

Environmental Assessment
Geothermal Leasing, Washoe County Parcels –
October, 2016

Prepared by
U.S. Department of the Interior
Bureau of Land Management
Carson City District, Stillwater Field Office

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DOI-BLM-NV-C010-2016-0033-EA

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Chapter 1. Introduction

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1.1. Identifying Information:

Geothermal Leasing, Washoe County Parcels — October 2016 Environmental Assessment;
EA# DOI-BLM-NV-C010-2016-0033-EA

1.1.2. Title, EA number, and type of project:

Geothermal Leasing Of Parcels In Washoe County

DOI-BLM-NV-C010-2016-0033-EA

1.1.3. Location of Proposed Action:

The Proposed Action is located on the public land within Washoe County, Nevada (**Fig X**). Legal descriptions for geothermal lease parcels that are pending within the subject lease areas comprising the Proposed Action are listed in **Appendix A**.

The three leases comprising the Proposed Action are described as:

- Fish Springs 1

T. 26 N., R. 18 E., section 27

Mount Diablo Base and Meridian

Washoe County, Nevada

- Fish Springs 2

T. 26 N., R. 19 E., sections 20, 21 & 29

Mount Diablo Base and Meridian

Washoe County, Nevada

- Steamboat

T. 18 N., R. 20 E., section 28

Mount Diablo Base and Meridian

Washoe County, Nevada

1.1.4. Name and Location of Preparing Office:

Bureau of Land Management
Carson City District
5665 Morgan Mill Road
Carson City, Nevada 89701

1.1.8. Lead Office - and number

Bureau of Land Management, Carson City District, Stillwater Field Office LLNVC01000

1.1.9. Case file number

n/a

1.1.10. Applicant Name:

Bureau of Land Management

1.2. Background Information:

The Bureau of Land Management (BLM), Carson City District (CCD), Sierra Front and Stillwater Field Offices have jointly prepared this environmental assessment (EA) to analyze impacts to the human and natural environment from leasing of fluid mineral resources on public land located in Washoe County, Nevada. This document has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations implementing NEPA, and the Federal Land Policy and Management Act of 1976 (FLPMA). These provide the authority for the BLM to allow for the exploration, development, and utilization of geothermal resources on BLM-managed public lands.

This EA is tiered to the Programmatic Environmental Impact Statement for Geothermal Leasing in the Western United States (PEIS), (BLM and USFS, 2008) that standardized geothermal and fluid mineral leasing and permitting for fluid minerals operations on federal lands. That document consolidated and updated many of the mitigation measures and standard stipulations from various BLM (and FS) documents addressing fluid mineral leasing and development, including RMPs, forest plans, and other environmental documents for fluid mineral leasing and development. The Record of Decision (ROD) from that PEIS, signed on December 17, 2008, amended and updated existing BLM RMPs and provided for the consistent mitigation of fluid minerals operations by federal land management agencies.

Stipulations provided in the PEIS serve as the minimal level of protection and were adopted into local land use plans (BLM and USFS, 2008). For example, if an administrative unit has eligible wild and scenic rivers, the wild river stipulation would apply. If an existing land use plan offers more protective measures or has resource specific commitments (e.g., memorandum of understanding for cultural resources), those more protective measures would apply instead. This EA therefore, takes a closer look at the potential indirect and cumulative impacts from geothermal leasing to determine whether these indirect impacts by the lessee could be significant.

A geothermal lease is for the earth's heat resource where there is federal mineral estate. Geothermal resources are underground reservoirs of hot water or steam created by heat from the earth. Geothermal steam and hot water can reach the surface of the earth in the form of hot springs, geysers, mud pots, or steam vents. These resources also can be accessed by wells, and the heat energy can be used for generating electricity or other direct uses, such as heating greenhouses and aquaculture operations or for dehydrating vegetables. Geothermal resources on federal lands are subject to lease under the Geothermal Steam Act of 1970, as amended (30 USC § 1001, et seq.), and geothermal resource leasing regulations (43 CFR §3200).

Developing geothermal resources on public land involves four phases; leasing, exploration, development/operation and close-out. The first phase is to issue a lease. Leasing of geothermal resources confers an implied right to the lessee to explore and or develop the geothermal resource. The act of leasing does not directly result in surface disturbance activities; however ground disturbance would occur during the second phase, exploration, and phase three, development. Phase four, close-out, would involve removing facilities and reclaiming the site. The BLM would require a separate site-specific NEPA analysis for exploration, development/operation, and close-out phases.

1.3. Purpose and Need for Action:

The purpose of the Proposed Action is to lease some or all of the geothermal resources at sites located in Washoe County. The three parcels located on public land are open to fluid mineral leasing by regulation and cover an area of approximately 1,600 acres.

The need for the Proposed Action is to respond to EO 13212 as amended by EO 13302, Actions to Expedite Energy-Related Projects, which states “the increased production and transmission of energy in a safe and environmentally sound manner is essential.” Executive departments and agencies are directed to “take appropriate actions, to the extent consistent with applicable law, to expedite projects that will increase the production, transmission, or conservation of energy.”

EO 13212 further states that “(f)or energy-related projects, agencies shall expedite their review of permits or take other actions as necessary to accelerate the completion of such projects, while maintaining safety, public health, and environmental protections. The agencies shall take such actions to the extent permitted by law and regulation, and where appropriate.” In response to the EO 13212, BLM issued a National Energy Policy Implementation Plan in June 2001, which directs the BLM to process leases, in a timely manner, in order to help support efforts to increase energy production from federal lands, while preserving the health of the federal lands.

1.4. Land Use Plan Conformance

The proposed action and alternatives described below are in conformance with the Carson City District Consolidated Resource Management Plan (CRMP), MIN-1, Desired Outcomes, 1: “Encourage development of energy and mineral resources in a timely manner to meet national, regional and local needs consistent with the objectives for other public land uses” and MIN-4, Standard Operating Procedures: Leasable Minerals, 5: “Oil, gas, and geothermal exploration and production upon BLM land are conducted through leases with the Bureau and are subject to terms and stipulations to comply with all applicable federal and state laws pertaining to various considerations for sanitation, water quality, wildlife, safety, and reclamation. Stipulations may be site specific and are derived from the environmental analysis process.”

- Programmatic Environmental Impact Statement for Geothermal Leasing in the Western United States (PEIS), Record of Decision signed December 17, 2008;

- Nevada and Northeastern California Sub-Regional Greater Sage-Grouse Land Use Plan Amendment, Record of Decision signed September 21, 2015

State pages and decisions that show the proposed project and any alternatives are in conformance with the LUP.

1.5. Relationship to Statutes, Regulations, Plans and Environmental Analysis

List applicable laws, regulations, plans and other NEPA analysis that this document is consistent with, tiered to or referenced. Below is a preliminary list that you can work from and revise as appropriate.

The Proposed Action and Alternatives are consistent with the following documents:

- Federal Land Policy and Management Act of 1976;
- Endangered Species Act of 1973;
- National Environmental Policy Act of 1969;
- Migratory Bird Treaty Act of 1918;
- National Historic Preservation Act (16 USC 470f);
- Archeological Resources Protection Act;
- Native American Graves Protection and Repatriation Act;
- Indian Sacred Sites – EO 13007;
- Consultation and Coordination with Indian Tribal Governments – EO 13175;

1.6. Decision to Be Made:

To lease or not lease the Fish Springs 1 & 2 and Steamboat parcels for the October 26, 2016 competitive geothermal lease sale. And if leased, what stipulations would be attached to the lease.

1.7. Scoping and Issue Identification:

Internal scoping meetings for the BLM were initiated on April 18, 2016. During internal scoping BLM staff identified issues and concerns regarding the Proposed Action. Interdisciplinary team visited the sites on May 13, 2016.

