

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter identifies and describes the current condition and trend of elements or resources in the human environment which may be affected by the Proposed Action or Alternatives and the environmental consequences or effects of the action(s) on these elements and/or resources. The Affected Environment would be the same for all Alternatives.

Proposed Action

The scope of this EA addresses approximately 754,850 acres of BLM-administered lands within the Cow Canyon, Clan Alpine, and Dixie Valley Allotments. This EA also addresses the Clan Alpine HMA, in which 20% of its acreage (62,624 acres) lies within the Cow Canyon Allotment, 49% of its acreage (153,430 acres) lies within the Clan Alpine Allotment, and 31% of its acreage (97,068 acres) lies within the Dixie Valley Allotment.

General Setting

The Cow Canyon, Clan Alpine, and Dixie Valley Allotments are located in Churchill and Mineral Counties Nevada, and contain a total of approximately 754,850 acres of public lands.

Cow Canyon

The Cow Canyon Allotment is located in Churchill County, Nevada, and is approximately 90 miles northeast of Fallon, Nevada. The allotment extends north and south along the western edge of the Clan Alpine Mountains, and west from the mountains out upon the flat to Humboldt Marsh. Elevations range from 3400 to almost 9000 feet.

Clan Alpine

The Clan Alpine Allotment is located approximately 60 miles east of Fallon, Nevada. The allotment is characterized by the long, broad Edwards Creek Valley and bordered by two rugged mountain ranges. The eastern boundary of the allotment is formed by the summit of the New Pass Range and Desatoya mountains. The Clan Alpine mountain range creates the western boundary. Elevation ranges from 5100' in the Edwards Creek Valley playa to over 8000' along the ridge of the mountains. Desatoya Peak, with an elevation of 9973', is the highest point on the allotment. The Bell Flat winter use pasture of the allotment is located approximately 40 miles east of Fallon. The pasture is long and narrow and contains two valleys, Bell Flat to the west and Gabbs Valley to the east, which are separated by rolling hills and low mountains. The northern boundary is Hwy 50 and State Route 361 is the eastern boundary. The summit of the range of low mountains, which include Fairview Peak and Slate Mountain, delineates the western border with the Nye-Mineral County line as the southern. Elevation ranges from 4400 feet along Hwy 50 in Stingaree Flat to 8803 feet on Fairview Peak.

Dixie Valley

The Dixie Valley Allotment is located in Churchill County, Nevada, and is approximately 40 miles east of Fallon, Nevada. Administered by the CCD SFO, Nevada, the allotment consists of 282,801 acres of land administered by the BLM. It is composed of three former individual allotments – Dixie Valley, Hare Canyon and Mississippi Canyon. The allotment extends north from T17N to T22N and east from R34E through R36E. Portions of the allotment boundaries are formed by the ridgeline of the Stillwater Mountains to the west and U.S. Highway 50 to the south. It includes Dixie Valley, the southern portion of the Clan Alpine Mountains and Edwards

Creek Valley on the east boundary. The allotment topography varies from rugged mountainous terrain to low lying valleys with the elevation ranging from a high of 9966 feet to a low of 3380 feet above sea level. The allotment boundaries and pasture areas are secured with gap/drift fencing in critical areas.

Supplemental Authorities

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

Table 28: Supplemental Authorities*

Resource	Present Yes/No	Affected Yes/No	Rationale
Air Quality	Yes	No	The Project Area is not located within a non-attainment area. None of the anticipated impacts to Air Quality would be expected to exceed the national Ambient Air Quality Standards. The air quality in this part of the western Great Basin is generally good but can be affected by periodic episodes of particulate drift from wind events in association with storm tracks that pass predominately west or southwest to east or northeast.
Areas of Critical Environmental Concern	No	No	None present in the project area.
Cultural Resources	Yes	Yes	Analysis carried forward in document.
Environmental Justice	No	No	No minority or low income populations would be adversely affected by the Proposed Action.
Farm Lands (prime or unique)	No	No	None present in the project area.
Floodplains	Yes	No	No proposed activities are located within mapped floodplains.
Invasive, Nonnative Species	Yes	Yes	Analysis carried forward in document.
Migratory Birds	Yes	Yes	Analysis carried forward in document.
Native American Religious Concerns	Yes	Yes	Analysis carried forward in document.
Threatened or Endangered Species (animals)	No	No	None present in the project area.
Threatened or Endangered Species (plants)	No	No	None present in the project area.
Wastes, Hazardous or Solid	Yes	No	All spills, if any, would be handled in accordance with all applicable laws.
Water Quality (Surface/Ground)	Yes	Yes	Analysis carried forward in document.

