SWReGAP 2011

3.9 Recreation

3.9.1 Affected Environment

3.9.1.1 Overview

Recreation areas were identified using BLM land-ownership and recreation management area data as well as NDOW data. Dispersed recreation, primarily off-highway vehicle (OHV) use, occurs throughout the region of study, since all public land is available for recreation unless otherwise restricted. Designated recreation sites near the proposed GWD Project are shown in **Figure 3.9-1**. Other special designations that might have recreational values, such as designated wilderness and ACECs, are discussed in Section 3.14, Special Designations.

QUICK REFERENCE

ACM – Applicant Committed Protection Measures

NDOW – Nevada Division of Wildlife

OHV – Off-Highway Vehicle

RMP – Resource Management Plan

SRMA – Special Recreation Management Area

SRP – Special Recreation Permit

WMA – Wildlife Management Area

3.9.1.2 Region of Study

The region of study for recreation includes all lands within 5 miles of the ROWs and ancillary facilities and groundwater development areas, as well as recreation areas in the hydrologic basins that might be affected by groundwater drawdown. Five miles was determined to be a reasonable distance to capture potential impacts to the recreation experience associated with construction noise, equipment operation, and increased human presence. Indirect effects to the recreation experience associated with visual impacts are discussed in Section 3.15, Visual Resources.

The mountains and valleys between Ely and Las Vegas contain ecologically diverse habitats and varied terrain that offer a range of recreational opportunities. Recreational activities in the region of study typically consist of casual and dispersed uses including OHV use, hunting, fishing, camping, hiking, horseback riding, caving, geocaching, rock climbing, mountain biking, cultural tourism, bird watching, nature photography, and natural resource interpretation. Seasonal use of OHV trails typically occurs from late March through October in the Great Basin portion of the project area with heavier winter use in the Mohave Desert portion. OHV use on public lands is restricted to designated roads and trails but generally occurs throughout the year. The hunting seasons for various big-game species typically occur between August and mid-December.

Visitation Statistics. Public lands in the region of study receive an estimated average of about 2 million visits annually for OHV use, hiking, hunting, and fishing. Great Basin National Park averages 90,000 visitors each year.

In areas where recreation on public lands is the targeted use, the BLM designates special recreation management areas (SRMAs). A SRMA is an area in which more-intensive management is needed and recreation is a principal objective for management by the BLM. A SRMA might include developed and primitive recreation sites. In addition to opportunities on BLM lands, the region offers a variety of recreation activities on USFS lands, state parks, and National parks and monuments.

GBNP brings many visitors to the area for hiking, fishing, caving, seclusion, and cultural sites. The caves in the GBNP receive considerable recreational use each year. While the park receives nearly 90,000 visitors annually, Lehman Cave receives nearly 35,000 visitors annually (Dickinson 2010). Caves in the Baker Creek watershed (Ice, Crevasse, Halliday's Deep, and Wheeler's Deep) and the Lehman Creek watershed (Lehman, Little Muddy, Lehman Amex, and Root) are the focus of most of the park visitation. The Snake Creek Cave in the Snake Creek watershed receives the highest visitation of any wild (i.e., primitive) cave (NPS 2008).

Figure 3.9-1 Recreation

Recreational use of caves occurs at scattered locations throughout the region. Some popular caves are concentrated near Baker and Ely, but another well-known cave is the Whipple Cave in Cave Valley. Some Snake Valley caves are proposed SRMAs. These caves are important to paleontological, cultural, or Native American values (BLM 2007).

Recreation areas within the region of study are summarized in **Table 3.9-1** and shown in **Figure 3.9-1** and **Figure F3.9-1** (**Appendix F**).

Table 3.9-1 Recreation Areas within the Region of Study

Responsible Agency	Recreation Area	Total Area Size (acres)	Recreation Experience	Crossed by ROW or Ancillary-Facilities	Within Groundwater Development Area
BLM	Alamo SRP	283,884	Opportunities for competitive motorcycle special recreation permit events.	No	No
BLM	Big Dune SRMA	11,600	Managed for moderate, casual OHV use, camping, and other casual recreation opportunities.	No	No
BLM	Caliente SRP	426,598	Opportunities for competitive motorcycle special recreation permit events.	Yes	Yes
BLM	Chief Mountain SRMA	110,839	A broad recreation opportunity spectrum ensuring a balance of recreation experiences.	Yes	Yes
BLM	Cleve Creek Campground	~5	A group camping site and bird watching area with large barbecue area nestled amongst cottonwood canopy along Cleve Creek.	No	No
BLM	Egan Crest SRMA	53,455	Managed to ensure a balance of recreation experiences.	No	No
BLM	Ely Elk Viewing Area	~1 mile	A corridor dedicated to allow visitors a chance to stop and view elk from their vehicles. Hawks, ravens, and eagles perch on poles along the highway, and golden eagles are common year-round.	No	No
BLM	Ely SRP	213,823	Opportunities for competitive motorcycle special recreation permit events.	No	No
BLM	Jean Lake/Roach Lake SRMA	216,300	Managed for intensive recreation opportunities, including competitive OHV and other recreational events, as well as dispersed recreational use and commercial activities, while minimizing impacts to the BLM-sensitive white-margined penstemon.	No	No
BLM	Las Vegas Valley SRMA	197,300	Coordinate with county and city governments to facilities the provision of open space areas, recreational trails, and parks necessary for valley residents.	Yes	Yes
BLM	Laughlin SRMA	25,600	Provide a higher level of management emphasis through increased use monitoring, ranger patrols, increased BLM presence at permitted events, and increased coordination with local government and businesses for recreational uses.	No	No
BLM	Loneliest Highway SRMA	548,567	A broad recreation opportunity spectrum ensuring a balance of recreation experiences. Contains popular recreation destinations such as Illipah Reservoir, Cold Creek Reservoir, Garnet Hill Rockhounding Area, and the Pony Express Trail.	Yes	Yes
BLM	Meadow Valley Recreation Site	40	Developed campground.	No	No

Table3.9-1 Recreation Areas within the Region of Study (Continued)

Responsible Agency	Recreation Area	Total Area Size (acres)	Recreation Experience	Crossed by ROW or Ancillary-Facilities	Within Groundwater Development Area
BLM	Mount Wilson Backcountry Byway	65 miles	Distinct and diverse road that provides unique niche in providing an "off-the-beaten-path" experience through diverse landscape settings.	No	No
BLM	Muddy Mountains SRMA	123,400	Offers semi-primitive recreation opportunities and integrated management of wildlife habitat, cultural resources, and other recreational uses.	No	No
BLM	Nellis Dunes SRMA	10,000	Offers an open area for intensive off-road vehicle and other recreation opportunities, including organized OHV events, casual OHV free play, picnicking, photography, and other non-OHV commercial and competitive permitted activities.	No	No
BLM	Nelson/Eldorado SRMA	81,600	Offers competitive OHV events in accordance with desert tortoise protection requirements.	No	No
BLM	North Delamar SRMA	199,704	Provides a broad recreation opportunity spectrum ensuring a balance of recreation experiences.	No	Yes
BLM	Oak Springs Trilobite Trail	< 1mile	Maintains a non-motorized trail with interpretative information at the trailhead.	No	No
BLM	OHV Race Routes	> 745 miles	Offers competitive OHV high-speed events.	Yes	Yes
BLM	Pahranagat SRMA	289,945	Offers a broad recreation opportunity spectrum ensuring a balance of recreation experiences.	No	No
BLM	Pioche SRP	402,331	Offers opportunities for competitive motorcycle special recreation permit events.	Yes	Yes
BLM	Rainbow Backcountry Byway	120 miles	Offers a distinct and diverse road that offers an "off-the-beaten-path" adventure through diverse landscape settings.	No	No
BLM	Silver State OHV Trail Backcountry Byway	358 miles	Offers a distinct and diverse road that offers an "off-the-beaten-path" adventure through diverse landscape settings.	Yes	Yes
BLM	Sunrise Mountain SRMA	37,620	Offers recreation opportunities in concert with sensitive plant, scenic, cultural, and geologic values of the concurrent ACEC.	No	No
NGO	David E. Moore Bird Sanctuary	162	Offers an historic ranch with a rich, mixed bird community characteristic of the zone where the pinyon-juniper forests of the Great Basin foothills meet the desert shrub community. Most noteworthy is a population of long-billed curlews.	No	No
NPS	GBNP	77,100	Offers cave tours, scenic drives, nature trails, camping, fishing, wildlife viewing, cultural tourism.	No	No

Table3.9-1 Recreation Areas within the Region of Study (Continued)

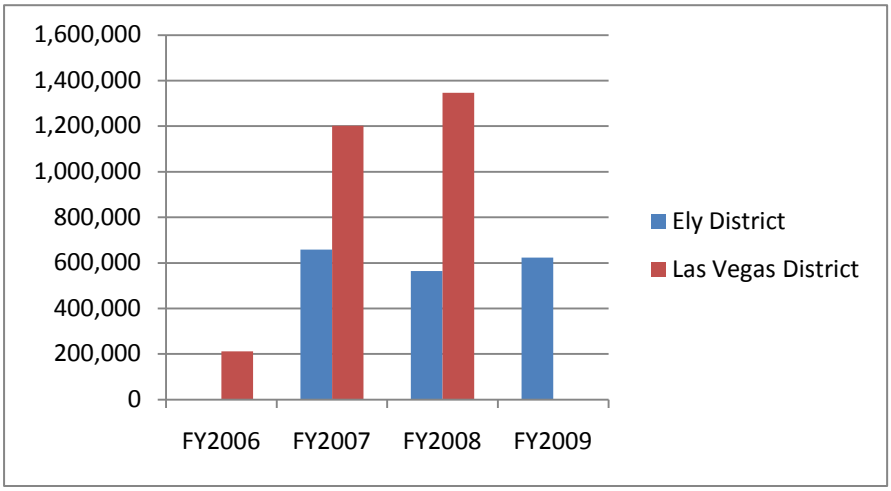
Responsible Agency	Recreation Area	Total Area Size (acres)	Recreation Experience	Crossed by ROW or Ancillary-Facilities	Within Groundwater Development Area
NPS	Lake Mead National Recreation Area	~1.5 million	Offers year-round recreational opportunities. Its lakes cater to boaters, swimmers, and fishermen while its desert rewards hikers, wildlife photographers, and roadside sightseers.	No	No
NV	Beaver Dam State Park	2,393	Offers a popular area for hikers and nature enthusiasts who enjoy its primitive and rustic character. Facilities include campgrounds, a group use area, a day-use picnic area, and hiking and interpretive trails.	No	No
NV	Cathedral Gorge State Park	1,573	Offers trails, scenic, shaded picnic areas, and a tree-shaded campground area with opportunities for hiking, picnicking, camping, nature study, and photography.	No	No
NV	Cave Lake State Park	4,291	Offers campgrounds, picnic areas, hiking trails and a boat launch at a 32-acre reservoir popular for trout fishing, crawdadding, boating, hiking, picnicking and camping, scenic views, opportunities for nature study and photography, and winter sports such as ice fishing, cross-country skiing, ice skating, and snow sculpting.	No	No
NV	Echo Canyon State Park	665	Offers a 65-acre reservoir with a campground, picnic area, group use facilities and boat launch popular for camping, fishing, hiking and scenery.	No	No
NV	Floyd Lamb State Park	2,040	Offers day-use area with picnicking and fishing.	No	No
NV	Kershaw-Ryan State Park	239	Offers picnic area, restrooms and trails for nature study, photography, picnicking, and hiking.	No	No
NV	Key Pittman WMA	1,332	Offers lakes, waterfowl, and public hunting grounds.	No	No
NV	Spring Mountain Ranch State Park	520	Offers an historic ranch and picnicking area.	No	No
NV	Spring Valley State Park	1,111	Offers boat launching, picnicking and camping facilities. Visitors also enjoy hiking, exploring, and touring the historic Ranch House museum.	No	No
NV	Steptoe Valley WMA	6,426	Offers sightseeing, wildlife observation, photography, hiking, educational/scientific activities, fishing, boating, and hunting.	Yes	No
NV	Valley of Fire State Park	40,936	Offers popular activities include camping, hiking, picnicking, and photography.	No	No
NV	Ward Charcoal Ovens State Park	819	Offers opportunities for hiking, mountain biking, OHV riding, wildlife viewing, birding, fishing, picnicking, and camping. Known for its six beehive-shaped historic charcoal ovens.	No	No

Table3.9-1 Recreation Areas within the Region of Study (Continued)

Responsible Agency	Recreation Area	Total Area Size (acres)	Recreation Experience	Crossed by ROW or Ancillary-Facilities	Within Groundwater Development Area
NV	Wayne E. Kirch WMA	14,815	Offers lakes, wetlands, waterfowl, and public hunting grounds.	No	No
USFWS	Desert National Wildlife Range	1,600,000	Offers wildlife viewing including desert tortoise and desert bighorn sheep.	No	No
USFWS	Fish Springs National Wildlife Refuge	17,992	Offers wildlife viewing for migrating wetland birds.	No	No
USFWS	Pahranagat NWR	5,308	Offers wildlife viewing for migratory birds and threatened and endangered species including desert tortoise and southwestern willow flycatcher.	No	No
USFWS	Moapa Valley National Wildlife Refuge	117	Offers wildlife viewing for Moapa dace and other endangered, threatened, and candidate species.	No	No
UT	Indian Peaks State Game Management Area	10,240	Offers public hunting for mule deer and trophy bull elk habitat; fishing for rainbow trout.	No	No

NGO – Non-governmental Organizations.