Chapter 2. Proposed Action and Alternatives

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2.1. Description of the Proposed Action:

The BLM CCD is proposing to lease six parcels covering approximately 1,640 acres of public land in Washoe County, Nevada.

- Fish Springs; 1,560 acres comprising two parcels (#1 – 360 acres & #2 – 1,200 acres) along the southeastern margin of the Honey Lake Valley approximately forty miles north of Reno, NV, ten miles east of Doyle, CA and six miles south of Flannigan, NV in Washoe County, Nevada (**Figures 1 & 2**).
- Steamboat; 40 acres approximately 10 miles south of Reno, NV at the south end of the Truckee Meadows in Washoe County, Nevada (**Figure 3**).

Issuance of geothermal leases confers on the lessee a right to future exploration and development of the resource with the lease area. However, leasing geothermal resources does not confer on the lessee the right to proceed with any ground-disturbing activities related to exploring for or developing geothermal resources. Issuance of geothermal leases could have indirect impacts because such leasing represents a commitment of resources, and it is reasonably expected that subsequent exploration, development, and closeout would occur. Proposals for exploration and/or development at specific sites would be examined for conformance with the land use plan and analyzed for NEPA adequacy at the time the proposals are submitted. Any proposal for exploration and/or development must be analyzed as required by NEPA.

A geothermal lease typically grants the lessee access to geothermal resources in the lease area for a period of 10 years. The terms of the lease require the lessee to show a certain level of diligence toward developing the geothermal resources within the lease area or the lease may be terminated. Once an area is developed for productive use of geothermal energy, the lease allows the lessee use of the resource for 40 years with a right of renewal for another 40 years. Geothermal exploration and production on public land conducted through leases is subject to terms and stipulations to comply with all applicable federal and state laws pertaining to various considerations for sanitation, water quality, wildlife, safety, and reclamation. Lease stipulations may be site specific and are derived from the environmental analysis process. Stipulations are site specific and are derived from the current management plan for that specific area.

Federal geothermal leases are initially issued through a competitive process. Only public lands that have been offered competitively and receive no bid are made available for noncompetitive leasing. Parcels not sold at the competitive sale become available for noncompetitive leasing for a 2-year period. Most lease applications are for a minimum of 640 acres. Lands not available for leasing are cited under Department of Interior, Bureau of Land Management, 43CFR §3201.11 Geothermal Resource Leasing and Geothermal Resources Unit Agreements and in the CRMP, 2001, as amended. Examples of public lands not open to fluid mineral leasing are Wilderness Areas, Wilderness Study Areas (WSAs), Areas of Critical Environmental Concern (ACECs), or National Conservation Areas. Also excluded are tribal lands, wildlife refuges, wildlife management areas, and private land with titles that include all fluid mineral rights.

2.2. Alternatives Considered but not Analyzed in Detail

The No Action Alternative considers that no leasing occur on these public lands. Under this alternative, the BLM would recommend no leasing and future exploration and development would not occur. Implementation of this alternative is inconsistent with the Federal Energy Policy

to promote the development of environmentally attractive energy resources. However, the BLM could adopt the No Action Alternative if the Proposed Action would result in unacceptable impact to the federal lands.

Chapter 3. Affected Environment and Environmental Consequences:

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This chapter identifies and describes the current condition and trend of elements or resources in the human environment which may be affected by implementation of the Proposed Action or Alternatives and the environmental consequences, or effects, of the action(s).

3.1. General Setting:

General descriptions of the affected environment for the three proposed lease areas are characterized by arid to semiarid conditions, low annual precipitation, and wide daily ranges in temperature.

Fish Springs Parcels

The two lease parcels in the Fish Springs area are located along the southern margin of the Honey Lake Valley which arches southeastward from near Susanville, CA in the northwest toward the Fish Springs area. This portion of the Honey Lake Valley is sparsely populated by widely spaced “ranchettes” with Doyle, CA being the closest community. Fish Springs Parcel #1 lies on alluvium of low relief, sloping gently northward from an elevation of about 4,100 feet to about 4,000 feet. The sandy soil – derived from locally occurring granitic rocks – supports a plant community dominated by sagebrush with grasses growing amongst the bushes. The portion of Fish Springs Parcel #2 lying in sections 20 & 29 is situated both topographically and botanically similar to the Fish Springs Parcel #1, save for the fact that the elevation in the southern portion of section 29 approaches 4,500 feet. The portion of Fish Springs Parcel #2 that lies within section 21 is typified by higher elevations ranging to 4,700 feet with a similar plant community to that of the rest of the parcel.

Steamboat Parcel

The Steamboat parcel is an isolated forty acre parcel of BLM land at an elevation of ranging from approximately 4,800 to 4,680 feet. The rocky, volcanically derived soils are sparsely vegetated and gently slope downward to the northwest. The parcel is located in suburban south Reno with subdivisions as close as one-half of a mile. There are also three geothermal power plants nearly adjacent to the parcel.

3.2. Supplemental Authorities:

Appendix 1 of the BLM’s NEPA Handbook (H-1790-1) identifies Supplemental Authorities that are subject to requirements specified by statute or executive order and must be considered in all BLM environmental documents. The table below lists the Supplemental Authorities and their status in the project area. Supplemental Authorities that may be affected by the Proposed Action are further described in this EA.

Table 3.1. Supplemental Authorities Table:

Resource ^{a1}	Present Yes/No	Affected Yes/No	Rationale
Air Quality	Yes	No	No impact from leasing alone. Further analysis will be required for exploration and/or development activities.
Areas of Critical Environmental Concern	No	No	Portion of parcel NV-16-10-003 containing ACEC removed since the Steamboat ACEC is closed to leasing.
Cultural Resources	Yes	No	Carried forward in the EA.

Resource ^{a1}	Present Yes/No	Affected Yes/No	Rationale
Environmental Justice	No	No	No low income or minority populations would be disproportionately affected by proposed action.
Farm Lands (prime or unique)	No	No	
Floodplains	No	No	Not within the FEMA 100 year floodplain.
Invasive, Nonnative Species	Yes	No	Noxious weeds: Scotch Thistle, Medusahead, and hoary cress. Invasive weeds: Cheatgrass, alyssum, bur buttercup, purple mustard, bull thistle.
Migratory Birds	Yes	No	Carried forward in the EA.
Native American Religious Concerns	Yes	No	Carried forward in the EA. In the past, the Washoe Tribe of Nevada and California has submitted formal documentation of concern of the potential for adverse impact to sacred and religious sites on parcel NV-16-10-003.
Threatened or Endangered Species (animals)	Yes	No	Carried forward in the EA.
Threatened or Endangered Species (plants)	Yes	No	Steamboat buckwheat, <i>Eriogonum ovalifolium</i> var. <i>williamsiae</i> , present in parcel NV-16-10-003.
Wastes, Hazardous or Solid	No	No	
Water Quality (Surface/Ground)	Yes	No	No impact from leasing alone. Further analysis will be required for exploration and/or development activities.
Wetlands/Riparian Zones	Yes	No	There are hot and cold springs and riparian areas within the lease areas. They will not be impacted during leasing, but will require analysis and beginning a Hydrologic Monitoring plan prior to exploration and/or development.
Wild and Scenic Rivers	No	No	
Wilderness/WSA	No	No	

^{a1} See H-1790-1 (January 2008) Appendix 1 Supplemental Authorities to be Considered.

Supplemental Authorities determined to be Not Present or Present/Not Affected need not be carried forward or discussed further in the document.

Supplemental Authorities determined to be Present/May Be Affected may be carried forward in the document.

3.3. Resources or Uses Other than Supplemental Authorities

The following resources or uses, which are not Supplemental Authorities as defined by BLM's Handbook H-1790-1, may also be present in the area. BLM resource specialists have evaluated the potential impact(s) of the Proposed Action and Alternatives on these resources and have documented their findings in the table below. Resources or uses that may be affected by the Proposed Action are further described in this EA.

