. The soil could be prime farmland if irrigated and reclaimed of excess salts and sodium. It is important to note that the area is not currently utilized as farmland.

3.15.2. Environmental Effects

Under the Proposed Action, soils would be impacted during the construction of the 10 foot deep reserve pit, well pad, access route, the product pipeline connecting the well to the central production facility, the temporary water supply line from the production facility into the well pad for make-up water during drilling, and drilling of the proposed well. Approximately 2.7 acres of soil are anticipated to be disturbed for the Proposed Action. The soils in the disturbance area have a relatively moderate runoff potential, which could be increased during construction. During site development and construction activities, minimal and short-term soil erosion and sedimentation impacts may occur as the well and pipeline are constructed. Clearing and grading activities will require removal of the vegetative cover, disturbance to the soil surface, and compaction of the soil. The disturbed soil may be susceptible to erosion by wind and surface runoff during storm events. This condition may increase the potential for discharges of sediment-laden runoff.

Potential soil impacts include increased erosion due to clearance of local vegetation, compaction of soils from operation of heavy equipment, and disturbance of soil productivity due to grading and mixing activities. Vegetation in the area may be removed to facilitate construction of the product pipeline, water supply pipeline, reserve pit, well pad, and access route. Plant roots help hold sediment in place and the above ground vegetation helps disperse runoff in order to avoid sheet erosion. In addition, compaction of soils by heavy construction equipment reduces pore space and therefore reduces the water infiltration rate in the disturbance area. As a result, erosion is more prevalent due to increased runoff volumes. Lastly, grading and mixing of the soil could affect soil productivity due to loss of topsoil and mixture of imported non-fertile soils, which could decrease plant growth. Imported materials can also contain non-native vegetation or noxious weeds, which can compete with native vegetation for fertile soils. Leaks and spills of fuel from construction vehicles can also impede vegetative growth in the area.

3.15.3. Conditions of Approval

Potential adverse effects from erosion and/or sedimentation would be mitigated through utilization of appropriate BMPs and adherence to the terms of the site's Stormwater Pollution Prevention Plan (SWPPP). The SWPPP is required by the National Pollutant Discharge Elimination System (NPDES) general permit which was issued to the State of Nevada (Permit #NVR050000). The objective of the SWPPP is to prevent pollutants from entering stormwater that passes across the facility or from discharging polluted stormwater offsite. The EPA defines storm water as "run-off from a storm event, snow melt runoff, and surface runoff and drainage". It is expected that permit requirements would be adhered to during construction activities.

To mitigate erosion and decrease environmental effects of the Proposed Action, specific measures and BMPs will be put in place via a SWPPP. The SWPPP will address erosion control measures during site preparation, construction, and continued use. Existing vegetation will be preserved as much as possible during site preparation and during construction, and bare soil areas will need to be seeded or stabilized following construction activities. In addition, care will be taken to minimize the introduction of noxious weeds, which can travel onsite via construction vehicles and imported material that may be used to construct the access route. Lastly, designated travel routes will be indicated for construction vehicles to minimize clearance of local vegetation and minimize compaction of soils.

3.15.4. Cumulative Effects

The CESA boundary for soils is Pine Valley encompassing 641,280 acres. The surface disturbance associated with the 2.7 acres of project disturbance is less than a fraction of a percent (4.2×10^{-6}). When this is combined to the past and present proposed actions is estimated to be less than 5 percent of the CESA. Cumulative effects to soils through erosion or compaction occur as a result of natural and man-made factors. Although soils are generally negatively affected by these impacts, they have not resulted in any major or high intensity impact to soil quality on a large spatial or temporal scale within the CESA. Cumulative effects to soils are anticipated and with the implementation and adherence to the SWPPP are expected to be minimal.

3.16. Transportation and Access

3.16.1. Affected Environment

Primary access to the Project Area is via SR 278. Unimproved roads within the project area would then be used to access the project site.

The Nevada Department of Transportation (NDOT) maintains Interstate-80 and SR 278. The NDOT average daily traffic (ADT) counts on highways and roads in the vicinity of the Project Area, in most cases, have been increasing on affected roadway segments.