Usage data on the majority of the recreation sites in **Table 3.9-1** are unavailable because of the unstructured nature of the sites' use and the expansive area covered by the sites. Best available data on recreation use is recorded in the BLM's *Recreation Management Information System* (RMIS) (**Figure 3.9-2**). Recreation use data is collected at 18 sites in the BLM Ely District and 13 sites in the BLM Las Vegas District. Recreation data are collected at select dispersed location areas and developed recreation sites (such as information centers, trailheads, campgrounds, and picnic areas). According to RMIS data recorded over a three-year period from 2007-2009, there was an average of 615,299 visits to public land in the BLM Ely District. The BLM Las Vegas District receives much higher visitation given the proximity of public lands to the Las Vegas area. According to RMIS data recorded over a two-year period from 2007-2008, there was an average of 1,273,899 visits to public land in the BLM Las Vegas District. While RMIS data provides a good reference of approximate recreation use, it is anticipated that RMIS data greatly underestimates total visitation to public lands.



Source: BLM RMIS.

Figure 3.9-2 Recreation Use Data on Public Lands in the Region of Study (Number of Visits)

In addition to the recreation areas identified in **Table 3.9-1**, visitors use public lands for a variety of hunting and fishing activities. Several fishable reservoirs, lakes, and ponds exist within the region (**Table 3.9-2**) (NDOW 2009a); Section 3.7, Aquatic Biological Resources, describes additional game-fish streams. Many of the lower-elevation ponds and reservoirs present opportunities to catch rainbow trout, catfish, bluegill, crappie, and largemouth bass. Angling opportunities at higher-elevation lakes and ponds consist of mostly rainbow and brown trout. Campgrounds often are located around fishable ponds and reservoirs, providing additional recreational opportunities. Other BLM-designated recreation areas include surface-water features as part of their recreational use and management. For example, the Ash Springs Recreation Site, located approximately 7 miles north of Alamo in the community of Ash Springs, involves uses such as soaking in a natural hot spring and picnicking (BLM 2007).

Table 3.9-2 Fishable Water Bodies in the Region of Study

Water Body	County
Floyd Lamb Park Pond	Clark
Lorenzi Park Pond	Clark
Sunset Park Pond	Clark
Eagle Valley Reservoir	Lincoln
Echo Canyon Reservoir	Lincoln
Nesbitt Lake	Lincoln
Upper Pahranagat Lake	Lincoln
Adams-McGill Reservoir	Nye
Cold Springs Reservoir	Nye
Dacey Reservoir	Nye
Haymeadow Reservoir	Nye
Bassett Lake	White Pine
Cave Lake	White Pine
Comins Reservoir	White Pine
Silver Creek Reservoir	White Pine
Sacramento Pass Recreation Area	White Pine
Baker Lake, GBNP	White Pine
Pruess Lake	Millard County, Utah

The number of sales of hunting and fishing licenses and stamps sold in 2004 through 2005 are presented in **Table 3.9-3** (BLM 2007). Hunting for upland game birds and for ducks is popular within the GWD Project region. Big-game hunters hunt mostly elk, bighorn sheep, mule deer, and pronghorn. Mule deer was the most-hunted species in the 2004-2005 season, whereas bighorn sheep was the least hunted (NDOW 2008).

Table 3.9-3 Hunting and Fishing Licenses and Stamps by County: 2004–2005

License Category	Clark	Lincoln	White Pine
Resident fishing	36,833	1,250	2,175
Non-resident fishing	10,906	179	784
Total Fishing Licenses	**47,739**	**1,429**	**2,959**
Trout stamp	18,146	985	2,296
Resident hunting	5,774	314	360
Non-resident hunting	260	29	31
Total Hunting Licenses	**6,034**	**343**	**391**
Duck stamp	1,174	47	130
Upland game bird stamp	4,172	132	418
Hunting/fishing combination	7,438	361	851

Source: NDOW 2009b and Final EIS (BLM 2007).

Rights-of-way and Ancillary Facilities

The proposed project ROWs or ancillary facilities would cross three SRMAs, two SRP areas, OHV race routes, the Silver State OHV Trail Backcountry Byway, and one state WMA. All except the WMA are BLM-administered areas primarily used for motorized-based recreation. The three SRMAs—Chief Mountain, Loneliest Highway, and Las Vegas Valley SRMAs—are large areas (between 100,000 and 550,000 acres) that provide a broad recreation opportunity spectrum. The two SRP areas—Caliente and Pioche SRP areas—are large areas (greater than 400,000 acres) that provide opportunities for competitive motorcycle special recreation permit events. The OHV race routes (more than 745 miles) cater to competitive OHV high-speed events, while the Silver State OHV Trail Backcountry Byway (358 miles) accommodates casual off-road uses. The Steptoe Valley WMA, a 6,426-acre area administered by the State of Nevada, provides opportunities for wildlife-based recreation include wildlife viewing, fishing, and hunting.

Groundwater Development Areas

Four SRMAs, two SRP areas, OHV race routes, and the Silver State OHV Trail Backcountry Byway fall within the groundwater development area boundaries. All areas also are crossed by the ROWs or ancillary facilities discussed in the previous section. In addition to the Chief Mountain, Loneliest Highway, and Las Vegas Valley SRMAs; the North Delamar SRMA (an area of 200,000 acres and similar recreation experiences) would be affected.

3.9.2 Environmental Consequences

3.9.2.1 Rights-of-way

Issues

- Effects on recreation areas (e.g., SRMAs, Silver State Off-highway Vehicle Trail, National Parks) and dispersed recreation activities (e.g., biking, camping, OHV use, special events).
- Increased proliferation of OHV routes and unauthorized OHV use on ROWs.
- Conflicts with hunting or wildlife-based recreation on public and private lands.

Assumptions

- Project actions would influence popular dispersed recreation activities in the region and hinder access to popular recreation areas.
- BLM management prescriptions and guidance would be followed.

Methodology for Analysis

- Quantification of recreation areas and trails that would be crossed by the ROWs and ancillary facilities;
- Qualitative identification of overlap and potential conflicts between recreational seasons and construction activities;
- Identification of areas in which ROWs would be accessible by existing OHV trails; and
- Identification of recreation sites within 5 miles of ROWs and ancillary facilities, as well as other recreation areas that might have limited accessibility because of project construction and facility maintenance.

3.9.2.2 Proposed Action, Alternatives A through C

Construction and Facility Maintenance

Impacts to Recreation Areas and Dispersed Recreation Activities

Table 3.9-4 provides a summary of temporary and permanent surface disturbance to ROWs within designated recreation areas. Surface disturbance, noise, and visual presence of other people during construction in these areas would detract from the natural character of the area and diminish the recreation experience on a short-term basis. While all recreation use types would be affected, impacts from construction activities would be greater for non-motorized uses. Minimal long-term adverse impacts to recreation in these areas would result from alteration of the recreation setting in areas with aboveground structures and vegetation alteration. Any increase in traffic associated with operations and maintenance, even in remote areas of the ROW, would likely be unnoticeable by recreationists in the area.

The surface disturbance that would occur in the recreation areas would comprise <1 percent of any individual recreation area and impacts would be localized. However, the ROW and ancillary facilities pass through the western-most edge the Chief Mountain SRMA and Caliente SRP area and intersect the Pioche SRP area, which would separate the western-most 10 percent of the SRP area from the remaining 90 percent. Along with the multiple crossings of the Silver State Off-highway Vehicle Trail Backcountry Byway by construction activities in Cave, Delamar, and Dry Lake valleys, this disturbance could temporarily reduce public access to recreational trails. Because these SRP areas are used for motorcycle and truck racing, the construction of the project ROWs could interfere with racing events. Where the corridor passes through the Steptoe Valley WMA, the proposed power line would be within an existing designated utility corridor. While the recreation setting would be altered in this area, the power line would be compatible with approved management direction.

Table 3.9-4 Summary of Potential Surface Disturbance in Recreation Areas from Construction of Rights-of-way and Ancillary Facilities (Acres), Proposed Action and Alternatives A through C

Recreation Area	Surface Disturbance (Acres)	Permanent Surface Disturbance in ROWs (Acres)
Caliente SRP	239	87
Chief Mountain SRMA	178	42
Las Vegas Valley SRMA	184	15
Loneliest Highway SRMA	695	58
Pioche SRP	1,148	55
Steptoe Valley WMA	4	0
Total	**2,448**	**257**

Many of the proposed ROWs either cross or are within several OHV race routes commonly used for motorcycle or truck race events throughout the year. The OHV race routes occur throughout Cave, Delamar, Dry Lake, and Steptoe valleys. This overlap could limit or preclude the use of these routes during construction.

In addition to those areas that would be directly affected, several other recreation areas could experience indirect effects from the construction of the ROWs and ancillary facilities. Reduced access and diminished opportunities for dispersed recreation might occur in those designated recreation areas adjacent to but not intersected by the ROWs. Construction of ancillary facilities could reduce the quality of recreational experiences, displace recreation users to other areas, or eliminate some recreation opportunities in localized areas. These areas, and the potential effects from construction, are listed in **Table 3.9-5**.

Table 3.9-5 Evaluation of Potential Construction Impacts to Recreation Areas Near Rights-of-way and Ancillary Facilities

Recreation Area	Intersects ROW or Ancillary Facility	Potential Impact
Caliente SRP	Yes	• Temporarily reduce public access to recreational trails, delay or interfere with racing events, and potentially displace users to other areas during construction
Cave Lake State Park	No	• Additional construction traffic may hinder access on SH 486 • Additional lighting and construction activity could affect nearby recreational setting and views from the area
Chief Mountain SRMA	Yes	• Temporarily reduce public access to recreational trails and potentially displace users to other areas during construction
Chief Mountain West Trailhead	No, but near trailhead	• Temporarily reduce public access to trailhead and adjacent trails • Diminished recreational experience because of a pipeline staging area within 0.25 mile of trailhead • Potentially displace users to other areas during construction
Ely Elk Viewing Area	No	• Disturbance to elk during construction could reduce opportunities for elk viewing
Kershaw-Ryan State Park	No	• Potentially impaired access caused by active construction traffic on SH 317 as well as U.S. 93 to the construction-support site near Caliente that could cause unanticipated delays to visitors

Table 3.9-5 Evaluation of Potential Construction Impacts to Recreation Areas Near Rights-of-way and Ancillary Facilities (Continued)

Recreation Area	Intersects ROW or Ancillary Facility	Potential Impact
Las Vegas Valley SRMA	Yes	• Detract from the natural character of the area and diminish the recreation experience • Proximity of ROWs to OHV trails may displace users
Loneliest Highway SRMA	Yes	• Detract from the natural character of the area and diminish the recreation experience
Nellis Dunes SRMA	No	• Construction activity nearby could affect recreational setting and views from the area
North Delamar SRMA	No	• Construction activity nearby could affect recreational setting and views from the area
OHV race routes	Yes	• Temporarily reduce public access to recreational trails, delay or interfere with racing events, and potentially displace users to other areas during construction
Pahranagat SRMA	No	• Construction activity nearby could affect recreational setting and views from the area
Pioche SRP	Yes	• Separation of the western-most 10 percent of SRP area from remainder of the SRP • Temporarily reduce public access to recreational trails, delay or interfere with racing events, and potentially displace users to other areas during construction
Silver State Off-highway Vehicle Trail Backcountry Byway	Yes	• Disturbance eliminating public access during construction periods (especially in Cave Valley), displacing users to other areas during construction • Construction ROW passing close to an existing trailhead for the Silver State Off-highway Vehicle Trail in the southern part may hinder access
Steptoe Valley WMA	Yes	• Potential disruption to recreational activities (i.e., hunting, fishing, bird watching, and other wildlife viewing) in the WMA
Sunrise Mountain SRMA	No	• Construction activity nearby could affect recreational setting and views from the area

The proposed construction support site would be adjacent to the Caliente access road to the Silver State Off-highway Vehicle Trail (on the south side of U.S. 93, west of Caliente). No improved trailhead exists at this location and the siting of the construction-support facility on private land would further reduce access to the Silver State Off-highway Vehicle Trail from the town of Caliente. Access to the Silver State Off-highway Vehicle Trail would be more than 0.5 mile further from Caliente than its current location. This distance would require the public to travel adjacent to the construction-support site on U.S. 93. In addition, visitors to Kershaw-Ryan State Park, accessed via SH 317, could encounter active construction traffic on SH 317 as well as U.S. 93 that could cause unanticipated delays to visitors.