Table 3.2. Resources or Uses Other Than Supplemental Authorities Table

Resource or Issue ^{a2}	Present Yes/No	Affected Yes/No	Rationale
BLM Sensitive Species (animals)	Yes	No	Carried forward in the EA.
BLM Sensitive Species (plants)	Yes	No	Carried forward in the EA.
Fire Management/Vegetation	Yes	No	No impact from leasing alone. Further analysis will be required for exploration and/or development activities.
Forest Resources	No	No	No trees in any of the lease parcels.
General Wildlife	Yes	No	Carried forward in the EA.

Chapter 3 Affected Environment and Environmental Consequences:

Resources or Uses Other than Supplemental Authorities

Resource or Issue ^{a2}	Present Yes/No	Affected Yes/No	Rationale
Land Use Authorization	Yes	No	No impact from leasing alone. Further analysis will be required for exploration and/or development activities.
Lands with Wilderness Characteristics	No	No	No impact from leasing alone. Further analysis will be required for exploration and/or development activities.
Livestock Grazing	Yes	No	No impact from leasing alone. Further analysis will be required for exploration and/or development activities.
Minerals	Yes	No	An LR2000 search for minerals projects and mining claims yielded none within the lease parcels.
Paleontological	No	No	A BLM records search was conducted to insure that no currently identified paleontological resources were present in the parcels that have special interest or importance to the general public. A detailed analysis is not required at the leasing stage.
Recreation	Yes	No	No impact from leasing alone. Further analysis will be required for exploration and/or development activities.
Socioeconomics	Yes	No	No increase in population, temporary monetary impacts.
Soils	Yes	No	No impact from leasing alone. Further analysis will be required for exploration and/or development activities.
Travel Management	Yes	No	No impact from leasing alone. Further analysis will be required for exploration and/or development activities.
Vegetation	Yes	No	No impact from leasing alone. Further analysis will be required for exploration and/or development activities.
Visual Resources	Yes	No	No impact from leasing alone. Further analysis will be required for exploration and/or development activities.
Wild Horses and Burros	Yes	No	No impact from leasing alone. Further analysis will be required for exploration and/or development activities.
Global Climate Change	Yes	No	There is public and scientific debate about human caused contributions to global climate change, no methodology currently exists to correlate greenhouse gas emissions (GHG) and to what extent these contributions would contribute to such climate change.
Greenhouse Gas Emissions	No	No	

^{a2} Resources or uses determined to be Not Present or Present/Not Affected need not be carried forward or discussed further in the document.

Resources or uses determined to be Present/May Be Affected may be carried forward in the document.

3.4. Resources Present and Brought Forward for Analysis (All Resources)

The following resources are present in the area and may be affected by the Proposed Action or Alternatives.

- Resource Name; Cultural Resources
- Resource Name; Native American Religious Concerns
- Resource Name; Migratory Birds
- Resource Name; Threatened or Endangered Species
- Resource Name; Wildlife

- Resource Name; BLM Sensitive Species

The description of the Affected Environment for the alternatives would be the same as that described for the proposed Action.

3.5. Cultural Resources

3.5.1. Affected Environment

Pending or future lease parcels within the proposed lease areas would be offered for lease subject to applicable laws and lease conditions. The proposed lease areas may be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders. The BLM will not approve any ground disturbing activities that may affect cultural properties eligible to the National Register of Historic Places (NRHP), until it completes its obligations under applicable requirements of the NHPA and other authorities. On all lease areas, once a project specific proposal is submitted, an additional Section 106 cultural resource assessment would be completed where site specific issues would be addressed as appropriate. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.

The BLM Carson City District Office Class I Cultural Resources Report (CRR) referenced for this EA adequately summarizes the presence and absence of archaeological inventories and cultural properties located on each proposed lease area (Young, 2014; Wright, 2016). Pertinent cultural resource information was reviewed and analyzed for the Area of Potential Effect (APE), which is defined as all lease areas comprising the Proposed Action. Cultural resource information available for each of the proposed lease areas varies. In no case is an entire lease area completely surveyed. Un-inventoried portions of lease areas or lease areas with small or minimal inventories were compared to adjacent sections or nearby areas with similar land forms. This analysis included an assessment of these lease areas for cultural resource sensitivity based upon elevation, topography, vegetation, and water resources especially in areas that have not been previously inventoried.

The location of prehistoric archaeological sites varies in predictable ways across the Western, Central, and Eastern regions of the CCDO. Sites are common in well-watered valley bottoms, near the mouth of mountain-front canyons, near outcrops of toolstone-quality rocks, and in locally productive resources patches (e.g. deer migration routes or pinyon communities) in mountain ranges. In fact, the distribution and relative proportion of sites and site types in the three lease parcels are very similar; most of the variation in the counts of site types between the regions is likely due to survey coverage, land status, and size of the region (Young, 2014). A brief summary and analysis of inventories within the proposed lease areas is provided below.

Two lease parcels (NV-16-10-001 & 002) are located in the northern portion of the Western Region, Long Valley Creek drains toward the mostly dry basin of Honey Lake Valley. The deeply incised drainage of Long Valley Creek, moving north, gives way to broad fans and dune systems on the margins of Honey Lake, a sub-basin of the formerly extensive, Pleistocene-age pluvial Lake Lahontan. Although the general rise and fall of the Pleistocene lake in the Honey Lake basin was likely synchronous with that of the greater Lake Lahontan, a detailed lake level reconstruction, especially for the Late Pleistocene and Holocene, would be specific to Honey

Lake because most of the time the lake within the sub-basin lacks connection to adjacent basins. Today the prominent feature in the Honey Lake Valley is a broad, vegetated, and open playa floor surrounded by undulating dune fields.

Parcel NV-16-10-001: Three inventories have been conducted within the lease parcel resulting in the identification of two sites: WA3190 is an unevaluated sites consisting of a sparse lithic scatter. Site WA9008 is recorded as an ineligible hearth feature and charcoal stain encountered.

Parcel NV-16-10-002: Four inventories have been conducted within the lease parcel resulting in the recordation of one site: WA8146, an ineligible sparse lithic scatter.

One lease parcel is located in the Steamboat Hills in the Western Region centered on the Truckee Meadows and Carson Valley. The Carson and Truckee rivers are the major waterways, although smaller drainages, including Long Valley and Steamboat creeks provide significant floral and faunal habitats, especially in the area surrounding and including this lease parcel. Because of the orographic effects resulting in a generally decreasing moisture gradient, west to east, across the region, well-watered perennial drainages are concentrated at the mountain front and, in this region, only the two major drainages reach the interior on a year-round basis. This pattern results in well-watered valleys giving way to dry mountain ranges and hills cut by discrete and narrow riparian corridors. The southern drainages coalesce at Washoe Lake, with its expansive arcuate dune and adjacent wetland, before falling into Steamboat Creek. The Steamboat drainage collects runoff from the Mount Rose fan as it opens into a large wetland valley-bottom, forming the Truckee Meadows (modern day Reno/Sparks). Steamboat Creek, emanating from the Truckee Meadows, is the final tributary input to the Truckee River drainage as it enters its lower-canyon reach and flows toward its terminus at Pyramid Lake.

The Steamboat Hills have attracted significant archaeological attention. The first significant, and well-dated, number of complex habitation assemblages appears in the Middle Archaic in all regions. The early villages of the Western Region are found in the Steamboat Hills and epitomize this overall pattern. A significant number of eligible sites have been recorded in the area surround the Steamboat lease parcel. Over 500 sites have been recorded within a four-mile radius of the Steamboat lease parcel.