Table 3.21. Traffic on Highways and Roads Near Project Area

NDOT ID	Road	Segment	2010	2011	2012	2013	2014
0110036	SR 278	50ft N of County Rd to Palisade South Jct	570	510	500	500	450

The Blackburn Federal Unit Agreement's (Serial Number N-30440X) boundary originally covered a larger area which encompassed the entire existing access road. The Blackburn Unit authorized occupancy of the entire access road until the unit boundary was contracted to the Unit Participating Area (Serial Number N-3044A). A new ROW is being applied for to authorize that portion of the existing access road that is now outside the unit boundary. The segment of the existing access road starting at State Route 278 and heading towards the central production facility ending at the current unit boundary is 1.45 miles in length. The unit operator has filed ROW application using form SF 299-09b with the TFO.

3.16.2. Environmental Effects

The Proposed Action could have direct impacts on transportation in the vicinity of the Project Area by increasing traffic volumes; and have indirect impacts through increasing opportunities for vehicle collisions with wildlife, cattle, and other vehicles, and contributing to roadway deterioration and dust creation on unpaved roads.

Table 3.22. Estimated Typical Traffic

Activity	Duration (days)	Light Vehicles	Heavy Vehicles	Total
Drilling	30	4	2	6
Completion	30	4	2	6
Service	30	2	0	2
Oil Trucks	On-going	0	2	2
Dust Control	On-going	0	1	1
	Total	10	7	17

3.16.3. Cumulative Effects

Cumulative effects that could affect transportation resources include past, current, and reasonably foreseeable future mineral, energy, and other industrial development in Eureka County. These effects would continue under the No Action Alternative. As described above, the Proposed Action would have potential long-term impacts to roadways and with design features, such as dust control, adherence to speed limits, etc., cumulative effects to transportation would be minimal.

3.17. Visual Resource Management

3.17.1. Affected Environment

Visual resources are the visible physical features of a landscape that convey scenic value. Scenic values are classified according to the Visual Resource Management (VRM) system. The objectives are to minimize the visual effects of surface disturbing activities and to maintain scenic values on public lands. The BLM-administered lands within the Project Area are designated as VRM system Class IV. In Class IV areas, the level of change to the characteristic landscape can be high.

3.17.2. Environmental Effects

Visual resources would be impacted by surface disturbing activities, fugitive dust, and the presence of the Blackburn Federal #22 well within the Project Area. These activities would create impacts to visual resources on a localized scale including contrasts in line, form, color and texture, depending upon site-specific landscape characteristics. During the 24-hour per day drilling phase of the Proposed Action, rig lighting would also be evident at night. Lighting during construction would follow “dark sky” lighting practices. Such practices are designed to reduce the effects of artificial light on the natural environment, including sky glow, glare, light trespass, light clutter, and decreased visibility at night (IDSA, 2014). Utilize consistent lighting mitigation measures that follow “Dark Sky” lighting practices. Effective lighting should have screens that do not allow the bulb to shine up or out. All proposed lighting shall be located to avoid light pollution onto any adjacent lands as viewed from a distance. All lighting fixtures shall be hooded and shielded, face downward, located within soffits and directed on to the pertinent site only, and away from adjacent parcels or areas.

Surface disturbance would be the major cause of visual resource impacts. Impacts under the Proposed Action would include well pad, gravel pit, road construction and road improvements. These features would present marked breaks and changes in the texture of the vegetation and landform patterns present. Well pad surface disturbance would impact visual line and texture elements in much the same way. Production equipment will be painted covert green to reduce visual impact and reseeding will blend line elements. Cut and fill effects from roads and well pads would also introduce distinct color and texture contrasts by exposing bare soils in areas where native vegetation and top soil comprise the existing landscape color elements.

Under the No Action Alternative, there would be no impacts to visual resources in the Project Area.

3.17.3. Conditions of Approval

The COAs identified for the Proposed Action include following “Dark-sky” procedures for activities at night, and painting production equipment covert green.

3.17.4. Cumulative Effects

The CESA boundary for Visual Resources is the Pine Valley Basin (641,280 acres). The surface disturbance association with the Proposed Action is 2.7 acres, combined with the total oil field disturbance of 29.76 acres, the disturbance with PPRFFAs is 10% of the Pine Valley Basin.

Long-term visual impacts would occur under the Proposed Action. With implementation of design features and conditions of approval, cumulative impacts to visual resources are expected to be minimal.

3.18. Vegetation

3.18.1. Affected Environment

The characteristic vegetation in the Project Area typically includes several grass species dominated by cheatgrass. Other sites that have been disturbed by agriculture and ranching/livestock operations would be classified as invasive annual grasslands (Lowry et al., 2005) and, if vegetated, are dominated by greasewood, sagebrush, non-native crested wheatgrass and cheatgrass. The greasewood within the Project Area does not possess any habitat value for the sage-grouse.