Resource	Present Yes/No	Affected Yes/No	Rationale
Wetlands/Riparian Zones	Yes	Yes	Analysis carried forward in document.
Wild and Scenic Rivers	No	No	None present in the project area.
Wilderness/WSA	Yes	Yes	Analysis carried forward in document.

March 2012

*See H-1790-1 (January 2008) Appendix 1 Supplemental Authorities to be Considered.

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

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

Resources or Uses Other Than Supplemental Authorities

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

Table 29: Resources or Uses Other Than Supplemental Authorities

Resource or Issue**	Present Yes/No	Affected Yes/No	Rationale
BLM Sensitive Species (animals)	Yes	Yes	Analysis carried forward in document.
BLM Sensitive Species (plants)	Yes	Yes	Analysis carried forward in document.
Fire Management/Vegetation	Yes	No	The majority of the project area is in the Churchill Ranges and Churchill Basins fire management units. Aggressive initial attack would be initiated with the intent of holding all unplanned ignitions to 250 acres or less, 90% of the time in areas dominated by cheatgrass or susceptible to post fire cheatgrass invasion. The southern portion of the Clan Alpine Bell Flat Pasture is in the Mineral Basin fire management unit. Under all fire intensity levels respond to fires by air or ground and evaluate the potential for fires to threaten identified values at risk from fire and/or the fire grows beyond 100 acres in size.
Forest Resources	Yes	No	No actions are proposed that would affect forest resources under any alternative.
General Wildlife	Yes	Yes	Analysis carried forward in document.
Land Use Authorization	Yes	No	No new authorizations would be implemented under any of the alternatives and no impacts would occur to existing land use authorizations in the project area.
Lands with Wilderness Characteristics	Yes	Yes	Analysis carried forward in document.

Resource or Issue**	Present Yes/No	Affected Yes/No	Rationale
Livestock Grazing	Yes	Yes	Analysis carried forward in document.
Minerals	Yes	Yes	Analysis carried forward in document.
Paleontological	No	No	None in project area.
Recreation	Yes	No	Most recreation is dispersed in this area and should not be impacted by any of the actions proposed in the alternatives.
Socioeconomics	Yes	No	The Proposed Action would not contribute to any population growth/reduction nor would it create any new jobs or tax base to the local communities.
Soils	Yes	No	Although livestock grazing would cause minor surface disturbance to soils within the Project Area, overall soils would not be affected by the Proposed Action or Alternatives. Managing wild horses within AML could benefit soils in areas that would/are impacted by heavy horse use thereby reducing the risk of soil erosion. See Appendix B for additional soil information.
Travel Management	Yes	No	The Proposed Action or Alternatives would have no effect on Travel Management. No road closures would occur and existing roads would be utilized.
Vegetation	Yes	Yes	Analysis carried forward in document.
Visual Resources	Yes	Yes	Analysis carried forward in document.
Wild Horses and Burros	Yes	Yes	Analysis carried forward in document.
Global Climate Change	Yes	No	There is a public and scientific debate about human-caused contributions to global climate change, no methodology currently exists to correlate greenhouse gas emissions (GHG) and to what extent these contributions would contribute to such climate change.
Greenhouse Gas Emission	Yes	No	There would be a negligible contribution of GHG-methane; no methodology currently exists to correlate GHG emissions from livestock grazing to any specific resource impact within the Project Area.