Parcel NV-16-10-003: Two inventories have been conducted within the lease parcel and one significant site has been recorded, WA1452, a large complex habitation assemblage. The surrounding area has been extensively inventoried and over 500 sites have been recorded within the greater region (approx. 4 radial miles). Based on known, significant archaeological resources in the area, the probability to encounter significant archaeological resources is very high. This area has been designated a high probability area.

3.5.2. Environmental Consequences

Issuing new fluid mineral leases would not result in any direct impacts to cultural resource because no surface disturbing activities would be authorized. Potential direct and indirect impacts from exploration and development activities would be analyzed under a separate site specific environmental analysis.

Based on the results of previous cultural resource inventories, the potential for locating additional cultural resources within the proposed lease areas reviewed for the Proposed Action ranges from low to high. Furthermore, analysis of the reasonably foreseeable impacts of leasing for both

identified and unidentified cultural properties resulted in the recommendation of No Historic Properties Affected for all of the lease parcels. This is based on the determination that leasing could occur without impact to known or unknown eligible historic properties in each of the lease areas.

After consideration of cultural resource information, and other general data including the CRMP (BLM, 2001), the PEIS (BLM and USFS, 2008), and applicable fluid mineral activity NEPA documents, specific data relating to the individual proposed parcels such as topography, vegetation, water and soils, it has been determined that reasonable fluid mineral development could occur without adverse impacts to known cultural properties eligible to the NRHP for parcels NV-16-10-001 & 002.

However, there is an extremely high probability that eligible sites could be discovered on parcel NV-16-10-003, based on site data and inventory results of adjacent sections.

The Nevada Protocol Part VII.D. was applied to the cultural resource review for the Proposed Action and the CCDO determination, under the Nevada Protocol review threshold at VII.D.(1), is that there are no historic properties effected; eligible sites are present but will not be effected as defined by 36 CFR 800.4.

Known cultural resources are located in such a fashion (size, density and placement) that avoidance is feasible during development of fluid mineral resources in parcels NV-16-10-001 & 002. Based on an analysis of inventoried area adjacent to NV-16-10-003, however, avoidance may not be feasible during development of fluid mineral resources on this parcel. The Steamboat lease parcel (NV-16-10-003) is within a very high probability area. A complete inventory of the proposed or anticipated future lease parcels has not occurred; therefore, the following stipulation should be added to lease parcels in the project area:

"This lease may be found to contain historic properties and/ or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves and Repatriation Act, E.O. 13007, or other statutes and executive orders. The BLM will not approve any ground disturbing activities that may affect such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated."

3.6. Native American Religious Concerns

3.6.1. Affected Environment

In accordance with the NHPA, NEPA, FLPMA, the American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, and E.O. 13007, the BLM must provide affected tribes an opportunity to comment and consult on the Proposed Action. The BLM must attempt to limit, reduce, or possibly eliminate any negative impacts to Native American traditional, cultural, or spiritual sites, activities, and resources.

The Washoe Tribe of Nevada and California and the Susanville Rancheria were notified of the proposed lease sale via certified letter on May 25, 2016. They were asked to identify traditional cultural places or any other areas of traditional cultural importance that need to be considered

within the APE. This was followed by telephone calls from CCDO staff. Any documents or concerns regarding leasing in the proposed lease areas that were submitted to the CCDO were formally documented during the consultation process, which is ongoing.

There are no known Native American concerns for the Fish Springs lease parcels, NV-16-10-001 & 002. However, the Washoe Tribe has previously formally expressed considerable concern over the leasing of parcels adjacent the current Steamboat lease parcel (NV-16-10-003). The Washoe Tribe has previously recommended adjacent Steamboat parcels not be leased.

3.6.2. Environmental Consequences

Issuing new fluid mineral leases would not result in any direct impacts because no surface disturbing activities would be authorized. Potential direct and indirect impacts from exploration and development activities would be analyzed under a separate site-specific environmental analysis. Although the act of selling fluid mineral leases does not directly authorize exploration, development, production, or any other related ground disturbance activities, there does exist the potential to impact Native American sites of spiritual, cultural, or traditional nature. Not all sensitive traditional, cultural, or spiritual sites and activities are of a physical nature. Many tribal sacred sites may lack artifacts that would support a past and continued use of the area. The fact that such a site exists and retains its physical integrity and is attached to the continuation of a sacred spiritual belief and/or use, is not to be viewed by non-natives as unimportant. However, impacts to cultural sites can be minimized and/or mitigated when affected Tribes provide input and actively and fully participate in the decision making process.

Without a specific proposed project location and description, identifying impacts to specific tribal resources is difficult. The tribes being given the opportunity to meet with BLM staff and management at the lease sale, exploration, and development stages, would allow for further tribal participation opportunities. As noted previously, the BLM would produce a site specific EA for any future development. Such an EA would discuss alternatives or measures that may reduce or eliminate impacts to Native American Religious Concerns.

3.7. Migratory Birds

3.7.1. Affected Environment

On January 11, 2001, President Clinton signed Executive Order 13186 (EO) placing emphasis on the conservation and management of migratory birds. Migratory birds are protected under the Migratory Bird Treaty Act of 1918 (MBTA) and EO 13186 addresses the responsibilities of federal agencies to protect migratory birds by taking actions to implement the MBTA. BLM management for migratory bird species on BLM-administered lands is based on Instruction Memorandum No. 2008-050. Based on this IM, migratory bird species of conservation concern include ‘Species of Conservation Concern’ and ‘Game Birds Below Desired Conditions’ (GBBDC). These lists have since been updated based on the 2010 Memorandum of Understanding (MOU) between the BLM and the USFWS to promote the conservation of migratory birds (BLM MOU WO-230-2010-04).

Golden Eagle – The Bald and Golden Eagle Protection Act (1940 as amended 1959, 1962, 1972, 1978) prohibits anyone without a permit issued by the Secretary of the Interior from —takingjj eagles, including their parts, nests, or eggs. The Act defines —takejj as —to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturbjj. —Disturbjj means —to

agitate or bother a bald or golden eagle to a degree that causes or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding or sheltering behavior. Consideration of golden eagles and their habitat must be incorporated into the National Environmental Policy Act (NEPA) analysis for all renewable energy projects (BLM Instruction Memorandum No. 2010-156).

Key habitat types found in the project area that support life requisites of migratory birds are described in detail under the Wildlife Affected Environment section. They are Cold Desert Scrub, Intermountain Rivers and Streams, Lower Montane Woodlands, and Sagebrush. Species that may be associated with these key habitats and could occur in the lease areas are listed in Table 2. Most of the migratory bird species using or potentially using the project area would likely be associated with more than one key habitat type.

The Intermountain West is the center of distribution for many western birds (Rich et al. 2004). Over half of this biome's Species of Continental Importance have 75% or more of their population here. Many breeding species from this biome migrate to winter in central and western Mexico or in the Southwestern biome. Shrub-nesting species comprise the largest number of Species of Continental Importance in this biome.

3.7.2. Environmental Consequences

Leasing is purely administrative, therefore direct impacts would not occur as a result of this Proposed Action. Moreover, leasing alone does not directly authorize fluid minerals exploration and development activities. Direct impacts from these activities would be analyzed under a separate site-specific environmental analysis. However, indirect effects may occur to habitat, individuals, or populations should the lease area be authorized for exploration or development. Indirect impacts from leasing may stem from ground water pumping/withdrawal which could lead to direct habitat loss, habitat modification, or behavioral modification as a result of fragmentation and/or disturbance (i.e. noise) from roads, power lines, and pipeline construction. These potential impacts are not meant to be inclusive.

Potential indirect effects would likely be minimized through compliance with state and federal regulations and adherence to lease stipulations. Furthermore, the entire range of potential impacts would be addressed under separate site-specific environmental analysis for exploration and/or development, which may contain best management practices, mitigation, survey requirements, and/or conditions of approval to minimize or eliminate effects to migratory birds and their habitat.