The northeastern-most ROW and facility construction would be approximately 3 miles from GBNP and, therefore, recreation users in GBNP would not be directly affected by ROW construction.

Dispersed recreation use outside of these designated recreation areas also would occur. Construction of the ROW and ancillary facilities would have direct localized short-term adverse impacts to dispersed recreation resources in the immediate vicinity of construction activities. Noise, equipment, and activity associated with construction would disrupt remote recreational experiences; however, the likelihood of recreationists encountering construction activities would be minimal in most of the area given the amount of public lands open to recreation. Impacts would likely be greater near popular use areas and developed recreation sites. Long-term adverse impacts to recreation would result from alteration

of the recreation setting remaining after the completion of construction from remaining aboveground structures and vegetation alteration.

Applicant committed measures:

ACMs would minimize some of the construction impacts on recreation activities. ACMs relevant to recreation are listed below.

ACM A.1.4. In accordance with the Ely BLM Resource Management Plan, SNWA will notify the BLM at least 10 days before initiation of the project. Notification will be made to the designated BLM representative as well as the BLM biologists in the Las Vegas, Caliente, and Ely BLM offices.

ACMs A.1.28 through A.1.32 include requirements for traffic management (such as signing, traffic controls, and detours) on access roads and would minimize adverse impacts to the public that uses those roads to access recreation areas.

ACM A.2.1. Facility inspection and maintenance will use established access roads, and no off-road travel will be allowed. While driving on paved roads or marked dirt roads, posted speed limits will be maintained. While driving on un-posted dirt roads, a maximum speed limit of 25 miles per hour will be maintained to reduce dust and allow for observation of desert tortoise, livestock, wild horses, or other wildlife in the road.

ACM A.11.2 would limit adverse impacts on the night sky by limiting lighting for nighttime construction to the basic requirements to conduct the work and by shielding lights to direct down towards the site; not into surrounding areas or onto roads.

Proposed mitigation measures:

ROW-REC-1: Enforce Recreational OHV Travel Restrictions. (see Mitigation Measure ROW-T-1 under Transportation) Identify construction zone and construction vehicle access areas where restrictions to unauthorized OHV travel should be enforced. Effectiveness: This measure would be highly effective, since coordination with BLM would minimize impacts to environmental resources. Effects on other resources: Implementation of this measure would not affect other environmental resources.

ROW-REC-2: Avoid Recreational Use Conflicts with Construction Activities. Schedule construction activities (pipeline and aboveground ancillary facilities) to minimize conflicts with recreation activities such as race events, hunting, and elk viewing. Effectiveness: This measure would be highly effective, since coordination with BLM would minimize impacts on recreational users. Effects on other resources: Implementation of this measure would not affect other environmental resources.

ROW-REC-3: Avoid Recreational Trail Location Conflicts. Coordinate with the BLM regarding future trail use where SRMAs and SRP areas are crossed. Effectiveness: This measure would be highly effective, since coordination with BLM would minimize impacts on future recreational uses. Effects on other resources: Implementation of this measure would not affect other environmental resources.

Conclusion. Construction activities would directly affect the following recreation areas: Caliente SRP area (239 acres), Pioche SRP area (1,148 acres), Chief Mountain SRMA (178 acres), Las Vegas Valley SRMA (184 acres), Loneliest Highway SRMA (695 acres), and Steptoe Valley WMA (4 acres). The surface disturbance anticipated in the recreation areas would comprise <1 percent of any recreation area and impacts would be localized. Surface disturbance, noise, and sights and sounds of other people during construction in these areas would detract from the natural character of the area and diminish the recreation experience in the short-term. Minimal long-term adverse impacts to recreation in these areas would result from alteration of the recreation setting in areas with aboveground structures and vegetation alteration. Any increase in traffic associated with operations and maintenance, even in remote areas of the ROW would likely be unnoticeable by recreationists in the area.

There may be delays in accessing developed and dispersed recreation areas due to construction, as well as potential disturbances to resources in recreation areas due to noise and construction on existing roads/trails. Access to both developed and dispersed recreation areas could be temporarily disturbed by delays in accessing these areas caused by construction activities. There also would be temporary disturbances to the recreational resources themselves (e.g., wildlife, wildlife habitat, recreational trails) during construction activities. This would be mitigated by proper coordination and timing of construction activities.

Residual impacts include:

- There would be a small amount of permanent surface disturbance in the following areas: Caliente SRP area (87 acres), Pioche SRP area (55 acres), Chief Mountain SRMA (42 acres), Las Vegas Valley SRMA (15 acres), and Loneliest Highway SRMA (58 acres). Long-term effects to recreation would result from alteration of the recreation setting remaining after the completion of construction from remaining aboveground structures and vegetation alteration.

Impacts on Hunting or Other Wildlife-Based Uses

Hunting and fishing are important recreational activities in the project area, as indicated by the number of hunting and fishing licenses sold (**Table 3.9-3**). The area's wildlife also attracts other wildlife-based recreation, including bird-watching and nature photography. Construction during hunting, fishing, or other active wildlife seasons could adversely affect these activities by creating additional noise, disrupting habitat that attracts wildlife and bird species, and increased human presence. Impacts on wildlife and fisheries are further discussed in Section 3.6, Terrestrial Wildlife and 3.7, Aquatic Biological Resources.

Construction activities could temporarily alter or restrict access to areas used by hunters, fishermen, bird watchers, nature photographers, and other wildlife enthusiasts. Wildlife habitat changes caused by surface disturbance of vegetation (and subsequent revegetation) would have long-term impacts within the ROWs. Two streams with game fish (Snake and Steptoe Creeks) would be crossed by the pipeline and power line ROWs.

The Steptoe Valley WMA, east of Ely, would be crossed by a proposed power line ROW. This crossing could cause minor disruptions in access to recreation (i.e., fishing, hunting, bird watching, and other wildlife viewing) during construction. The northeastern-most ROW and facility construction would be approximately 3 miles from GBNP and, therefore, impacts to dispersed and wildlife-based recreation in the Park would not be directly affected by ROW construction.

Applicant committed measures:

ACM A.1.4 (notification of BLM prior to project mitigation) and ACMs A.1.28 through A.1.32 (traffic management) would minimize construction impacts to hunting or other wildlife-based uses.

Proposed mitigation measures:

ROW-REC-1: Recreational OHV Travel Restrictions, **ROW-REC-2: Avoid Recreational Use Conflicts**, and **ROW-REC-3: Avoid Recreational Trail Conflicts**. These measures also would be applied to the issue involving reduced access to recreation areas or dispersed recreation for hunting or other wildlife-based uses.

Conclusion. Construction activities could temporarily alter or restrict access to areas for hunting or other wildlife-based uses. Wildlife habitat changes caused by surface disturbance of vegetation (and subsequent revegetation) would have long-term impacts within the ROWs. Two streams with game fish (Snake and Steptoe Creeks) and one WMA (Steptoe Valley WMA) would be crossed by the pipeline and power line ROWs.

Residual impacts include:

- Access to both developed and dispersed recreation areas used for hunting or other wildlife-based uses could be temporarily disturbed by delays caused by construction. There also would be short-term disturbances to the

recreational resources themselves (e.g., wildlife, wildlife habitat, recreational trails, etc.) during construction activities. This would be mitigated by proper coordination and timing of construction activities.

Unauthorized Public Access and Route Proliferation

Improvement of existing primitive roads in conjunction with the project could result in indirect effects to recreation from route proliferation and unauthorized public use of the project ROWs. The public could use these improved roads to access previously inaccessible public lands or create new routes to destination areas, such as the Silver State Off-highway Vehicle Trail Backcountry Byway. OHV users on the Silver State Trail, due to its proximity to ROWs associated with the project, could make unauthorized use of the pipeline and power line ROWs. Impacts to recreation could include degradation of quality of recreational resources by a network of "social" roads, however, the degree of impacts cannot be estimated as the actual level and location of route proliferation is speculative at this time.

Applicant committed measures:

ACM A.1.4 (notification of BLM prior to project mitigation), ACMs A.1.28 through A.1.32 (traffic management), and ACM 1.2.1 (limitations to inspection and maintenance travel) would minimize construction impacts to recreation activities.

Proposed mitigation measures:

ROW-REC-1: Recreational OHV Travel Restrictions. ROW-REC-1 would be applied to the issue involving route proliferation and unauthorized public use of the project ROWs.

Conclusion. Construction of ROWs and ancillary facilities and facility maintenance would result in route proliferation and unauthorized public use of the project ROWs that could degrade the quality of recreational resources.

Residual impacts include:

- While mitigation would reduce the extent of the impact, route proliferation and unauthorized public use of the project ROWs would likely occur to some extent in the project area.

3.9.2.3 Alternative D

Construction and Facility Maintenance

Reduced Access to Recreation Areas and Dispersed Recreation Activities

Table 3.9-6 provides a summary of temporary and permanent disturbance to ROWs within designated recreation areas. Surface disturbance, noise, and visual presence of other people during construction in these areas would detract from the natural character of the area and diminish the recreation experience on a short-term basis. While all recreation use types would be affected, impacts from construction intrusions would be greater for non-motorized based uses. Minimal long-term adverse impacts to recreation in these areas would result from alteration of the recreation setting in areas with aboveground structures and vegetation alteration. Any increase in traffic associated with operations and maintenance, even in remote areas of the ROW, would likely be unnoticeable by recreationists in the area.

The surface disturbance that would occur in the recreation areas would comprise <1 percent of any recreation area and impacts would be localized. However, the ROW and ancillary facilities pass through the western-most edge the Chief Mountain SRMA and Caliente SRP area and intersect the Pioche SRP area, which would separate the western-most 10 percent of the SRP area from the remaining 90 percent. Along with the multiple crossings of the Silver State Off-highway Vehicle Trail Backcountry Byway by construction activities in Cave, Delamar, and Dry Lake valleys, this division could temporarily reduce public access to recreational trails. Because these SRP areas are used for motorcycle and truck racing, the construction of the project ROWs could interfere with racing events. The Loneliest Highway SRMA and Steptoe Valley WMA would not be directly affected under this alternative.

Table 3.9-6 Summary of Potential Surface Disturbance in Recreation Areas from Construction of Rights-of-way and Ancillary Facilities, Alternative D

Recreation Area	Temporary Surface Disturbance in ROWs (Acres)	Permanent Surface Disturbance in ROWs (Acres)
Caliente SRP	239	87
Chief Mountain SRMA	178	42
Las Vegas Valley SRMA	184	15
Loneliest Highway SRMA	0	0
Pioche SRP	1,148	55
Steptoe Valley WMA	0	0
Total	**1,749**	**199**

Many of the proposed ROWs either cross or are within several OHV race routes commonly used for motorcycle or truck race events throughout the year. The OHV race routes occur throughout Cave, Delamar, Dry Lake, and Steptoe valleys. This overlap could limit or preclude the use of these routes during construction.

In addition to those areas that would be directly affected, several other recreation areas could experience indirect effects from the construction of the ROWs and ancillary facilities. Reduced access and reduced opportunities for dispersed recreation might occur in those designated recreation areas adjacent to but not intersected by the ROWs. Construction of ancillary facilities could reduce the quality of recreational experiences, displace recreation users to other areas, or eliminate some recreation opportunities in localized areas. These areas, and the potential effects from construction, are listed in **Table 3.9-7**.

The proposed construction support site would be adjacent to the Caliente access road to the Silver State Off-highway Vehicle Trail (on the south side of U.S. 93, west of Caliente). No improved trailhead exists at this location and the siting of the construction-support facility on private land would further reduce access to the Silver State Off-highway Vehicle Trail from the town of Caliente. Access to the Silver State Off-highway Vehicle Trail would be more than 0.5 mile further from Caliente than its current location. This distance would require the public to travel adjacent to the construction-support site on U.S. 93. In addition, visitors to Kershaw-Ryan State Park, accessed via SH 317, could encounter active construction traffic on SH 317 and U.S. 93, causing unanticipated delays to visitors.