March 2012

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

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

Resources Present and Brought Forward For Analysis

The potential impacts to the resources and uses listed in Table 28 and Table 29 were evaluated by the BLM interdisciplinary team to determine if detailed analysis of that resource or use was required in this EA. Through this process, the interdisciplinary team determined that there are resources that are present but the impacts from them would not warrant detailed analysis. Rationale is provided in Table 28 and Table 29 above for these resources and uses explaining why additional analysis is not warranted. The following resources and uses are brought forward for detailed analysis in this EA as they are present in the area and may be affected by the Proposed Action or alternatives:

- Livestock Grazing
- Vegetation
- Minerals
- Invasive, Non-native and Noxious Weeds
- Wetlands/Riparian
- Water Quality
- Migratory Birds
- Wildlife
- BLM Sensitive Status Species (animals)
- Threatened, Endangered, Proposed or Candidate Species (animals)
- Wild Horses and Burros
- Cultural Resources
- Native American Religious Concerns
- Wilderness/WSA
- Visual Resources
- Lands with Wilderness Characteristics

3.1 Lands with Wilderness Characteristics

Wilderness characteristics are resource values that include naturalness and outstanding opportunities for solitude and primitive and unconfined recreation. All BLM lands, including those in the project area, were inventoried for wilderness characteristics in 1979 and 1980 as directed under Section 603 of FLPMA. Lands found to have wilderness characteristics in the original 1979 and 1980 inventories were subsequently designated as either Wilderness Areas (WAs) or WSAs. The CCD wilderness inventory was conducted in 1979 and 1980 in accordance with BLM's Wilderness Study Policy: "Policies, Criteria and Guidelines for Conducting Wilderness Studies on Public Lands (47 CFR §5098-5122)".

Section 201 of FLPMA requires the BLM to maintain an inventory of BLM-administered public lands to determine whether they possess wilderness characteristics. Lands with Wilderness Characteristics (LWCs) are lands that have been inventoried and determined by the BLM to contain wilderness characteristics as defined in Section 2(c) of the Wilderness Act. In order for an area to be classified as LWC, it must possess sufficient size (more than 5,000 acres), naturalness, and outstanding opportunities for either solitude and/or primitive and unconfined

recreation. To comply with this directive, the CCD is currently conducting a LWC review throughout the District as part of the revision to the Resource Management Plan.

One area of approximately 6,800 acres, located between the Stillwater Range and Job Peak WSAs on the west side of the Dixie Valley Allotment has been identified as potentially qualifying as being LWC. Upon completion of the LWC review, a determination would be made in the Resource Management Plan planning process if this area in fact meets the guidelines to be designated and if so, a decision on the designation and the appropriate level of management objectives would be completed. Therefore, LWCs will not be carried forward in this EA for analysis.

3.2 Livestock Grazing

3.2.1 Affected Environment

The Cow Canyon, Clan Alpine, and Dixie Valley Allotments occur within the Sierra Front-Northern Great Basin Area Resource Advisory Council (RAC) area. The S&Gs reflect the stated goals of improving rangeland health while providing for the viability of the livestock industry, all wildlife species, and wild horses and burros in the Northeastern Great Basin Area. Standards are expressions of physical and biological conditions required for sustaining rangelands for multiple uses. Guidelines point to management actions related to livestock grazing for achieving the Standards. For each grazing permit renewal, BLM conducts an allotment evaluation and standards determination analysis in the form of a SDD to determine if the current livestock grazing management practices in place are achieving the Standards and conforming to the Guidelines. If the Standards assessed are not achieved, a determination is made if significant progress is being made towards Standard achievement and if current livestock grazing is a significant contributing factor to not achieving the standard. The results of these assessments are summarized in Table 3.

Generally, major plant communities across the project area show a tendency for shrub dominance with a limited herbaceous understory. This is believed to be a stable state for these plant communities. The transition into this state was due largely to heavy grazing that occurred throughout the west in the early 20th century (pre-Taylor Grazing Act). Altered natural disturbance regimes (fire cycles, etc.) and climate conditions also have played a role in this transition. Over the past 100 years, livestock grazing has been reduced to current levels. Current grazing management is focused on improving conditions to meet or make progress towards the standards for rangeland health and/or Table 2-2 Habitat Standards while providing for multiple use, sustained yield, and watershed function and health.