3.8. Threatened or Endangered Species

3.8.1. Affected Environment

Federally listed species are those designated by the U.S. Fish and Wildlife Service as endangered or threatened. On September 14, 2010, the U.S. Fish and Wildlife Service's electronic listing of federally listed threatened, endangered, proposed for listing species was reviewed to determine which species might be associated with the lease areas (http://www.fws.gov/nevada/protected_species/species_by_county.html).

The Carson wandering skipper (*Pseudocopaeodes eunus obscurus*) is a federally endangered butterfly. It has been identified in sections 20 & 29 of the Fish Springs 2 parcel (NV-16-10-002).

Little is known about the specific habitat requirements of the skipper (USFWS 2007). Habitat is generally characterized by an elevation of less than 1,524 meters (5,000 feet), the presence of saltgrass (*distichlis spicata*) and nectar sources in open areas near springs or water, and possible association with geothermal activity. Salt grass is the larval host plant, while adults require nectar for food. Larval development may depend on the present of the high quality salt grass provided by more permanent water sources.

Threats to the subspecies include habitat destruction, degradation, and fragmentation due to urban and residential development; wetland habitat modification; agricultural practices; oil, gas, and geothermal development; and nonnative plant invasion. Other threats include collecting, excessive livestock trampling/grazing, water exportation projects, road construction, recreation, pesticide drift, and inadequate regulatory mechanisms. This subspecies is also especially vulnerable to chance environmental or demographic events as a small population. The combination of only four known populations, small range, and restricted habitat makes the subspecies highly susceptible to extinction or extirpation from a significant portion of its range due to stochastic events such as fire, drought, disease, or other random occurrences.

Steamboat buckwheat, (*Eriogonum ovalifolium* var. *williamsiae*) is a federally endangered plant species found within the Steamboat parcel (NV-16-10-003). Natural occurrence of this plant is limited to the area of Steamboat Hot Springs in Washoe County, Nevada. It grows in young, shallow, poorly developed, light-colored soils. This plant is often found in association with shadscale saltbush, greasewood, and rubber rabbitbrush. It is dependent on wetland margin areas. The main threat to this species is geothermal drilling, but other threats include highway construction and maintenance, private development, competition with tallwhitetop and other invasive weeds, and alteration of spring flows via regional groundwater pumping and other water diversions.

3.8.2. Environmental Consequences

Leasing is purely administrative, therefore direct impacts would not occur as a result of this Proposed Action. Moreover, leasing alone does not directly authorize fluid minerals exploration and development activities. Direct impacts from these activities would be analyzed under a separate site-specific environmental analysis. However, indirect effects may occur to habitat, individuals, or populations should the lease area be authorized for exploration or development. Indirect impacts from leasing may stem from ground water pumping/withdrawal, which could lead to direct habitat loss, or behavioral modification as a result of fragmentation from roads, power lines, and pipeline construction. These potential impacts are not meant to be inclusive. Section 7 consultation under the Endangered Species Act would be needed for these leases should exploration and/or development be proposed after leasing.

Mitigation Measures – To protect the locally occurring population of the federally endangered plant species Steamboat buckwheat (*Eriogonum ovalifolium* var. *williamsiae*) the Steamboat parcel (NV-16-10-003) would be offered for sale with the stipulation of No Surface Occupancy (NSO). This stipulation would protect the Steamboat buckwheat from habitat loss resulting from surface disturbance while still making available the geothermal resources which may exist within the parcel.

3.9. Wildlife

3.9.1. Affected Environment

Based on the Southwest Regional GAP Analysis Project, the Nevada Department of Wildlife's Wildlife Action Plan (Wildlife Action Plan Team 2006) characterized Nevada's vegetative land cover into 8 broad ecological system groups and linked those with Key Habitat types, which are further refined into Ecological Systems characterized by plant communities or associations (USGS 2005). Key Habitats can be used to infer likely occurrences of wildlife species assemblages when survey data are lacking, as is generally the case within the lease areas. The Key Habitats occurring in the considered lease parcels are:

- Fish Springs 1 (NV-16-10-001) — Inter-Mountain Basins Greasewood Flat, Big Sagebrush Shrubland, & Mixed Salt Desert Scrub
- Fish Springs 2 (NV-16-10-002) — Inter-Mountain Greasewood Flat, Big Sagebrush Shrubland, Mixed Salt Desert Scrub, & Great Basin Xeric Mixed Sagebrush Shrubland
- Steamboat (NV-16-10-003) — Inter-Mountain Big Sagebrush Shrubland,,Greasewood Flat, & Barren Land

Known or potential BLM Sensitive wildlife and plant species that could be occur in the lease parcels are displayed in Tables 3-1 & 3-2.

Table 3-1

BLM Designated Sensitive Wildlife Species Know or Potentially Found in the Planning Area

Wildlife	Seasonal Distribution & Trend in Planning Area	Dominant and/or Relevant Key Habitat Type(s)
Birds		
Bald Eagle <i>Haliaeetus leucocephalus</i>	Only 3 know breeding locations. Winters in low numbers. Trend is stable or increasing with recent winter increases in Carson Valley.	Intermountain Rivers and Streams, Lakes, and Reservoirs, Sierra Conifer Forests and Woodlands
Brewer's sparrow <i>Spizella breweri</i>	Breeds in planning area. Declining across the west.	Sagebrush and Cold Desert Scrub
Ferruginous Hawk <i>Buteo regalis</i>	Winters in the Lahontan Valley and scattered year-round elsewhere. Trend is stable.	Intermountain Rivers and Streams, Sagebrush, Lower Montane Woodlands
Golden Eagle <i>Aquila chrysaetos</i>	Wide year-round distribution. Trend is declining regionally and in Nevada.	Cliffs and Canyons, Sagebrush, and Lower Montane Woodland
Greater sage-grouse <i>Centrocercus urophasianus</i>	See Figure 2.6 for distribution of Bi-state and Great Basin populations. Trend is declining.	Sagebrush, Springs and Springbrooks, & Wet Meadows
Loggerhead shrike <i>Lanius ludovicianus</i>	Year-round distribution. Trend is declining.	Cold Desert Scrub & Sagebrush
Northern goshawk <i>Accipiter gentilis</i>	Year-round distribution. Have been documented in the Carson, Wassuk, Pine Nut, Clan Alpine, & Desatoya Mountain Ranges.	Aspen Woodland