Since construction in White Pine County would be excluded under this alternative, impacts to recreation areas in White Pine County including GBNP would not be anticipated.

Table 3.9-7 Evaluation of Potential Construction Impacts to Recreation Areas Near Rights-of-way and Ancillary Facilities, Alternative D

Recreation Area	Intersects ROW or Ancillary Facility	Potential Impact
Caliente SRP	Yes	• Temporarily reduce public access to recreational trails, delay or interfere with racing events, and potentially displace users to other areas during construction
Chief Mountain SRMA	Yes	• Temporarily reduce public access to recreational trails and potentially displace users to other areas during construction
Chief Mountain West Trailhead	No, but near trailhead	• Temporarily reduce public access to trailhead and adjacent trails • Diminished recreational experience because of a pipeline staging area within 0.25 mile of trailhead • Potentially displace users to other areas during construction

Table 3.9-7 Evaluation of Potential Construction Impacts to Recreation Areas Near Rights-of-way and Ancillary Facilities, Alternative D (Continued)

Recreation Area	Intersects ROW or Ancillary Facility	Potential Impact
Kershaw-Ryan State Park	No	• Potentially impaired access caused by active construction traffic on SH 317 as well as U.S. 93 to the construction-support site near Caliente that could cause unanticipated delays to visitors
Las Vegas Valley SRMA	Yes	• Detract from the natural character of the area and diminish the recreation experience • Proximity of ROWs to OHV trails may displace users
Nellis Dunes SRMA	No	• Construction activity nearby could affect recreational setting and views from the area
North Delamar SRMA	No	• Construction activity nearby could affect recreational setting and views from the area
OHV race routes (in Lincoln County)	Yes	• Temporarily reduce public access to recreational trails, delay or interfere with racing events, and potentially displace users to other areas during construction
Pahranagat SRMA	No	• Construction activity nearby could affect recreational setting and views from the area
Pioche SRP	Yes	• Separation of the western-most 10 percent of SRP area from remainder of the SRP • Temporarily reduce public access to recreational trails, delay or interfere with racing events, and potentially displace users to other areas during construction
Silver State Off-highway Vehicle Trail Backcountry Byway	Yes	• Disturbance eliminating public access during construction periods (especially in Cave Valley) , displacing users to other areas during construction • Construction ROW passing close to an existing trailhead for the Silver State Off-highway Vehicle Trail in the southern part may hinder access
Sunrise Mountain SRMA	No	• Construction activity nearby could affect recreational setting and views from the area

Dispersed recreation use outside of these designated recreation areas would also occur. Construction of the ROW and ancillary facilities would have direct localized short-term adverse impacts to dispersed recreation resources in the immediate vicinity of construction activities. Noise, equipment and activity associated with construction would disrupt remote recreational experiences; however, the likelihood of recreationists encountering construction activities would be minimal in most of the area given the amount of public lands open to recreation. Impacts would likely be greater near popular use areas and developed recreation sites. Long-term adverse impacts to recreation would result from alteration of the recreation setting remaining after the completion of construction from remaining aboveground structures and vegetation alteration.

Applicant committed measures:

ACM A.1.4 (notification of BLM prior to project mitigation), ACMs A.1.28 through A.1.32 (traffic management), ACM 1.2.1 (limitations to inspection and maintenance travel), and ACM A.11.2 (impacts on the night sky) would minimize construction impacts to recreation activities.

Additional mitigation measures:

ROW-REC-1: Recreational OHV Travel Restrictions, **ROW-REC-2: Avoid Recreational Use Conflicts**, and **ROW-REC-3: Avoid Recreational Trail Conflicts**. These measures would minimize construction impacts to recreation activities.

Conclusion. Impacts to recreation users from construction activities would occur to a lesser extent than under the Proposed Action and Alternatives A through C, because the ROWs would not extend into White Pine County. Direct impacts from construction under this alternative would not occur to the Loneliest Highway SRMA and Steptoe Valley WMA. The surface disturbance anticipated in the recreation areas would comprise less than 0.3 percent of any recreation area and impacts would be localized. Surface disturbance, noise, and sights and sounds of other people during construction in the Caliente SRP area (239 acres), Pioche SRP area (1,148 acres), Chief Mountain SRMA (178 acres), and Las Vegas Valley SRMA (184 acres) would detract from the natural character of the area and diminish the recreation experience in the short-term. Minimal long-term adverse impacts to recreation in these areas would result from alteration of the recreation setting in areas with aboveground structures and vegetation alteration. Any increase in traffic associated with operations and maintenance, even in remote areas of the ROW would likely be unnoticeable by recreationists in the area.

There may be delays in accessing developed and dispersed recreation areas due to construction, as well as potential disturbances to resources in recreation areas due to noise and construction on existing roads/trails. There also would be temporary disturbances to the recreational resources themselves (e.g., wildlife, wildlife habitat, recreational trails) during construction activities. This would be mitigated by proper coordination and timing of construction activities.

Residual impacts include:

- A small amount of permanent surface disturbance would occur in the following areas: Caliente SRP area (87 acres), Pioche SRP area (55 acres), Chief Mountain SRMA (42 acres), and Las Vegas Valley SRMA (15 acres). Long-term adverse impacts to recreation would result from alteration of the recreation setting remaining after the completion of construction from remaining aboveground structures and vegetation alteration.

Impacts on Hunting or Other Wildlife-Based Uses

Hunting and fishing are important recreational activities in the project area, as indicated by the number of hunting and fishing licenses sold (**Table 3.9-3**). The area's wildlife also attracts other wildlife-based recreation, including bird-watching and nature photography. Construction during hunting or other active wildlife seasons could adversely affect these activities by creating additional noise, disrupting habitat that attracts wildlife and bird species, and increased human presence. Impacts on wildlife and fisheries are further discussed in Section 3.6, Terrestrial Wildlife and 3.7, Aquatic Biological Resources.

Construction activities could temporarily alter or restrict access to areas used by hunters, bird watchers, nature photographers, and other wildlife enthusiasts. Wildlife habitat changes caused by surface disturbance of vegetation (and subsequent revegetation) would have long-term impacts within the ROWs. There would be no effect on recreational fishing under Alternative D because no streams with game fisheries would be crossed by ROWs. No direct or indirect impacts to the Steptoe Valley WMA, GBNP, or other recreation areas in White Pine County would be anticipated under this alternative.

Applicant committed measures:

ACM A.1.4 (notification of BLM prior to project mitigation), ACMs A.1.28 through A.1.32 (traffic management), and ACM 1.2.1 (limitations to inspection and maintenance travel) would minimize construction impacts to hunting or other wildlife-based uses.

Proposed mitigation measures:

ROW-REC-1: Recreational OHV Travel Restrictions, **ROW-REC-2: Avoid Recreational Use Conflicts**, and **ROW-REC-3: Avoid Recreational Trail Conflicts**. These measures also would be applied to the issue involving reduced access to recreation areas or dispersed recreation for hunting or other wildlife-based uses.

Conclusion. Construction activities could temporarily alter or restrict access to areas for hunting or other wildlife-based uses. Wildlife habitat changes caused by surface disturbance of vegetation (and subsequent revegetation) would have long-term impacts within the ROWs. There would be no effect on recreational fishing under Alternative D because no streams with game fisheries would be crossed by ROWs. No direct or indirect impacts to the Steptoe Valley WMA, GBNP, or other recreation areas in White Pine County would be anticipated under this alternative.

Residual impacts include:

- Access to both developed and dispersed recreation used for hunting or other wildlife-based uses could be temporarily disturbed by delays caused by construction. There would also be short-term disturbances to the recreational resources themselves (e.g., wildlife, wildlife habitat, recreational trails) during construction activities. This would be mitigated by proper coordination and timing of construction activities.

Unauthorized Public Access and Route Proliferation

Improvement of existing primitive roads in conjunction with the project could result in indirect effects to recreation from route proliferation and unauthorized public use of the project ROWs. The public could use these improved roads to access previously inaccessible public lands or create new routes to destination areas, such as the Silver State Off-highway Vehicle Trail Backcountry Byway. OHV users on the Silver State Trail, due to its proximity to ROWs associated with the project, could make unauthorized use of the pipeline and power line ROWs. Impacts to recreation could include degradation of quality of recreational resources by a network of "social" roads, however, the degree of impacts cannot be estimated as the actual level and location of route proliferation is speculative at this time.

Applicant committed measures:

ACM A.1.4 (notification of BLM prior to project mitigation), ACMs A.1.28 through A.1.32 (traffic management), and ACM 1.2.1 (limitations to inspection and maintenance travel) would minimize construction impacts to recreation activities.

Proposed mitigation measures:

ROW-REC-1: Recreational OHV Travel Restrictions. ROW-REC-1would be applied to the issue involving route proliferation and unauthorized public use of the project ROWs.

Conclusion. Construction of ROWs and ancillary facilities and facility maintenance would result in route proliferation and unauthorized public use of the project ROWs that could degrade the quality of recreational resources.

Residual impacts include:

- Route proliferation and unauthorized public use of the project ROWs to the extent not reduced by mitigation.

3.9.2.4 Alternative E

Construction and Facility Maintenance

Reduced Access to Recreation Areas and Dispersed Recreation Activities

Table 3.9-8 provides a summary of temporary and permanent disturbance to ROWs within designated recreation areas. Surface disturbance, noise, and visual presence of other people during construction in these areas would detract from the natural character of the area and diminish the recreation experience on a short-term basis. While all recreation use types would be affected, impacts from construction intrusions would be greater for non-motorized based uses. Minimal long-term adverse impacts to recreation in these areas would result from alteration of the recreation setting in areas with aboveground structures and vegetation alteration. Any increase in traffic associated with operations and maintenance, even in remote areas of the ROW, would likely be unnoticeable by recreationists in the area.

The surface disturbance that would occur in the recreation areas would comprise <1 percent of any recreation area and impacts would be localized. However, the ROW and ancillary facilities pass through the western-most edge the Chief Mountain SRMA and Caliente SRP area and intersect the Pioche SRP area, which would separate the western-most 10 percent of the SRP area from the remaining 90 percent. Along with the multiple crossings of the Silver State Off-highway Vehicle Trail Backcountry Byway by construction activities in Cave, Delamar, and Dry Lake Valleys, this division could temporarily reduce public access to recreational trails. Because these SRP areas are used for motorcycle and truck racing, the construction of the project ROWs could interfere with racing events. Where the corridor passes through the Steptoe Valley WMA, the proposed power line would be within an existing designated utility corridor.

While the recreation setting in this area would be altered in this area, the power line would be compatible with approved management direction.

Table 3.9-8 Summary of Potential Surface Disturbance in Recreation Areas from Construction of Rights-of-way and Ancillary Facilities, Alternative E

Recreation Area	Temporary Surface Disturbance in ROWs (Acres)	Permanent Surface Disturbance in ROWs (Acres)
Caliente SRP	239	87
Chief Mountain SRMA	178	42
Las Vegas Valley SRMA	184	15
Loneliest Highway SRMA	695	58
Pioche SRP	1,148	55
Steptoe Valley WMA	4	0
Total	**2,448**	**257**

Many of the proposed ROWs either cross or are within several motorcycle or truck race routes used throughout the year. The OHV race routes occur throughout Cave, Delamar, Dry Lake, and Steptoe valleys. This overlap could limit or preclude the use of these routes during construction.

In addition to those areas that would be directly affected, several other recreation areas could experience indirect effects from the construction of the ROWs and ancillary facilities. Reduced access and reduced opportunities for dispersed recreation might occur in those designated recreation areas that are adjacent to but not intersected by the ROWs. Construction of ancillary facilities could reduce the quality of recreational experiences, displace recreation users to other areas, or eliminate some recreation opportunities in localized areas. These areas, and the potential effects from construction, are listed in **Table 3.9-9**.