Table 3.23. Vegetation Descriptions

Type	Common Name Scientific Name	Description	Coverage
Juniper	Juniper, spiny phlox (<i>Phlox hoodii</i>)	Juniper forests on rocky, barren soils with sparse bunch grasses and forbs.	Not estimated
Greasewood	Greasewood (<i>adenostoma fasciculatum</i>), basin big sagebrush	Low lying alkaline areas dominated by dense greasewood, with big basin sagebrush sometimes co-dominant.	50 to 60 percent
Big Basin Sagebrush	Basin big sagebrush	Dominated by dense, tall sage; most prevalent in drainages.	Not estimated
Sagebrush Community	Wyoming big sagebrush, rabbitbrush (<i>Ericameria nauseosa</i> and <i>Chrysothamnus viscidiflorus</i>), Sandberg bluegrass	Most common vegetation type on rolling hills throughout the Project Area.	40 to 50 percent
Grass Dominated	Crested wheatgrass, Cheatgrass	Dominated by crested wheatgrass with some bunch grasses present.	5 to 15 percent

3.18.2. Environmental Effects

The proposed action would directly affect the vegetation by removal of vegetation during clearing and grading activities. Damage to vegetation can occur from dust during construction and operation. And, as discussed earlier, the introduction or increase in invasive and noxious weeds could alter vegetation cover and species composition, potentially out-competing native plant species.

Table 3.24. Effects to Vegetation Types

Type	Estimated Shrub Cover	Vegetation in Project Area (acres)	Potential Surface Disturbance (acres)	Percentage of Project Area Disturbed
Greasewood	40 to 50 percent	1.35	1.35	100
Sagebrush	40 to 50 percent	1.35	1.35	100
Crested wheatgrass	0 to 20 percent	0.54	0.54	100

Under the No Action Alternative, no impacts to vegetation would occur.

3.18.3. Conditions of Approval

The BMPs identified for effected vegetation in the Project Area includes reclamation with BLM approved seed mixes for species diversity and soil stabilization.

3.18.4. Cumulative Effects

Cumulative effects that could impact vegetation include: wildland fire, oil and gas exploration, dispersed recreation (i.e., hunting, camping, etc.), grazing, increased invasive and noxious weed presence, and OHV use. Long-term effects would continue under the No Action Alternative. With implementation of BMPs described above, cumulative impacts resulting from the Proposed Action would be minimal.

3.19. Wildlife

3.19.1. Affected Environment

Ord's kangaroo rats and Townsend's ground squirrels are common to arid sagebrush communities. Other possible wildlife in the project area includes sagebrush lizard, Great lizard, bullsnake, gopher snake, and western terrestrial garter snake, striped skunk, black-tailed jackrabbit, mountain cotton tail, coyote, Great Basin ground squirrel, raccoon, Uinta chipmunk, desert cottontail, American deer mouse, Great Basin pocket mouse, white-tailed jackrabbit, and weasel.

There are no streams or other bodies of water in the Project Area for fish.

Table 3.25. Wildlife Species

Common Name	State	Common Name	State
American crow	Protected	Great Basin spadefoot	
Black-billed magpie	Protected	Great Basin whiptail	
Black-tailed jackrabbit	Unprotected	Greater short-horned lizard	
Bushy-tailed woodrat		Green-winged teal	
Chisel-tooted kangaroo rat		Kangaroo rat (unknown)	
Common raven	Protected	Least chipmunk	
Common sagebrush lizard		Little pocket mouse	
Common yellowthroat	Protected	Long-nosed leopard lizard	
Cottontail (unknown)		North American deer mouse	
Coyote	Unprotected	Uinta chipmunk	
Desert horned lizard		Weasel (unknown)	

Common Name	State	Common Name	State
Desert striped whipsnake		Western fence lizard	
Great Basin fence lizard		Western jumping mouse	
Great Basin gophersnake		White-tailed jackrabbit	
Great Basin pocket mouse			