Peregrine falcon <i>Falco peregrinus</i>	Migration and or wintering in the Lahontan Valley, Lake Tahoe Basin, & Walker River floodplain. Trend is increasing outside of the Great Basin; therefore recolonization of breeding territories in the planning area may occur in the near future.	Cliffs and Canyons & Marshes
Pinyon jay <i>Gymnorhinus cyanocephalus</i>	Year-round distribution with trend in decline. Age profile and structural features of pinyon-juniper woodlands is thought to be a primary reason for declining trend.	Lower Montane Woodlands
Sage thrasher <i>Oreoscoptes montanus</i>	Distribution is breeding only. Trend is thought to be stable or in slight decline.	Sagebrush & Intermountain Cold Desert Scrub primarily where contiguous or interspersed with sagebrush
Snowy plover <i>Charadrius alexandrinus</i>	Known to breed at the Stillwater National Wildlife Refuge and Carson Lake in the Lahontan Valley, Walker Lake, and Pyramid Lake. Trend is declining regionally but not well quantified in the Great Basin.	Desert Playa and Ephemeral Pools
Swainson's hawk <i>Buteo swainsoni</i>	Breeding distribution primarily where agricultural lands exist in proximity to nesting trees and open shrublands. Trend is declining range wide but currently unknown for the planning area.	Agricultural Lands and Intermountain Rivers and Streams
Western burrowing owl <i>Athene cunicularia hypugaea</i>	Breeding distribution. Trend in the planning area is currently unknown.	Intermountain Cold Desert Scrub & Sagebrush
Mammals		
Big brown bat <i>Eptesicus fuscus</i>	Widespread year-round distribution. Considered secure but listed as special status species because of high concern over the unknown potential of white-nose syndrome moving to the western states.	Hibernates in winter but locations unknown. Multiple habitats used. Caves, trees, buildings, mines, and bridges used as roost sites.
Desert bighorn sheep <i>Ovis Canadensis nelsoni</i>	Year-round distribution. Trend is increasing in planning area due to reintroductions and augmentations by NDOW.	Cliffs and Canyons
Brazilian free-tailed bat <i>Tadarida brasiliensis</i>	Summer resident. Considered vulnerable in Nevada.	Multiple habitats uses. Roosts include cliff faces, mines, caves, buildings, bridges, and hollow trees. Colonies number from a few hundred to several thousand in Nevada.
California myotis <i>Myotis californicus</i>	Widespread year-round distribution but mostly hibernates in winter. Considered secure in Nevada but listed as special status species because of high concern over the unknown potential of white-nose syndrome moving to the western states.	Multiple habitats used. Roosts include cliff faces, mines, caves, buildings, bridges, and hollow trees.
Dark kangaroo mouse <i>Microdipodops megacephalus</i>	Year-round but hibernated in winter. Trend is in decline in Nevada but apparently secure globally.	Intermountain Cold Desert Scrub & Sagebrush
Fringed myotis <i>Myotis thysanodes</i>	Year-round resident but mostly hibernates in winter. Considered imperiled in Nevada.	Multiple habitats used. Roosts include mines, caves, buildings, and trees.

Hoary bat <i>Lasiurus cinereus</i>	Summer resident but spatial distribution data is limited. Trend in Nevada unknown but listed as special status species because of high concern over the unknown potential of white-nose syndrome moving to the western states.	Tree roost sites are most important.
Little brown myotis <i>Myotis lucifugus</i>	Year-round resident but mostly hibernates in winter. Considered vulnerable in Nevada.	Multiple habitats used. Roosts include, mines, caves, buildings, and trees.
Long-eared myotis <i>Myotis evotis</i>	Year-round resident but mostly hibernates in winter. Considered secure in Nevada but listed as special status species because of high concern over the unknown potential of white-nose syndrome moving to the western states.	Multiple habitats used. Roosts include crevices, mines, caves, buildings, bridges, and hollow trees.
Long-legged myotis <i>Myotis Volans</i>	Year-round resident but mostly hibernates in winter. Considered secure in Nevada but listed as special status species because of high concern over the unknown potential of white-nose syndrome moving to the western states.	Multiple habitats used. Roosts include crevices, mines, caves, buildings, bridges, and hollow trees.
Pale kangaroo mouse <i>Microdipodops pallidus</i>	Year-round resident with some populations considered to be in decline. Considered to be imperiled in Nevada.	Cold Desert Scrub
Pallid bat <i>Antrozous pallidus</i>	Year-round resident but mostly hibernates in winter. Considered vulnerable in Nevada.	Multiple habitats used. Roosts include rock outcrops, mines, caves, buildings, bridges, and hollow trees.
Pika <i>Ochotona princeps</i>	Only known locations are in the Carson and Desatoya mountain ranges. Populations may exist in the Pilot Table mountains. Trend for pikas in the Great Basin is declining.	Cliffs and Canyons & Grasslands and Meadows
Pygmy rabbit <i>Brachylagus idahoensis</i>	Distribution poorly understood. No good estimates regarding their trends.	Sagebrush
Spotted bat <i>Euderma maculatum</i>	Year-round resident but mostly hibernates in winter. Considered imperiled in Nevada. Information lacking for this species.	Rocky cliffs most important.
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	Year-round resident but mostly hibernates in winter. Considered imperiled in Nevada. Information lacking for this species.	Multiple habitats used, but caves and mines most important.
Western pipistrelle <i>Parastrellus Hesperus</i>	Year-round resident but mostly hibernates in winter. Considered secure in Nevada but listed as special status species because of high concern over the unknown potential of white-nose syndrome moving to the western states.	Cliffs and Canyons
Western red bat <i>Lasiurus blossevillii</i>	Distribution largely unknown but thought to just be a migrant. Very rare in Nevada.	Various wooded habitats.
Western small-footed myotis <i>Myotis ciliolabrum</i>	Year-round resident but mostly hibernates in winter. Considered vulnerable in Nevada.	Multiple habitats used. Roosts include cliff faces, mines, caves, buildings, bridges, and hollow trees.

Yuma myotis <i>Myotis yumanensis</i>	Year-round resident but hibernates in winter. Considered vulnerable in Nevada.	Multiple habitats used. Roosts include cliff faces, mines, caves, buildings, bridges, and hollow trees.
Reptiles and Amphibians		
Dixie Valley toad <i>Anaxyrus boreas</i> sp.ssp.	Only found in vicinity of Dixie Valley hot springs. Trend unknown.	Playas and Ephemeral Pools
Northern leopard frog <i>Lithobates pipiens</i>	Permanent year-round resident with historic known records from Churchill, Douglas, Lyon, Storey, and Washoe Counties within the planning area. Considered imperiled in Nevada with a global population trend down.	Springs and Springbrooks, & Wet Meadows
Shasta alligator lizard <i>Elgaria coerulea shastaensis</i>	Trend, distribution and status unknown in the Planning area.	Conifer Forests and Woodlands
Invertebrates		
Bee <i>Anthophora</i> sp. nov. 1	Unknown	Sand Dunes and Badlands
Bee <i>Hesperapis</i> sp. nov. 2	Unknown	Sand Dunes and Badlands
Bee <i>Perdita haigi</i>	Unknown	Sand Dunes and Badlands
Bee <i>Perdita</i> sp. nov. 3	Unknown	Sand Dunes and Badlands
Click beetle <i>Cardiophorus</i> sp.ssp. nov.	Unknown	Sand Dunes and Badlands
Carson Valley silverspot <i>Speyeria nokomis carsonensis</i>	Current distribution unknown. Historic records from Alpine, Carson City, Douglas, Lyon, and Washoe Counties. Considered critically imperiled in Nevada.	Grasslands and Meadows
Early blue or Dotted blue butterfly <i>Euphilotes enoptes primavera</i>	Records only exist from Mineral County in the Wassuk Range. Trend unknown considered critically imperiled in Nevada.	Unknown
Great Basin small blue butterfly <i>Philotiella speciosa septentrionalis</i>	Distribution unknown but type locality is from Fort Churchill Road in Lyon County. Trend unknown considered critically imperiled in Nevada.	Unknown
Hardy's Aegialian scarab <i>Aegialia hardyi</i>		Sand Dunes and Badlands
Sand Mountain Aphodius scarab <i>Aphodius</i> sp. 3	Distribution restricted to Sand Mountain dune area	Sand Dunes and Badlands

Sand Mountain blue butterfly <i>Euphilotes pallescens arenamontana</i>	Only found at Sand Mountain dune. Trend thought to be in decline	Sand Dunes and Badlands supporting Kearney buckwheat
Sand Mountain Pygmy scarab Beetle <i>Coenonycha pygmaea</i>	Only found at Sand Mountain dune.	Sand Dunes and Badlands
Molluscs		
Ovate Cain Spring pyrg <i>Pyrgulopsis pictilis</i>	Unknown distribution and trend	Springs and Springbrooks
Wongs pyrg <i>Pyrgulopsis wongi</i>	Records for Douglas and Mineral Counties. Trend unknown.	Springs and Springbrooks

Table 3–2

Current BLM Designated Sensitive Plant Species Known or Potentially Found in the Planning Area