Table 3.9-9 Evaluation of Potential Construction Impacts to Recreation Areas Near Rights-of-way and Ancillary Facilities, Alternative E

Recreation Area	Intersects ROW or Ancillary Facility	Potential Impact
Caliente SRP	Yes	• Temporarily reduce public access to recreational trails, delay or interfere with racing events, and potentially displace users to other areas during construction
Cave Lake State Park	No	• Additional construction traffic may hinder access on SH 486 • Additional lighting and construction activity could affect nearby recreational setting and views from the area
Chief Mountain SRMA	Yes	• Temporarily reduce public access to recreational trails and potentially displace users to other areas during construction
Chief Mountain West Trailhead	No, but near trailhead	• Temporarily reduce public access to trailhead and adjacent trails • Diminished recreational experience because of a pipeline staging area within 0.25 mile of trailhead • Potentially displace users to other areas during construction
Ely Elk Viewing Area	No	• Disturbance to elk during construction could reduce opportunities for elk viewing
Kershaw-Ryan State Park	No	• Potentially impaired access caused by active construction traffic on SH 317 and U.S. 93 to the construction-support site near Caliente; causing unanticipated delays to visitors

Table 3.9-9 Evaluation of Potential Construction Impacts to Recreation Areas Near Rights-of-way and Ancillary Facilities, Alternative E (Continued)

Recreation Area	Intersects ROW or Ancillary Facility	Potential Impact
Las Vegas Valley SRMA	Yes	• Detract from the natural character of the area and diminish the recreation experience • Proximity of ROWs to OHV trails may displace users
Loneliest Highway SRMA	Yes	• Detract from the natural character of the area and diminish the recreation experience
Nellis Dunes SRMA	No	• Construction activity nearby could affect recreational setting and views from the area
North Delamar SRMA	No	• Construction activity nearby could affect recreational setting and views from the area
OHV race routes	Yes	• Temporarily reduce public access to recreational trails, delay or interfere with racing events, and potentially displace users to other areas during construction
Pahranagat SRMA	No	• Construction activity nearby could affect recreational setting and views from the area
Pioche SRP	Yes	• Separation of the western-most 10 percent of SRP area from the remainder of the SRP • Temporarily reduce public access to recreational trails, delay or interfere with racing events, and potentially displace users to other areas during construction
Silver State Off-highway Vehicle Trail Backcountry Byway	Yes	• Disturbance eliminating public access during construction periods (especially in Cave Valley), displacing users to other areas during construction • Construction ROW passing close to an existing trailhead for the Silver State Off-highway Vehicle Trail in the southern part may hinder access
Steptoe Valley WMA	Yes	• Potential disruption to recreational activities (i.e., hunting, fishing, bird watching, and other wildlife viewing) in the WMA
Sunrise Mountain SRMA	No	• Construction activity nearby could affect recreational setting and views from the area

The proposed construction support site would be adjacent to the Caliente access road to the Silver State Off-highway Vehicle Trail (on the south side of U.S. 93, west of Caliente). No improved trailhead exists at this location and the siting of the construction-support facility on private land would further reduce access to the Silver State Off-highway Vehicle Trail from the town of Caliente. Access to the Silver State Off-highway Vehicle Trail would be more than 0.5 mile further from Caliente than its current location. This distance would require the public to travel adjacent to the construction-support site on U.S. 93. In addition, visitors to Kershaw-Ryan State Park, accessed via SH 317, could encounter active construction traffic on SH 317 and U.S. 93; causing unanticipated delays to visitors.

The northeastern-most ROW and facility construction would be located further from GBNP than the Proposed Action. As stated for the Proposed Action, indirect effects of construction on GBNP would not occur.

Dispersed recreation use outside of these designated recreation areas would also occur. Construction of the ROW and ancillary facilities would have direct localized short-term adverse impacts to dispersed recreation resources in the immediate vicinity of construction activities. Noise, equipment and activity associated with construction would disrupt remote recreational experiences; however, the likelihood of recreationists encountering construction activities would be minimal in most of the area given the amount of public lands open to recreation. Impacts would be greater near popular use areas and developed recreation sites. Long-term adverse impacts to recreation would result from alteration of the

recreation setting remaining after the completion of construction from remaining aboveground structures and vegetation alteration. This alternative would not directly impact dispersed recreation in Snake Valley.

Applicant committed measures:

ACM A.1.4 (notification of BLM prior to project mitigation), ACMs A.1.28 through A.1.32 (traffic management), ACM 1.2.1 (limitations to inspection and maintenance travel), and ACM A.11.2 (impacts to night sky) would minimize construction impacts to recreation activities.

Proposed mitigation measures:

ROW-REC-1: Recreational OHV Travel Restrictions, **ROW-REC-2: Avoid Recreational Use Conflicts**, and **ROW-REC-3: Avoid Recreational Trail Conflicts**. These measures also would be applied to the issue involving access to recreation areas.

Conclusion. Construction activities impact recreational activities to a lesser extent than under the Proposed Action and Alternatives A through C and a slightly greater extent than Alternative D, due to the fact that the ROWs would not be extended into Snake Valley. Construction activities would directly affect the following recreation areas: Caliente SRP area (239 acres), Pioche SRP area (1,148 acres), Chief Mountain SRMA (178 acres), Las Vegas Valley SRMA (184 acres), Loneliest Highway SRMA (695 acres), and Steptoe Valley WMA (4 acres). The surface disturbance anticipated in the recreation areas would comprise less than 0.3 percent of any recreation area and impacts would be localized. Surface disturbance, noise, and sights and sounds of other people during construction in these areas would detract from the natural character of the area and diminish the recreation experience in the short-term. Minimal long-term adverse impacts to recreation in these areas would result from alteration of the recreation setting in areas with aboveground structures and vegetation alteration. Any increase in traffic associated with operations and maintenance, even in remote areas of the ROW would likely be unnoticeable by recreationists in the area.

There may be delays in accessing developed and dispersed recreation areas due to construction, as well as potential disturbances to resources in recreation areas due to noise and construction on existing roads/trails. There also would be temporary disturbances to the recreational resources (e.g., wildlife, wildlife habitat, recreational trails) during construction activities. This would be mitigated by proper coordination and timing of construction activities.

Residual impacts include:

- A small amount of permanent surface disturbance would occur in the following areas: Caliente SRP area (87 acres), Pioche SRP area (55 acres), Chief Mountain SRMA (42 acres), Las Vegas Valley SRMA (15 acres), and Loneliest Highway SRMA (58 acres). Long-term adverse impacts to recreation would result from alteration of the recreation setting remaining after the completion of construction from remaining aboveground structures and vegetation alteration. There would be no direct impacts to recreation areas and dispersed recreation in Snake Valley.

Impacts on Hunting or Other Wildlife-Based Uses

Hunting and fishing are important recreational activities in the project area, as indicated by the number of hunting and fishing licenses sold (**Table 3.9-3**). The area's wildlife also attracts other wildlife-based recreation, including bird-watching and nature photography. Construction during hunting or other active wildlife seasons also could adversely affect these activities, by creating additional noise, disrupting habitat that attracts wildlife and bird species, and increased human presence. Impacts on wildlife and fisheries are further discussed in Sections 3.6, Terrestrial Wildlife and 3.7, Aquatic Biological Resources.

Construction activities could temporarily alter or restrict access to areas used by hunters, bird watchers, nature photographers, and other wildlife enthusiasts. Wildlife habitat changes caused by surface disturbance of vegetation (and subsequent revegetation) would have long-term impacts within the ROWs. There would be no effect on recreational fishing under Alternative E because no streams with game fisheries would be crossed by ROWs.

The Steptoe Valley WMA, east of Ely, would be crossed by a proposed power line ROW. This crossing could cause minor disruptions in access to recreation (i.e., fishing, hunting, bird watching, and other wildlife viewing) during construction. The northeastern-most ROW and facility construction would be further from GBNP than the Proposed Action and, therefore, impacts to dispersed and wildlife-based recreation in GBNP would not be directly affected by ROW construction.

Applicant committed measures:

ACM A.1.4 (notification of BLM prior to project mitigation) and ACMs A.1.28 through A.1.32 (traffic management) would minimize construction impacts to hunting or other wildlife-based uses.

Proposed mitigation measures:

ROW-REC-1: Recreational OHV Travel Restrictions, **ROW-REC-2: Avoid Recreational Use Conflicts**, and **ROW-REC-3: Avoid Recreational Trail Conflicts**. These measures also would be applied to the issue involving reduced access to recreation areas or dispersed recreation for hunting or other wildlife-based uses.

Conclusion. Construction activities could temporarily alter or restrict access to areas for hunting or other wildlife-based uses. Wildlife habitat changes caused by surface disturbance of vegetation (and subsequent revegetation) would have long-term impacts within the ROWs. There would be no effect on recreational fishing under Alternative E because no streams with game fisheries would be crossed by ROWs.

Residual impacts include:

- Access to both developed and dispersed recreation areas used for hunting or other wildlife-based uses could be temporarily disturbed by delays caused by construction. There also would be temporary disturbances to the recreational resources themselves (e.g., wildlife, wildlife habitat, recreational trails, etc.) during construction activities. This would be mitigated by proper coordination and timing of construction activities.

Unauthorized Public Access and Route Proliferation

Improvement of existing primitive roads in conjunction with the project could result in indirect effects to recreation from route proliferation and unauthorized public use of the project ROWs. The public could use these improved roads to access previously inaccessible public lands or create new routes to destination areas, such as the Silver State Off-highway Vehicle Trail Backcountry Byway. OHV users on the Silver State Trail, due to its proximity to ROWs associated with the project, could make unauthorized use of the pipeline and power line ROWs. Impacts to recreation could include degradation of quality of recreational resources by a network of “social” roads, however, the degree of impacts cannot be estimated as the actual level and location of route proliferation is speculative at this time.

Applicant committed measures:

ACM A.1.4 (notification of BLM prior to project mitigation), ACMs A.1.28 through A.1.32 (traffic management), and ACM 1.2.1 (limitations to inspection and maintenance travel) would minimize construction impacts to recreation activities.

Proposed mitigation measures:

ROW-REC-1: Recreational OHV Travel Restrictions. ROW-REC-1would be applied to the issue involving route proliferation and unauthorized public use of the project ROWs.

Conclusion. Construction of ROWs and ancillary facilities and facility maintenance would result in route proliferation and unauthorized public use of the project ROWs that could degrade the quality of recreational resources.

Residual impacts include:

- While mitigation would reduce the extent of the impact, route proliferation and unauthorized public use of the project ROWs would likely occur to some extent in the project area.

3.9.2.5 Alignment Options 1 through 4

Impacts for the alignment options (1 through 4) are identified in relation to the relevant segment of the Proposed Action and Alternatives A through C (**Table 3.9-10)**.

Table 3.9-10 Recreation Impact Summary for Alignment Options 1 through 4

Alignment Option 1 (Humboldt-Toiybe Power Line Alignment) **Option Description**: Change the locations of a portion of the 230-kV power line from Gonder Substation near Ely to Spring Valley. **Applicable To**: Proposed Action and Alternatives A through C and E.	• Impacts associated with Alignment Option 1 include a reduction in temporary disturbance (43 percent less) in the Loneliest Highway SRMA, compared to the Proposed Action.
Alignment Option 2 (North Lake Valley Pipeline Alignment) **Option Description**: Change the locations of portions of the mainline pipeline and electrical transmission line in North Lake Valley. **Applicable To**: Proposed Action and Alternatives A through C and E.	• Impacts associated with the Alignment Option 2 would similar to the Proposed Action.
Alignment Option 3 (Muleshoe Substation and Power Line Alignment) **Option Description**: Eliminate the Gonder to Spring Valley transmission line, and construct a substation with an interconnection with an interstate, high voltage power line in Muleshole Valley. **Applicable To**: Proposed Action and Alternatives A through C and E.	• Impacts associated with Alignment Option 3 include a reduction in temporary disturbance (47 percent less) in the Loneliest Highway SRMA, compared to the Proposed Action.
Alignment Option 4 (North Delamar Valley Pipeline and Power Line Alignment) **Option Description**: Change the location of a short section of mainline pipeline in Delamar Valley to follow an existing transmission line. **Applicable To**: All alternatives.	• Impacts associated with Alignment Option 4 include 6 percent more surface disturbance in the Caliente SRP area and 12 percent more surface disturbance in the Chief Mountain SRMA, compared to the Proposed Action.

3.9.2.6 No Action Alternative

Under the No Action Alternative, project construction and operation would be limited to that is already approved. The majority of the surface-disturbing activities to construct pipelines would occur on non-recreational public lands in Lincoln and Clark Counties. The use of recreation lands managed by other federal and state agencies would be handled in compliance with specific, existing management plans and guidelines. No changes to recreation would be expected.

3.9.2.7 Comparison of Alternatives

Table 3.9-11 compares the impacts to recreation from ROWs under the Proposed Action and Alternatives A through C plus Alternatives D and E.