Table 3.26. Other Wildlife Found In Pine Valley Basin

Common Name		
Ambersnail (unknown)	Golden-mantled ground squirrel	Rams-horn (unknown)
American beaver	Gray partridge	Red fox
American white pelican	Great-tailed grackle	ringtail
Brook trout	Great Basin collared lizard	Rustic ambersnail
California quail	Gyro (unknown)	Scaled quail
Canada goose	Long-nosed snake	Scud (freshwater shrimp)
Chihuahuan grasshopper mouse	Mallard	Silky vallonina
Chucker	Montane vole	Springsnail (unknown)
Common muskrat	Mountain cottontail	Tadpole physa
Crestless column	Mountain lion	Tahoe sucker
Dusky grouse	Mountain quail	Toquerville pyrg
Fingernail clam (unknown)	Northern rubber boa	Trumpeter swan
Forest disc	Physa (unknown)	Western glass-snail
Fox (unknown)	Pondsnail (unknown)	Western skink
Glass physa	Rainbow trout	Whitepine mountainsnail

3.19.2. Environmental Effects

Construction and operation of the Proposed Action could directly and/or indirectly affect terrestrial wildlife present in the Project Area. Direct effects include mortality by vehicles during construction and operation of the project, and poaching coincidental with increased human use. The removal and alteration of vegetation composition and structure of existing habitats will make the habitats less functional for wildlife. Decreased habitat use proximate to the project components will cause displacement of animals to alternative habitats.

Under the No Action Alternative, there would be no new impacts for game and non-game wildlife species or habitats within the Project Area.

3.19.3. Conditions of Approval

The BLM has identified the following conditions to further reduce potential impacts to wildlife and fisheries:

- Garbage shall be removed at frequent intervals to avoid attracting scavengers and predators to the pad vicinities. No vehicles will be parked off pad or road disturbance to avoid contamination or fire starts. Employees must stay on pad areas for the duration of shift.
- No harassment of wildlife - chasing, feeding, approaching, any interference disturbance.
- No garbage shall be thrown into the reserve pit to avoid attracting scavengers.
- The use of hunting equipment including calls, bow/arrow, traps, snares, firearms, baits, scents, etc. shall be prohibited on-site.

3.19.4. Cumulative Effects

The relatively small surface disturbance would be associated with minimal cumulative effects on wildlife and habitat loss.

The CESA for wildlife encompasses 641,280 acres. No direct or indirect impacts would occur to wildlife outside of this CESA boundary. The surface disturbance associated with the 2.7 acres of project disturbance is less than a fraction of a percent (4.2×10^{-6}). When this is combined to the past and present proposed actions is estimated to be less than 5 percent of the CESA.

Cumulative impacts to wildlife and their habitat from the Proposed Action would be mainly the removal of vegetation, or destruction of habitat. Regional data for three BBC that are sagebrush obligate species indicate their populations are declining. Cumulative effects of the Proposed Action and reasonably foreseeable actions, would contribute minimally to habitat loss and/or alteration with little affect to populations of sagebrush obligate species.

Chapter 4. Tribes, Individuals, Organizations, or Agencies Consulted

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4.1. Tribes, Individuals, Organizations, or Agencies Consulted

The BLM sent letters consulted with the Tribes listed in Table 4.1, “Consultations” below. The BLM also consulted with the Nevada Department of Wildlife.

Table 4.1. Consultations

Date	Name	Type of Communication	Affiliation
January 5, 2016	Chairman David Decker	Letter	Elko Band Council
January 5, 2016	Chairwoman Lydia Johnson	Letter	Te-Moak Tribal Council
January 5, 2016	Chairman Alvin Marques	Letter	Ely Shoshone Tribe
January 5, 2016	Chairwoman Perline Thompson	Letter	Duckwater Shoshone Tribe
January 5, 2016	Chairman James Bircham, Jr.	Letter	Yomba Shoshone Tribe
January 5, 2016	Chairman Lindsay Manning	Letter	Shoshone-Paiute Tribe of the Duck Valley Indian Reservation
January 5, 2016	Chairwoman Edith Smartt	Letter	South Fork Band Council
January 5, 2016	Chairman Casey Franco	Letter	Wells Band Council
January 5, 2016	Chairman Virgil W. Johnson	Letter	Confederated Tribes of the Goshute Indian Reservation
January 5, 2016	Chairwoman Lydia Johnson	Letter	Battle Mountain Band Council
January 7, 2016	Battle Mountain Band Council	Meeting	Battle Mountain Band Council
January 27, 2016	Elko Band Council	Meeting	Elko Band Council

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Chapter 5. List of Preparers, List of Acronyms and References