Common Name	Scientific Name	Known Acres of Habitat*
Altered andesite buckwheat	<i>Eriogonum robustum</i>	813
Altered andesite popcornflower	<i>Plagiobothrys glomeratus</i>	Unknown
Ames milkvetch	<i>Astragalus pulsiferae</i> var. <i>pulsiferae</i>	Unknown
Beatley buckwheat	<i>Eriogonum rosense</i> var. <i>beatleyae</i>	2.8+
Bodie Hills rockcress	<i>Boechea bodiensis</i>	54.1
Bodie Hills draba	<i>Cusickiella quadricostata</i>	Unknown
Churchill Narrows buckwheat	<i>Eriogonum diatomaceum</i>	17.9 (based on 2011 survey)
Eastwood milkweed	<i>Asclepias eastwoodiana</i>	Unknown
Lahontan beardtongue	<i>Penstemon palmeri</i> var. <i>macranthus</i>	Unknown
Lavin milkvetch	<i>Astragalus oophorus</i> var. <i>lavinii</i>	93.7
Margaret rushy milkvetch	<i>Astragalus convallarius</i> var. <i>margaretiae</i>	Unknown
Masonic Mountain jewelflower	<i>Streptanthus oliganthus</i>	41.8
Mono County Phacelia	<i>Phacelia monoensis</i>	52.1
Nevada Dune beardtongue	<i>Penstemon arenarius</i>	554+
Oryctes	<i>Oryctes nevadensis</i>	146+
Pine Nut Mountains mousetails	<i>Ivesia pityocharis</i>	104
Playa phacelia	<i>Phacelia inundata</i>	Unknown
Sagebursh pygmyleaf	<i>Loeflingia squarrosa</i> ssp. <i>Artemisiarum</i>	5+
Sand cholla	<i>Grusonia pulchella</i>	7.2+
Shevock brislemoss	<i>Orthotrichum shevockii</i>	Unknown
Sierra Valley mousetails	<i>Ivesia aperta</i> var. <i>aperta</i>	11.1
Sodaville milkvetch	<i>Astragalus lentiginosus</i> var. <i>sesquimentralis</i>	10.1
Steamboat buckwheat	<i>Eriogonum ovalifolium</i> var. <i>williamsiae</i>	51.4
Tiehm blazingstar	<i>Mentzelia tiehmii</i>	Unknown
Tiehm peppergrass	<i>Stroganowia tiehmii</i>	635
Tonopah milkvetch	<i>Astragalus pseudiodanthus</i>	Unknown
Washoe pine	<i>Pinus ponderosa</i> ssp. <i>washoensis</i>	30.1+
Williams Combleaf	<i>Polycytenium williamsiae</i>	457+
Windloving buchwheat	<i>Eriogonum anemophilum</i>	108+

*Acres calculated with on the ground surveys incorporated into GIS calculated acerages.

Big Game - Big game species that occupy these areas include mule deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*) and desert bighorn sheep (*Ovis canadensis nelsoni*). Mountain lions (*Felis concolor*) can be found as well.

Mule Deer — Deer feed on forbs, grasses, and shrubs depending on the time of year. Forbs and grasses are most important in spring and summer while shrubs are most utilized during winter and dry summer months. Occupancy of mature habitat can be limited by water availability. Mule deer populations in Nevada are at an all-time low and population recovery is difficult due to the extent of habitat loss. The lack of crucial winter range is one of the limiting resources for deer populations. Both of the Fish Springs parcels are within mule deer crucial winter habitat.

Pronghorn — Pronghorn only occur in North America. Habitat requirements consist of large expanses of low, rolling, and relatively barrier-free terrain. Preferred forage is forbs, shrubs, and then grasses (Krausman 1996). Free water is required. Fish Springs 2 parcel (NV-16-10-002) is within pronghorn crucial winter habitat.

Desert Bighorn Sheep — The desert bighorn sheep found in the lease areas is one of four desert subspecies of bighorn sheep (*Ovis canadensis nelsoni*) found in North America. They prefer rough, rocky, and steep terrain; require freestanding water in the summer months or during drought; and mainly eat grasses, shrubs, and forbs. The northeastern portion of Fish Springs 2 parcel (NV-16-10-002) is within desert bighorn sheep year-round habitat.

3.9.2. Environmental Consequences

Leasing is purely administrative, therefore direct impacts would not occur as a result of this Proposed Action. Moreover, leasing alone does not directly authorize fluid minerals exploration and development activities. Direct impacts from these activities would be analyzed under a separate site-specific environmental analysis. However, indirect effects may occur to habitat, individuals, or populations should the lease area be authorized for exploration or development. Indirect impacts from leasing may stem from ground water pumping/withdrawal, direct habitat loss, habitat modification, or behavioral modification as a result of habitat fragmentation, blockage of travel corridors, and/or disturbance (i.e. noise) from roads, power lines, and pipeline construction. These potential impacts are not meant to be inclusive.

Potential indirect effects to wildlife would likely be minimized through compliance with state and federal regulations and adherence to lease stipulations. Furthermore, the entire range of potential impacts would be addressed under separate site-specific environmental analysis for exploration and/or development, which may contain best management practices, mitigation, survey requirements, and/or conditions of approval to minimize or eliminate effects to wildlife species and their habitat.

3.10. BLM Sensitive Species

3.10.1. Affected Environment

All federally designated candidate species, proposed species, and de-listed species in the 5 years following their delisting shall be conserved as BLM sensitive species. Sensitive species are defined in BLM Manual 6840 (Special Status Species Management) as native species found on BLM-administered lands for which the BLM has the capability to significantly affect the conservation status of the species through management and either one of the following:

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Consequences:
Environmental Consequences*

1. There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range; or
2. The species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk.

A list of sensitive species associated with BLM lands in Nevada was revised in 2011. Tables 3–1 and 3–2 lists BLM Sensitive Species expected or found in or near the proposed lease areas.

Altered andesite buckwheat – This BLM sensitive species altered andesite buckwheat (*Eriogonum robustum*) is known to occur in the Steamboat area. The range of this BLM sensitive species consists of the mountains and foothills surrounding Reno-Sparks and Virginia City in southern Washoe and western Storey Counties, Nevada. Nearly all known populations, including those in the Steamboat area, occur on dry, shallow, highly acidic gravelly clay soils. These areas support sparse vegetation, mostly consisting of stunted woodlands of ponderosa pine (*Pinus ponderosa*) and /or Jeffrey pine (*Pinus jeffreyi*). While native fauna seem to have nominal impacts, this plant is negatively affected by substrate disturbance from cattle and wild horses. Additionally, open soils or ridgelines and close proximity to human populations make their habitat attractive for road development. Currently, roads and OHV use impact about half of the know sites where altered andesite buckwheat occurs.

Sage-grouse – In response to the USFWS’s 2010 determination that the listing of the greater sage-grouse was “warranted, but precluded” by other priorities, the BLM in coordination with the USDA Forest Service, developed a landscape-level management strategy, based on the best available science, that was targeted, multi-tiered, coordinated, and collaborative. This effort culminated on September 21, 2015 with the signing of the Record of Decision (ROD) and Approved Resource Management Plan Amendments for the Great Basin Region, including the Greater Sage-Grouse Cub-Regions of: Idaho and Southwestern Montana, Nevada and Northeastern California, Oregon, and Utah. The efforts of the BLM, in coordination with the Forest Service on National Forest System lands within the remaining range of the species, constitute a coordinated strategy for conserving the Greater Sage-Grouse and the sagebrush-steppe ecosystem on most Federal lands on which the species depends. This ROD amended multiple Land Use Plans in these six states, including the Carson City District Resource Management Plan (CRMP, BLM 2001).