Table 3.9-11 Comparison of Alternatives

Parameter	Proposed Action and Alternatives A through C	Alternative D	Alternative E
Long-term, direct impacts to recreation areas	6 recreation areas, 257 acres	4 recreation areas, 199 acres	6 recreation areas, 257 acres
Indirect impacts to recreation areas	17 recreation areas	12 recreation areas, no impacts in White Pine County	17 recreation areas, reduced impacts in Snake Valley
Impacts to dispersed recreation activities	Minimal, localized impacts to remote recreational experiences	Minimal, localized impacts to remote recreational experiences, except White Pine County	Minimal, localized impacts to remote recreational experiences, except Snake Valley
Impacts on Hunting or Other Wildlife-Based Uses	Two streams with game fish and one WMA would be crossed by the pipeline and power line ROWs	No direct impacts to streams with game fish or WMAs	Two streams with game fish and one WMA would be crossed by the pipeline and power line ROWs
Unauthorized public access and route proliferation	Increased potential for route proliferation and unauthorized public use of the project ROWs	Increased potential for route proliferation and unauthorized public use of the project ROWs	Increased potential for route proliferation and unauthorized public use of the project ROWs

3.9.2.8 Groundwater Development and Groundwater Pumping

Issues

Groundwater Development Construction and Facility Maintenance

- Effects on recreation areas (e.g., SRMAs, Silver State Off-highway Vehicle Trail, National Parks) and dispersed recreation activities (e.g., biking, camping, OHV use, special events).
- Increased proliferation of OHV routes and unauthorized OHV use on ROWs.
- Conflicts with hunting or wildlife-based recreation on public and private lands.

Groundwater Pumping

- Groundwater drawdown effects on recreation setting and water-based activities.

Assumptions

Groundwater Development Construction and Facility Maintenance

- Construction activities within groundwater development areas would influence popular dispersed recreation activities in the region and hinder access to popular recreation areas.
- BLM management prescriptions and guidance would be followed.

Groundwater Pumping

- Alterations to vegetation and wildlife habitat caused by groundwater pumping would influence the recreation experience and visitors to National Parks.
- Groundwater drawdown that affects surface water resources would affect the recreation setting and water-based recreation activities.
- Assumptions about the potential changes in future groundwater availability from groundwater pumping do not incorporate additional assumptions about the effects of climate change because specific long term effects of climate change are not presently known, and the incremental contribution of climate change effects to project effects cannot be reasonably estimated. A general discussion of climate change effects is provided in Section 3.1.3.2, Climate Change Effects to All Other Resources.

Methodology for Analysis

Groundwater Development Construction and Facility Maintenance

- Quantification of recreation areas and trails that would be crossed by the ROWs and ancillary facilities.
- Qualitative identification of overlap and potential conflicts between recreational seasons and construction activities.
- Identification of areas in which ROWs would be accessible by existing OHV trails.
- Identification of recreation sites within 5 miles of groundwater development areas, as well as other recreation areas that might have limited accessibility because of project construction and operation.

Groundwater Pumping

- Identification of water sources in recreation areas within the groundwater drawdown areas and an estimation of potential changes to water availability for these resources.

3.9.2.9 Proposed Action

Groundwater Development Area

Impacts to Recreation Areas and Dispersed Recreation Activities

Impacts from the construction of the well fields and associated facilities would be similar to those described for the construction and operation of the ROWs and ancillary facilities. As shown in **Table 3.9-12**, the Caliente and Pioche

SRP areas and the Chief Mountain, Loneliest Highway, and North Delamar SRMAs all fall within the boundaries of proposed groundwater development areas. Surface disturbance, noise, and visual presence of other people during construction in these areas would detract from the natural character of the area and diminish the recreation experience in the short-term. While all recreation use types would be affected, impacts from construction intrusions would be greater for non-motorized based uses. Minimal long-term adverse impacts to dispersed recreation use in these areas would result from alteration of the recreation setting in areas with aboveground structures and vegetation alteration. Any increase in traffic associated with operations and maintenance, even in remote areas of the ROW, would likely be unnoticeable by recreationists in the area.

Table 3.9-12 Recreation Areas Within Groundwater Development Areas

Recreation Area	Acres in Groundwater Development Areas	Percent of Recreation Area
Caliente SRP	1,895	0.4
Pioche SRP	58,355	14.5
Chief Mountain SRMA	2,409	2.2
Loneliest Highway SRMA	95,871	17.5
North Delamar SRMA	9,351	4.7

Although locations and amounts of surface disturbance within the groundwater development areas is unknown at this time, surface disturbance would be anticipated in only a small portion of the recreation areas. Impacts in these areas would be localized. Only two recreation areas have more than 10 percent of their total area contained within the groundwater development areas; the remaining three areas have less than 5 percent of their total area contained within the groundwater development areas.

In addition, the Silver State Off-highway Vehicle Trail Backcountry Byway crosses the groundwater development areas in Cave, Delamar, and Dry Lake Valleys. Construction activities could reduce public access to recreational trails and alter the recreation setting for trail users in localized areas. Several OHV race routes commonly used for motorcycle or truck race events throughout the year also cross the areas identified for groundwater development. The OHV race routes occur throughout Cave, Delamar, and Dry Lake Valleys. This overlap could limit or preclude the use of these routes during construction.

Impacts to dispersed recreation use outside of these designated recreation areas also would occur. Construction of the ROWs and ancillary facilities would have direct localized short-term adverse impacts to dispersed recreation resources in the immediate vicinity of construction activities. Noise, equipment, and activity associated with construction would disrupt remote recreational experiences; however, the likelihood of recreationists encountering construction activities would be minimal in most of the area given the amount of public lands open to recreation. Impacts would be greater near popular use areas and developed recreation sites. Impacts to dispersed recreation use would be anticipated to be higher in the southern portions of the project area, which receives more recreation use due to its proximity to Las Vegas, than the northern portions of the project area. Long-term adverse impacts to recreation would result from alteration of the recreation setting remaining after the completion of construction from remaining aboveground structures and vegetation alteration.

Applicant committed measures:

ACM A.1.4 (notification of BLM prior to project mitigation), ACMs A.1.28 through A.1.32 (traffic management), ACM A.2.1 (travel restrictions), and ACM A.11.2 (impacts on night sky) would minimize construction impacts on recreation activities.

Conclusion. Construction activities would directly affect the following recreation areas: Caliente SRP, Pioche SRP, Chief Mountain SRMA, Loneliest Highway SRMA, and North Delamar SRMA. Only two recreation areas have more than 10 percent of their total area contained within the groundwater development areas; the remaining three areas have less than 5 percent of their total area contained within the groundwater development areas. Surface disturbance would be anticipated only in a small portion of the recreation areas. Impacts in these areas would be localized. Surface

disturbance, noise, and visual presence of other people during construction in these areas would detract from the natural character of the area and diminish the recreation experience in the short-term. Minimal long-term adverse impacts to dispersed recreation use in these areas would result from alteration of the recreation setting in areas with aboveground structures and vegetation alteration. Any increase in traffic associated with operations and maintenance, even in remote areas of the ROW would likely be unnoticeable by recreationists in the area.

There may be delays in accessing developed and dispersed recreation areas due to construction, as well as potential disturbances to resources in recreation areas due to noise, and construction on existing roads/trails. Impacts to dispersed recreation use would be anticipated at a higher level in the southern portions of the project area, which receives more recreation use due to its proximity to Las Vegas compared to the northern portions of the project area. There also would be temporary disturbances to the recreational resources (e.g., wildlife, vegetation, recreational trails, etc.) during construction activities. These impacts would be mitigated by proper coordination and timing of construction activities.

Proposed mitigation measures:

ROW-REC-1: Recreational OHV Travel Restrictions, **ROW-REC-2: Avoid Recreational Use Conflicts**, and **ROW-REC-3: Avoid Recreational Trail Conflicts**. These measures also would be applied to reduce impacts to recreation activities within groundwater development areas.

Residual impacts include:

- There would be a small amount of permanent surface disturbance in the following areas: Caliente SRP, Pioche SRP, Chief Mountain SRMA, Loneliest Highway SRMA, and North Delamar SRMA. Long-term adverse impacts to recreation would result from alteration of the recreation setting remaining after the completion of construction from remaining above-ground structures and vegetation alteration.

Impacts on Hunting or Other Wildlife-Based Uses

Hunting and fishing are important recreational activities in the project area, as indicated by the number of hunting and fishing licenses sold (**Table 3.9-3**). The area's wildlife also attracts other wildlife-based recreation, including bird-watching and nature photography. Construction during hunting, typical fishing, or other active wildlife seasons could adversely affect these activities by creating additional noise, disrupting habitat that attracts wildlife and bird species, and increased human presence. Impacts on wildlife and fisheries are further discussed in Sections 3.6 (Terrestrial Wildlife) and 3.7 (Aquatic Biological Resources).

Construction activities could temporarily alter or restrict access to areas used by hunters, fishermen, bird watchers, nature photographers, and other wildlife enthusiasts. Removal and alteration of vegetation along the ROWs would modify the recreation setting for these users in the long-term. Long-term maintenance would be occasional and would only periodically affect recreation users.

Applicant committed measures:

ACM A.1.4 (notification of BLM prior to project mitigation) and ACMs A.1.28 through A.1.32 (traffic management) would minimize construction impacts to hunting or other wildlife-based uses.

Conclusion. Construction activities could temporarily alter or restrict access to areas for hunting or other wildlife-based uses. Removal and alteration of vegetation within the ROWs would modify the recreation setting for these users in the long-term. Long-term maintenance would be occasional and would only periodically affect recreation users when the activities occur.

Proposed mitigation measures:

ROW-REC-1: Recreational OHV Travel Restrictions, **ROW-REC-2: Avoid Recreational Use Conflicts**, and **ROW-REC-3: Avoid Recreational Trail Conflicts**. These measures would be applied to the issue involving reduced access to recreation areas or dispersed recreation for hunting or other wildlife-based uses.

Residual impacts include:

- Access to both developed and dispersed recreation areas used for hunting or other wildlife-based uses could be temporarily disturbed by delays caused by construction. There also would be short-term disturbances to the recreational resources themselves (e.g., wildlife, wildlife habitat, recreational trails) during construction activities. This would be mitigated by proper coordination and timing of construction activities. Removal and alteration of vegetation along the ROWs would modify the recreation setting for these users in the long-term. Long-term maintenance would be occasional and would only periodically affect recreation users when the activities occur.

Unauthorized Public Access and Route Proliferation

Improvement of existing primitive roads in conjunction with the project could result in indirect effects to recreation resources from route proliferation and unauthorized public use of the project ROWs. The public could use these improved roads and maintained ROWs to access previously inaccessible public lands or create new routes to destination areas, such as the Silver State Off-highway Vehicle Trail Backcountry Byway. OHV users on the Silver State Trail, due to its proximity to the groundwater development areas, could make unauthorized use of the access roads and ROWs. Impacts to recreation could include degradation of quality of recreational resources by a network of "social" roads, however, the degree of impacts cannot be estimated as the actual level and location of route proliferation is speculative at this time.

Applicant committed measures:

ACM A.1.4 (notification of BLM prior to project mitigation), ACMs A.1.28 through A.1.32 (traffic management), and ACM 1.2.1 (limitations to inspection and maintenance travel) would minimize construction impacts to recreation activities.

Conclusion. Construction of the groundwater development areas would result in route proliferation and unauthorized public use of the project access roads and ROWs that could degrade the quality of recreational resources.

Proposed mitigation measures:

ROW-REC-1: Recreational OHV Travel Restrictions. ROW-REC-1would be applied to the issue involving route proliferation and unauthorized public use of the project ROWs.

Residual impacts include:

- While mitigation would reduce the extent of the impact, route proliferation and unauthorized public use of the project ROWs would likely occur to some extent in the project area.

Groundwater Pumping

Drawdown effects may reduce water levels in ponds, springs, and perennial streams and alter vegetation, which could change the recreation setting and wildlife use patterns and subsequently affect wildlife-based recreation including hunting, wildlife viewing, bird watching, and fishing. More details on the anticipated changes in overall plant communities and wildlife habitat are provided in Section 3.5, Vegetation Resources and Section 3.6, Terrestrial Wildlife Resources. Section 3.7, Aquatic Biological Resources, provides more information related to impacts to aquatic species, such as recreational game fisheries.

The drawdown effects to water-based recreation were analyzed in terms of springs and streams that have a moderate to high risk of being affected by the drawdown due to their geomorphological setting (valley floor or valley margins, as opposed to upland) and depth to groundwater (Section 3.3, Water Resoruces). Recreation areas with perennial streams at moderate to high risk of being affected by a 10-foot or greater drawdown under the Proposed Action include the Loneliest Highway SRMA at full build out, GBNP at full build out plus 75 years, and the Pioche SRP Area at full build out plus 200 years. The Loneliest Highway SRMA would have the most springs affected by the drawdown. Springs at moderate to high risk for reduced flows within recreation areas due to pumping effects are listed in **Table 3.9-13**. Recreation areas with perennial streams at moderate to high risk of being affected by a 10-foot or greater drawdown under the Proposed Action include GBNP and the Loneliest Highway SRMA at full build out plus 75 years and full

build out plus 200 years, and the North Delamar SRMA at full build out plus 200 years. Perennial streams at moderate to high risk for reduced flows within recreation areas due to pumping effects are listed in **Table 3.9-14**. The potential risk to water resources within and adjacent to GBNP are addressed within Section 3.3.2, Water Resources.