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5.1. List of Preparers

Table 5.1. List of Contracted Preparers

Name	Company	Title	Responsibilities
John Snow	McGinley & Associates (MGA)	Principal	Project Manager
Sarah Hoffman	MGA	Senior Environmental Geologist	Prepared Environmental Assessment
Brian Giroux	MGA	Principal Hydrogeologist	EA Reviewer
Joe McGinley	MGA	President & CEO	EA Reviewer
Benjamin Peterson	MGA	Project Geologist	GIS
Erika Johnson	Summit EnviroSolutions	Cultural Lead	Cultural Resources

Table 5.2. List of BLM Preparers

Name	Title	Responsibilities
Tom Schmidt	Geologist	Project lead, Geology, HAZMAT
Nycole Burton	Wildlife Biologist	T&E Species, Wildlife, Fisheries
Ryan Brown	Archaeologist	Archaeology
Rich Adkins	Tribal Liaison	Native American Concerns
John Daniel	Hydrologist	Hydrology, Air Quality, Soils
Elisabeth Puentes	Realty/Lands	Transportation and Access
Mike Setlock	Outdoor Recreation Planner	Wilderness, Recreation, VRM
Josh Robbins	Rangeland Management Specialist	Livestock Grazing/ Rangeland Health, Vegetation
Sam Cisney	Weeds Management Specialist	Noxious and Non-native Invasive Plant Species
Terri Dobis	Planning and Environmental Coordinator	NEPA compliance
Deb McFarlane	Assistant Field Manager	Review
Rich Adams	Field Manager	Review
Melanie Peterson	Field Manager	Review

5.2. Acronyms

ADT	Average Daily Traffic Count
AFA	Acre Feet Annually
AO	Authorized Officer
APD	Application for Permit to Drill
APE	Area of Potential Effect
AST	Aboveground Storage Tank
AUM	Animal Unit Month
BAPC	Bureau of Air Pollution Control
BBDF	Blackburn Detachment Fault
BCC	Birds of Conservation Concern
BGEPA	Bald and Golden Eagle Protection Act
bgs	below ground surface
BLM	Bureau of Land Management
BMP	Best Management Practices
BTEX	Benzene, toluene, ethylbenzene, and xylenes
BWQP	Bureau of Water Quality Planning
CAA	Clean Air Act

CEQ	Council on Environmental Quality
CESA	Cumulative Effects Study Area
CFR	Code of Federal Regulations
CO	Carbon monoxide
COA	Condition of Approval
CWA	Clean Water Act
CWMA	Cooperative Weed Management Area
DOI	Department of the Interior
DWR	Division of Water Resources
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
F	Fahrenheit
FEMA	Federal Emergency Management Agency
FLMPA	Federal Land Policy and Management Act
FMU	Fire Management Unit
GHMA	General Habitat Management Area
HASP	Health and Safety Plan
HC/CUEP	Horse Canyon/ Cortez Unified Exploration Project
IHMA	Important Habitat Management Area
LCT	Lahontan cutthroat trout
MBTA	Migratory Bird Treaty Act
MGA	McGinley & Associates
MLA	Mineral Leasing Act
MWTA	Medical Waste Tracking Act
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NDEP	Nevada Division of Environmental Protection
NCDS	National Climate Data Center
NDOA	Nevada Department of Agriculture
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act of 1969
NHPA	National Historical Preservation Act
NO ₂	Nitrogen dioxide
NO _x	Nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statutes
O ₃	Ozone
OHMA	Other Habitat Management Area
OHV	Off Highway Vehicle
Pb	Lead
PFYC	Potential Fossil Yield Classification
PHMA	Priority Habitat Management Area
PM ₁₀	Particulate matter equal to or less than 10 microns in diameter
PM _{2.5}	Particulate matter equal to or less than 2.5 microns in diameter
PPRFFA	Past, Present, and Reasonably Foreseeable Future Actions
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act

ROD	Record of Decision
ROW	Right-of-Way
RMP	Resource Management Plan
SAD	Surface Area Disturbance
SDS	Safety Data Sheet
SHPO	State Historic Preservation Officers
SO ₂	Sulfur dioxide
SPCC	Spill Prevention Control and Countermeasures
SR	State Route
SWPPP	Stormwater Pollution Prevention Plan
TFO	Tuscarora Field Office
TMDL	Total Maximum Daily Load
TPY	Ton Per Year
TSCA	Toxic Substance Control Act
USDA	United States Department of Agriculture
USGS	United States Geologic Survey
VRM	Visual Resource Management

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