Appendix C of the ROD (September, 2015) states “Required Design Features (RDFs) are required for certain activities in all Greater Sage-Grouse habitat. RDFs establish the minimum specifications for certain activities to help mitigate adverse impacts. Applicable RDFs would be applied, through the environmental review process, to any future exploration and/or development project proposed for the offered lease parcels.

Fish Springs Parcels (1,560 acres) – As delineated in the Nevada and Northeastern California Sub-Regional Greater Sage-Grouse Land Use Plan Amendment, Record of Decision habitat maps these parcels are entirely within General Habitat Management Area (GHMA). Additionally, a portion of Fish Springs 2 parcel (NV-16-10-002) is also located within Priority Habitat Management Area (PHMA). Figure 4 graphically depicts the extent of GHMA and PHMA in these two parcels. These Habitat Management Areas are open to geothermal leasing, exploration, and development with major stipulations in PHMA and minor stipulations in GHMA in addition to applicable RDFs. Site and project specific mitigation measures for any future projects on

these parcels would be developed using the Objectives and Management Decisions found in the September, 2015 ROD.

3.10.2. Environmental Consequences

Leasing is purely administrative, therefore direct impacts to BLM designated Sensitive Species would not occur as a result of this Proposed Action. Moreover, leasing alone does not directly authorize fluid minerals exploration and development activities. Direct impacts from these activities would be analyzed under a separate site-specific environmental analysis. However, indirect effects may occur to habitat, individuals, or populations should the lease area be authorized for exploration or development. Indirect impacts from leasing may stem from ground water pumping/withdrawal, direct habitat loss, habitat modification, or behavioral modification as a result of habitat fragmentation, blockage of travel corridors, and/or disturbance (i.e. noise) from roads, power lines, and pipeline construction. These potential impacts are not meant to be inclusive.

3.10.3. No Action

If we implement the No Action, what are the Impacts expected on this resource?

The physical descriptions of the affected environment for the No Action Alternative would be the same as that for the Proposed Action. Implementation of the No Action Alternative would result in the lands not being open to new fluid mineral leasing and the resulting indirect impacts from exploration, other than casual use, or development. Hence, no ground disturbing activities beyond those proposed for or authorized under past leases would occur as a result of the No Action Alternative to the Proposed Action.

Although environmental impacts resulting from the issuance of new leases within the area of the Proposed Action would not occur under the No Action Alternative, implementation of this alternative would not be consistent with the land use plan. This is also inconsistent with the Federal Energy Policy to promote the development of environmentally attractive energy resources. The No Action Alternative would deprive county, state and federal agencies of royalty payments which could be generated from fluid mineral leasing and the successful development of fluid mineral resources.

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Chapter 4. Cumulative Effects:

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The purpose of the cumulative impacts analysis for the proposed action is to evaluate the combined, incremental effects of human activity within the scope of the project. Council of Environmental Quality (CEQ) regulations defines scope to include connected actions, cumulative actions, and similar actions (40 CFR 1508.25). The Council on Environmental Quality formally defines cumulative impacts as follows:

‘...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time’ (40 CFR 1508.7).

For the purposes of this EA, the cumulative impacts are the sum of all past, present (including proposed actions), and reasonably foreseeable future actions (RFFAs) resulting primarily from offering for sale three geothermal lease parcels in Washoe County, Nevada. The purpose of the cumulative analysis in this EA is to evaluate the significance of the Proposed Action’s contributions to cumulative environment.

As required under the NEPA and the regulations implementing NEPA, this chapter addresses those cumulative effects on the environmental resources in the Cumulative Effects Study Areas (CESAs) which could result from the implementation of the Proposed Action and No Action Alternative, past actions, present actions, and RFFAs. The extent of the CESA varies by resource based on the geographic or biological limits of that resource.

For the purposes of this analysis and under federal regulations, ‘impacts’ and ‘effects’ are assumed to have the same meaning and are interchangeable.

4.1. Past, Present and Reasonably Foreseeable Future Actions

The past, present, and reasonably foreseeable future actions applicable to the assessment area are identified as described below.

Fill in the table with relevant actions and mark whether they have occurred in your Cumulative Effects Study Area in the past, present, and/or future (reasonably foreseeable future – meaning we have an application or plan submitted). The following table can be modified to include relevant actions, and delete irrelevant actions. This table helps to identify any actions that contribute to cumulative impacts for your Proposed Action, No Action and other alternatives identified in the EA. If a resource or use doesn’t have impacts from the action, it will also not have cumulative impacts and does not need to be addressed in this chapter.

Table 4.1. Past, Present, and Reasonably Foreseeable Future Actions Table

Project – Name or Description	Status (x)		
	Past	Present	Future
Issuance of multiple use decisions and grazing permits for ranching operations through the allotment evaluation process and the reassessment of the associated allotments.	X	X	X
Livestock Grazing	X	X	X
Invasive weed inventory/treatments	X	X	X
Recreation	X	X	X
Geothermal exploration and utilization	X	X	X

*Chapter 4 Cumulative Effects:
Past, Present and Reasonably Foreseeable
Future Actions*

Range Improvements (including fencing, wells and water developments)			X
Utility and other Rights-of-Way	X	X	X

4.2. Cumulative Effects on Resources

4.2.1. Cumulative Impacts of the Proposed Action

Leasing fluid minerals on public land in the three parcels comprising the Proposed Action would not contribute to cumulative impacts on resources or resource uses in the project area. Issuing leases does not cause direct impacts; however, it does imply a conditional commitment of resources for future exploration and utilization. Three separate and generally sequential phases of geothermal development could occur. The probable sequence and degree of environmental impact would be contingent upon the success or failure of each preceding phase. The three phases are exploration, development/production, and close-out. While the number, variety, and magnitude of actions on federal lands that may be considered to occur is great, information about how many future projects may actually be undertaken is lacking, and information about the likely locations of future development is unknown. This evaluation does not replace the requirement that BLM conduct a site-specific environmental analysis at the exploration, development, and production stages, in order to comply with the National Environmental Policy Act (NEPA).

4.2.2. Cumulative Impacts of the No Action

If the No Action alternative were selected there would be no potential impacts to the considered parcels from any future geothermal exploration or development projects. Selection of the No Action alternative would not affect any of the other activities that have historically and currently are occurring on the parcels.

Chapter 5. Tribes, Individuals, Organizations, or Agencies Conferred:

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Table 5.1. List of Persons, Agencies and Organizations Consulted

Name	Purpose & Authorities for Consultation or Coordination
Susanville Indian Rancheria	Cultural Resources and Native American Religious Concerns
Washoe Tribe of California and Nevada	Cultural Resources and Native American Religious Concerns

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Chapter 6. List of Preparers

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Table 6.1. List of Preparers

Name	Title	Responsible for the Following Section(s) of this Document
Linda Appel	Rangeland Management Specialist	Farm Lands, Invasive Nonnative Species, Livestock Grazing, Vegetation, Wild Horses & Burros
Melanie Cota	Wildlife Biologist	Migratory Birds, Threatened or Endangered Species, BLM Sensitive Species, General Wildlife
Dan Westermeyer	Outdoor Recreation Planner	ACECs, Wild & Scenic Rivers, Wilderness/WSAs, Lands with Wilderness Characteristics, Recreation, Travel Management, Visual Resources
Jason Wright	Archaeologist	Cultural Resources, Native American Religious Concerns, Paleontological Resources
Angelica Rose	Planning & Environmental Coordinator	Environmental Justice, Socioeconomics
Ken Depaoli	Geologist	Mineral Resources
Dave Schroeder	Environmental Protection Specialist	Wastes, Hazardous or Solids
Matt Simons	Reality Specialist	Land Use Authorizations
Michelle Stropky	Hydrologist	Air Quality, Floodplains, Water Quality, Wetlands/Riparian Zones, Soils,
Keith Barker	Fire Ecologist	Fire Management
Coreen Francis	Forester	Forestry Resources