The NPS has noted that the statute that established the GBNP specifies that the purpose of the GBNP is to conserve the natural resources within the GBNP and provide for the enjoyment of those resources in a way that leaves them unimpaired for future generations. NPS states that this mandate requires that there can be no impact to GBNP resources from the proposed project.

Recreational opportunities that could be affected if surface water resources are impacted by pumping include fishing and bird watching. Silver Creek Reservoir and Pruess Lake are fishable water bodies that also occur in the area of potential effects that could be adversely affected by groundwater drawdown. Reduced stream flows are likely to result in fewer sport fishing opportunities in these recreation areas if fisheries are diminished. The potential effects of the Proposed Action pumping on game fish streams within the entire project study area are discussed in Aquatic Biological Resources, Section 3.7.

Table 3.9-13 Number of Springs in Recreation Areas at Risk of Being Affected By Drawdown Due to Proposed Action Pumping

Recreation Areas	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years
Loneliest Highway SRMA	2	18	19
Pioche SRP	0	0	1

Table 3.9-14 Miles of Perennial Streams in Recreation Areas at Risk of Being Affected By Drawdown Due to Proposed Action Pumping

Recreation Areas	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years
Loneliest Highway SRMA	0	1.4	3.7
North Delamar SRMA	0	0	3

Applicant committed measures:

ACM – SNWA has recognized and agreed to "avoid any effect on federal resources within the boundaries of the GBNP from groundwater withdrawal by SNWA" (**Appendix C**).

Conclusion. Groundwater drawdown is projected to be greater than 10 feet for some springs and perennial streams in GBNP, Loneliest Highway SRMA, Pioche SRP area, and North Delamar SRMA. This could result in localized effects for water- and wildlife-based recreation activities dependent on these water sources.

Mitigation Recommendations:

Monitoring and mitigation measures recommended in Water Resources (Section 3.3) and Aquatic Biological Resources (Section 3.7) for springs and streams within recreation areas would be used to avoid or minimize adverse effects on game fisheries.

Residual impacts include:

- Localized effects for water- and wildlife-based recreation activities dependent on these water sources within the GBNP, Loneliest Highway SRMA, Pioche SRP area, and North Delamar SRMA identified as medium to high risk of being affected by the groundwater drawdown. More details on the anticipated changes in overall plant communities and wildlife habitat are provided in Vegetation Resources (Section 3.5) and Terrestrial Wildlife Resources (Section 3.6). Section 3.7.2, Aquatic Biological Resources, provides more information related to impacts to aquatic species, such as recreational game fisheries.

- **REC-4: Additional Snake Valley Impact Data**. Prior to BLM issuing a ROW and/or notice to proceed for the Snake Valley lateral, additional data and analysis will be completed to identify if impacts from the proposed project will occur, and if so, the magnitude and extent of those impacts to the resources of the GBNP.

3.9.2.10 Alternatives A through E

Groundwater Development Areas

The impacts to recreation that could result from construction, operation, and maintenance of groundwater development areas for Alternatives A through E are summarized in **Table 3.9-15**.

Table 3.9-15 Summary of Recreation Impacts, Proposed Mitigation, and Residual Effects for Alternatives A through E

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Construction, Operation, and Maintenance				
Same as the Proposed Action.	Under this alternative, only two recreation areas overlap with the groundwater development areas: Loneliest Highway SRMA (16,449 acres) and North Delamar SRMA (1,368 acres).	Same as the Proposed Action.	Under this alternative, there would be no disturbance in the Loneliest Highway SRMA. Remote recreational experiences in White Pine County would not be affected.	Alternative E would disturb less area in the Loneliest Highway SRMA (70,889 acres) than the Proposed Action. Remote recreational experiences in Snake Valley would not be affected.
Recommended Mitigation				
None.	None.	None.	None.	None.
Residual Impacts				
Same as the Proposed Action.	Potential surface disturbance in 2 recreation areas: Loneliest Highway and North Delamar SRMAs.	Same as the Proposed Action.	Potential surface disturbance in 4 recreation areas: Caliente and Pioche SRP areas and Chief Mountain and North Delamar SRMAs.	Potential surface disturbance in 5 recreation areas: Caliente and Pioche SRP areas and Chief Mountain, Loneliest Highway, and North Delamar SRMAs.

Groundwater Pumping

Drawdown effects on recreation activities would be similar to the Proposed Action. Springs and perennial streams at moderate to high risk for reduced flows within recreation areas due to pumping effects under Alternatives A though E are listed in **Table 3.9-16** and **Table 3.9-17**.

Table 3.9-16 Number of Springs in Recreation Areas at Risk of Being Affected By Drawdown Due to Pumping (Alternatives A through E)

Recreation Areas	Pumping Timeframe	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Loneliest Highway SRMA	Full Build Out	0	6	0	0	0
	Full Build Out + 75 Years	11	20	3	0	5
	Full Build Out + 200 Years	16	22	10	0	8
Pioche SRP	Full Build Out	0	0	0	0	0
	Full Build Out + 75 Years	0	0	0	0	0
	Full Build Out + 200 Years	0	1	0	9	0

Table 3.9-17 Miles of Perennial Streams in Recreation Areas at Risk of Being Affected By Drawdown Due to Pumping (Alternatives A through E)

Recreation Areas	Pumping Timeframe	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Cave Lake State Park	Full Build Out	0	0	0	0	0
	Full Build Out + 75 Years	0	0	0	0	0
	Full Build Out + 200 Years	0	3	0	0	0
Loneliest Highway SRMA	Full Build Out	0	0	0	0	0
	Full Build Out + 75 Years	1	4	1	0	0
	Full Build Out + 200 Years	3	7	2	0	0
North Delamar SRMA	Full Build Out	0	0	0	0	0
	Full Build Out + 75 Years	0	0	0	0	0
	Full Build Out + 200 Years	0	3	0	0	0

Conclusion. Impacts to recreation from groundwater pumping would be less under all alternatives as compared to the Proposed Action, with the exception of Alternative B. Alternative B would generate the greatest localized impacts, due to the non-optimized spacing of wells, and this could potentially result in create greater impacts to GBNP, Cave Lake State Park, and the Loneliest Highway SRMA.

Applicant-committed measures:

ACM – SNWA has recognized and agreed to "avoid any effect on federal resources within the boundaries of the GBNP from groundwater withdrawal by SNWA" (**Appendix C**).

Mitigation Recommendations:

Monitoring and mitigation measures recommended in Water Resources, Section 3.3 and Aquatic Biological Resources, Section 3.7 for springs and streams within recreation areas would be used to avoid or minimize adverse effects on game fisheries.

Residual impacts include:

- Localized effects for water- and wildlife-based recreation activities dependent on these water sources within Cave Lake State Park, GBNP, Loneliest Highway SRMA, and North Delamar SRMA identified as moderate to high risk of being affected by the groundwater drawdown. More details on the anticipated changes in overall plant communities and wildlife habitat are provided in Vegetation Resources (Section 3.5) and Terrestrial Wildlife

Resources (Section 3.6). Section 3.7.2 (Aquatic Biological Resources), provides more information related to impacts to aquatic species, such as recreational game fisheries.

3.9.2.11 No Action

Under the No Action alternative, the ROWs would not be granted and the project would not be constructed as proposed. However, other ongoing projects and activities would continue to draw down groundwater levels. Projected drawdown impacts on springs and perennial streams at medium to high risk for reduced flows within recreation areas due to pumping effects are listed in **Table 3.9-18** and **Table 3.9-19**.

Table 3.9-18 Number of Springs in Recreation Areas at Risk of Being Affected By Drawdown Due to Pumping, No Action Alternative

Recreation Areas	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years
Caliente SRP	1	1	1
Kershaw-Ryan State Park	3	3	3
Loneliest Highway SRMA	0	0	0
Pioche SRP	9	10	10

Table 3.9-19 Miles of Perennial Streams in Recreation Areas at Risk of Being Affected By Drawdown Due to Pumping, No Action Alternative

Recreation Areas	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years
Caliente SRP	0	0	9
North Delamar SRMA	<1	<1	<1

Conclusion. Existing projects and activities under the No Action Alternative could potentially affect some springs and perennial streams in the Caliente SRP area, Kershaw-Ryan State Park, Pioche SRP area, and North Delamar SRMA. This could result in localized effects for water- and wildlife-based recreation activities that are dependent on these water sources.

Mitigation Recommendations:

None.

Residual impacts include:

- Localized effects for water- and wildlife-based recreation activities dependent on these water sources within the Caliente SRP area, Kershaw-Ryan State Park, Pioche SRP area, and North Delamar SRMA identified as medium to high risk of being affected by the groundwater drawdown. More details on the anticipated changes in overall plant communities and wildlife habitat are provided in Vegetation Resources, Section 3.5 and Terrestrial Wildlife Resources, Section 3.6. Section 3.7, Aquatic Biological Resources, provides more information related to impacts to aquatic species, such as recreational game fisheries.

3.9.3 Cumulative Impacts

3.9.3.1 Issues

Surface Disturbance

- Effects on recreation areas (e.g., SRMAs, Silver State Off-highway Vehicle Trail), NPS units, and dispersed recreation activities (e.g., biking, camping, OHV use, special events).
- Increased proliferation of OHV routes and unauthorized OHV use on ROWs.
- Conflicts with hunting or wildlife-based recreation on public and private lands.

Groundwater Pumping

- Groundwater drawdown effects on recreation setting, NPS units, and water-based activities.

3.9.3.2 Assumptions

Surface Disturbance

- Construction activities and resulting development would influence popular dispersed recreation activities in the region and could temporarily limit access to these areas.
- BLM management prescriptions and guidance would be followed.

Groundwater Pumping

- Alterations to vegetation and wildlife habitat caused by groundwater pumping would influence the recreation experience.
- Groundwater drawdown that affects surface water resources could affect water-based recreation activities.

3.9.3.3 Methodology for Analysis

The cumulative impacts of construction of the GWD Project should take into account all surface-altering actions that would be likely to occur and that might affect recreation areas and recreation uses in the project region. Using the impact analysis for the ROWs and groundwater development areas, impacts from other RFFAs identified in Chapter 2 were considered. Any potential overlap with recreation areas and potential conflicts between recreational uses and construction activities are identified as an impact.

3.9.3.4 No Action

Surface Disturbance

Other RFFAs in the region of study would affect recreation resources and recreation areas regardless of the GWD Project since much of the area is open to dispersed recreation. Planned construction projects may increase the presence of surface disturbance, noise, and sights and sounds of other people during construction in these areas, which would detract from the natural character of the area and diminish the recreation experience in the short-term. Impacts would be greater near popular use areas and developed recreation sites. Projects that occur concurrently or sequentially would have greater and more noticeable impacts on recreation uses. While all recreation use types would be affected, impacts from construction intrusions would be greater for non-motorized based uses.

The temporary effects that occur during construction would generally be more disruptive than occasional long-term operational and maintenance activity. Minimal long-term adverse impacts to dispersed recreation use would result from alteration of the recreation setting in areas with aboveground structures and vegetation alteration. Multiple projects within known recreation areas could alter the recreation setting and potentially displace some recreation users.

Concurrent and sequential construction projects during hunting, typical fishing, or other active wildlife seasons could adversely affect these activities, by creating additional noise, disrupting habitat that attracts wildlife and bird species, and increased human presence. Cumulative adverse effects to wildlife habitat could have indirect effects on recreational resources through reduced wildlife populations available for hunting, bird-watching, or nature photography, although the combination of projects needed to have a noticeable effect on wildlife populations is not foreseen.

Improvement of existing primitive roads in conjunction with development projects on public lands can have a beneficial cumulative effect on recreation by creating new access routes for use of public lands. Conversely, the recreation setting could be adversely impacted by the cumulative proliferation of access routes.

Groundwater Pumping

For the No Action alternative, the ROWs would not be granted and the project would not be constructed as planned. However, other planned projects and activities would occur that would affect groundwater levels. Cumulative drawdown impacts to springs and perennial streams at medium to high risk for reduced flows within recreation areas due to groundwater drawdown under the No Action alternative are listed in **Tables 3.9-20** and **3.9-21**, respectively.

Table 3.9-20 Number of Springs in Recreation Areas at Risk of Being Affected By Drawdown Due to Cumulative Pumping with No Action

Recreation Areas	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years
Caliente SRP	8	11	11
Kershaw-Ryan State Park	3	3	3
Pioche SRP	9	10	10

Table 3.9-21 Miles of Perennial Streams in Recreation Areas at Risk of Being Affected By Drawdown Due to Pumping Effects, No Action

Recreation Areas	Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years
Caliente SRP	9	9	9
Lake Mead National Recreation Area	<1	<1	<1
North Delamar SRMA	<1	<1	6
Overton WMA (falls within the Lake Mead National Recreation Area)	<1	<1	<1

Conclusion. Other RFFAs in the region of study would affect dispersed recreation, wildlife-based recreation, and route proliferation regardless of the GWD Project since much of the area is open to dispersed recreation. Impacts would be greater near popular use areas and developed recreation sites. The temporary effects that occur during construction would generally be more disruptive than occasional long-term operational and maintenance activity.

Existing projects and activities under the No Action Alternative could potentially imapct some springs and perennial streams in the Caliente SRP area, Kershaw-Ryan State Park, Pioche SRP area, Lake Mead National Recreation Area, North Delamar SRMA, and Overton WMA.

Additional Mitigation:

None.

Residual impacts include:

- Cumulative effects to dispersed recreation, wildlife-based recreation, and route proliferation where RFFAs are proposed, occur concurrent or sequential with other projects, or disturb the same recreation areas. Localized effects for water- and wildlife-based recreation activities dependent on water sources within the Caliente SRP area, Kershaw-Ryan State Park, Pioche SRP area, Lake Mead National Recreation Area, North Delamar SRMA, and Overton WMA identified as medium to high risk of being affected by the groundwater drawdown. More details on the anticipated changes in overall plant communities and wildlife habitat are provided in Vegetation Resources,

Section 3.5 and Terrestrial Wildlife Resources, Section 3.6. Section 3.7.2, Aquatic Biological Resources provides more information related to impacts to aquatic species, such as recreational game fisheries.

3.9.3.5 Proposed Action

Surface Disturbance

The GWD Project would contribute to cumulative effects to recreational resources where other RFFAs are in the immediate vicinity of the proposed project, such as pipelines or transmission lines in the same utility corridor. The Spring Valley Wind project and ON Transmission Line would affect the same recreation areas affected by the GWD Project. Both projects would affect the Loneliest Highway SRMA, and the ON Transmission Line also would affect the Silver State Trail Backcountry Byway. In addition, much of the public lands crossed by the proposed pipeline are open to dispersed recreation. Concurrent construction projects may increase the presence of surface disturbance, noise, and visual presence of other people during construction in these areas, which would detract from the natural character of the area and diminish the recreation experience in the short-term. Impacts would be greater near popular use areas and developed recreation sites in the southern portions of the project area, which receives more recreation use due to its proximity to Las Vegas, than the northern portions of the project area. Projects that occur concurrently or sequentially would have greater and more noticeable impacts on recreation uses. However, the likelihood of construction concurrent with the GWD Project is low. While all recreation use types would be affected, impacts from construction intrusions would be greater for non-motorized based uses.

The temporary effects that occur during construction would generally be more disruptive than occasional long-term operational and maintenance activity. Minimal long-term adverse impacts to dispersed recreation use in these areas would result from alteration of the recreation setting in areas with aboveground structures and vegetation alteration. Multiple projects within known recreation areas could alter the recreation setting and potentially displace some recreation users. This cumulative effect could occur in the Loneliest Highway SRMA and Silver State Trail Backcountry Byway.

Concurrent construction projects during hunting, fishing, or other active wildlife seasons could adversely affect these activities, by creating additional noise, disrupting habitat that attracts wildlife and bird species, and increased human presence. Cumulative adverse effects to wildlife habitat could have indirect effects on recreational resources through reduced wildlife populations available for hunting, bird-watching, or nature photography, although the combination of projects needed to have a noticeable effect on wildlife populations is not foreseen.

Improvement of existing primitive roads in conjunction with development projects on public lands can have a beneficial cumulative effect on recreation by creating new access routes for use of public lands. Conversely, the recreation setting could be adversely impacted by the cumulative proliferation of access routes.

Groundwater Pumping

Drawdown effects may reduce water levels in ponds, springs, and perennial streams and alter vegetation, which could change the recreation setting and wildlife use patterns and subsequently affect wildlife-based recreation including hunting, wildlife viewing, bird watching, and fishing. More details on the anticipated changes in overall plant communities and wildlife habitat are provided in Section 3.5, Vegetation Resources and Section 3.6, Terrestrial Wildlife Resources. Section 3.7.2, Aquatic Biological Resources, provides more information related to impacts to aquatic species, such as recreational game fisheries. Springs and perennial streams at moderate to high risk for reduced flows within recreation areas due to groundwater drawdown under the Proposed Action are listed in **Tables 3.9-22** and **3.9-23**, respectively.

Table 3.9-22 Springs in Recreation Areas at Risk from Groundwater Pumping (10-foot Drawdown Contour) for No Action Cumulative, Proposed Action, and Cumulative with the Proposed Action[1]

Recreation Area	Cumulative with No Action			Proposed Action			Cumulative with Proposed Action		
	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years
Caliente SRP	8	11	11	0	0	0	8	11	11
Kershaw-Ryan State Park	3	3	3	0	0	0	3	3	3
Pioche SRP	9	10	10	0	0	1	9	10	10
Loneliest Highway SRMA	0	0	0	2	18	19	4	18	19

[1] Acreages are based on drawdown models outputs and are not additive. Information presented is approximate and intended to display incremental effects of the project in relation to other projects in the region.

Table 3.9-23 Miles of Perennial Springs in Recreation Areas at Risk from Groundwater Pumping (10-foot Drawdown Contour) for No Action Cumulative, Proposed Action, and Cumulative with the Proposed Action[1]

Recreation Area	Cumulative with No Action			Proposed Action			Cumulative with Proposed Action		
	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years	Full Build Out	Full Build Out Plus 75 Years	Full Build Out Plus 200 Years
Caliente SRP	9	9	9	0	0	0	9	9	9
Lake Mead National Recreation Area	<1	<1	<1	0	0	0	<1	<1	<1
North Delamar SRMA	<1	<1	6	0	0	3	<1	4	9
Overton WMA	<1	<1	<1	0	0	0	<1	<1	<1
Loneliest Highway SRMA	0	0	0	0	1	4	0	2	4

[1] Acreages are based on drawdown models outputs and are not additive. Information presented is approximate and intended to display incremental effects of the project in relation to other projects in the region.

The Proposed Action could contribute incremental effects under cumulative pumping to streams and springs within four areas: Pioche SRP, GBNP, Loneliest Highway SRMA, and the North Delamar SRMA (**Tables 3.9-22** and **2.9-23**). This alternative would contribute all of the potential effects in GBNP and the Loneliest Highway SRMA. The relative contribution to cumulative effects would be 10 percent in the Pioche SRP and 33 percent in the North Delamar SRP. No Action pumping contributes all of the effects in the Caliente SRP, Kershaw-Ryan State Park, Overton WMA, and Lake Mead National Recreation Area.

Conclusion. The GWD Project could contribute to cumulative effects to dispersed recreation, wildlife-based recreation, and route proliferation where other RFFAs are in the immediate vicinity of the proposed project. These incremental effects could potentially occur in the Pioche SRP, GBNP, Loneliest Highway SRMA, and North Delamar SRMA,

based on spring and perennial stream parameters for recreation areas. Proposed Action pumping would contribute most or all of the effects in GBNP and the Loneliest Highway SRMA. No action pumping would contribute most of the effects in the North Delamar SRMA and Pioche SRP, with a small contribution from the Proposed Action. Impacts would be greater near popular use areas and developed recreation sites in the southern portions of the project area, which receives more recreation use due to its proximity to Las Vegas, than the northern portions of the project area. The temporary effects that occur during construction generally would be more disruptive than occasional long-term operational and maintenance activity.

Groundwater drawdown is projected to be greater than 10 feet for some springs and perennial streams in the Caliente SRP area, GBNP, Kershaw-Ryan State Park, Loneliest Highway SRMA, Pioche SRP area, Lake Mead National Recreation Area, North Delamar SRMA, and Overton WMA.

Mitigation Recommendations:

None.

Residual impacts include:

- ACMs and monitoring and mitigating measures could be effective in reducing impacts to springs and streams within recreation areas. However, it is not possible to determine the level of impact reduction at this time. Residual effects on some springs or streams in recreation areas could occur considering the relatively long recovery period.

3.9.3.6 Cumulative Analysis – Alternatives A through E

Surface Disturbance

Cumulative impacts to recreation resources from surface disturbance associated with the GWD Project and other RFFAs would be similar to the Proposed Action. Alternatives D and E would have the least contribution of impacts to recreation resources in White Pine County and Snake Valley.

Groundwater Pumping

Drawdown effects on recreation activities would be similar to the Proposed Action. Springs and perennial streams at moderate to high risk for reduced flows within recreation areas due to pumping effects under Alternatives A though E are listed in **Tables 3.9-24** and **3.9-25**.

Table 3.9-24 Number of Springs in Recreation Areas at Risk of Being Affected By Drawdown Due to Pumping Cumulative with Alternatives A through E

Recreation Areas	Pumping Timeframe	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Caliente SRP	Full Build Out	8	8	8	8	8
	Full Build Out + 75 Years	11	11	11	10	11
	Full Build Out + 200 Years	11	11	11	11	11
Kershaw-Ryan State Park	Full Build Out	3	3	3	3	3
	Full Build Out + 75 Years	3	3	3	3	3
	Full Build Out + 200 Years	3	3	3	3	3
Loneliest Highway SRMA	Full Build Out	0	6	0	0	0
	Full Build Out + 75 Years	13	20	9	0	6
	Full Build Out + 200 Years	16	22	11	0	8
Pioche SRP	Full Build Out	9	9	9	6	9
	Full Build Out + 75 Years	10	10	10	10	10
	Full Build Out + 200 Years	10	10	10	10	10

Table 3.9-25 Miles of Perennial Streams in Recreation Areas at Risk of Being Affected By Drawdown Due to Pumping Cumulative with Alternatives A through E

Recreation Areas	Pumping Timeframe	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Caliente SRP	Full Build Out	9	9	9	9	9
	Full Build Out + 75 Years	9	9	9	9	9
	Full Build Out + 200 Years	9	9	9	9	9
Cave Lake State Park	Full Build Out	0	0	0	0	0
	Full Build Out + 75 Years	0	0	0	0	0
	Full Build Out + 200 Years	0	3	0	0	0
Lake Mead National Recreation Area	Full Build Out	<1	<1	<1	<1	<1
	Full Build Out + 75 Years	<1	<1	<1	<1	<1
	Full Build Out + 200 Years	<1	<1	<1	<1	<1
Loneliest Highway SRMA	Full Build Out	0	0	0	0	0
	Full Build Out + 75 Years	1	4	1	0	0
	Full Build Out + 200 Years	4	7	3	0	0
North Delamar SRMA	Full Build Out	<1	<1	<1	<1	<1
	Full Build Out + 75 Years	3	4	3	<1	3
	Full Build Out + 200 Years	6	9	6	6	6
Overton WMA	Full Build Out	<1	<1	<1	<1	<1
	Full Build Out + 75 Years	<1	<1	<1	<1	<1
	Full Build Out + 200 Years	<1	<1	<1	<1	<1

All of the alternatives (A through E) would result in a lesser extent of drawdown impacts to recreational resources, as compared to the Proposed Action, with the exception of Alternative B. Alternative B would result in greater localized drawdown impacts to Cave Lake State Park, GBNP, the Loneliest Highway SRMA, and the North Delamar SRMA. The patterns of incremental contributions from Alternatives A through E would be the same as the Proposed Action. Individual alternatives would contribute most or all of the cumulative effects in GBNP and the Loneliest Highway SRMA. Alternative B would contribute all of the cumulative effects in Cave Lake State Park. Individual alternatives would contribute a relative small portion of cumulative effects on recreation resources in the North Delamar SRMA and Pioche SRP. The No Action Alternative would contribute all of the cumulative effects in the Caliente SRP, Kershaw-Ryan State park, Overton WMA, and Lake Mead National Recreation Area.

Mitigation Recommendations:

None.

Residual impacts include:

- As noted for the Proposed Action, residual effects on some springs and streams in recreation areas could occur from Alternatives A through E when considering the relatively long recovery period for affected waterbodies.