The 2007 MOU between NASF and BLM states the management responsibilities of the BLM for livestock grazing on the Navy withdrawn lands, which include areas within the Cow Canyon, Clan Alpine, and Dixie Valley Allotments (refer to Maps in Appendix A):

- Notify the Navy when grazing is to occur in the Navy's designated retention areas in Dixie Valley.
- Continue allotment management programs on BLM's three grazing allotments in Dixie Valley and adjust AUMs as necessary to protect vegetation conditions.

- Continue to manage grazing in accordance with its Grazing Allotment Management Plans and in a manner that is compatible with current and future military training requirements on Navy-acquired and withdrawn lands.
- Consult with the Navy before constructing or removing range improvements per amended allotment management plans.

The 2007 MOU between NASF and BLM states the management responsibilities of the BLM and NASF for livestock grazing on the Navy withdrawn lands:

- Manage vegetation and grazing in Dixie Valley per the Grazing, Vegetation, and Water Resource Management Plan for the Dixie Valley Settlement Area, Churchill County, Nevada. This plan shows the locations of water sources that would remain for livestock and the management of vegetation to be protected for wildlife habitat and Navy training purposes.
- Manage the eight identified ponds in Dixie Valley (low cost methods) with the goal of maintaining the existing ecological values. These areas would be fenced to exclude livestock, but they may be opened for grazing for short periods if determined to benefit management.
- Continue to prohibit domestic sheep grazing on Navy lands within nine miles of desert bighorn sheep habitat. These areas would likely include B-17, Dixie Valley, and Horse Creek.

Cow Canyon

The current term livestock grazing permit authorizes 365 cattle from May 1 to November 15 for a total of 2390 AUMs.

The Cow Canyon Allotment consists of approximately 146,228 acres of land administered by the BLM. The majority of the allotment is unfenced except for drift fences between the two use areas and along the ridgeline between the Clan Alpine and Cow Canyon Allotments. The livestock operator relies on water control, natural barriers and herding to accomplish management control. Short sections of drift fence are placed in critical areas to aid in control. The available water includes wells, creeks, and springs, some developed and some not.

Clan Alpine

The current term livestock grazing permit authorizes 927 cattle from May 1 to March 31 for a total of 10,210 AUMs. A separate winter sheep operation is located within the eastern portion of the Edwards Pasture in the New Pass Range area. The period of use runs from 12/01 to 03/15 allowing for 1737 domestic sheep to graze a total of 1200 AUMs and is administered by the BMDO.

The Clan Alpine Allotment consists of approximately 358,377 acres of land administered by the BLM. The majority of the allotment is unfenced. Short sections of drift fence are placed in critical areas and along the ridgeline between the Clan Alpine and Cow Canyon Allotments to aid in control. The livestock operator relies on water control, natural barriers and herding to accomplish management control. The available water includes wells, creeks, and springs, some developed and some not.

Dixie Valley

The current term livestock grazing permit authorizes 528 cattle yearlong from March 1 to February 28 for a total of 6341 AUMs.

The Dixie Valley Allotment consists of approximately 250,245 acres of land administered by the BLM. The majority of the allotment is unfenced. Short sections of drift fence are placed in critical areas to aid in control. The livestock operator relies on water control, natural barriers and herding to accomplish management control. The available water includes wells, creeks, and springs, some developed and some not.

3.2.2 Environmental Consequences

3.2.2.1 *Alternative 1: Proposed Action*

Cow Canyon

This alternative is designed to allow for continued progress towards or achievement of Standards for Rangeland Health and/or Table 2-2 Habitat Standards. The Proposed Action continues the current grazing rotation system, adding two weeks at the end of the season to help facilitate livestock removal from the high country, and decreasing the number of cattle to keep the AUMs at their current level. Existing Range Improvements are noted (see Table 14) with listed mitigation measures needed for fully operational improvements and timetables for meeting these obligations. Range Improvements are an integral part of the rotational grazing systems. These actions are vital to obtaining proper grazing management and the achievement of the Standards for Rangeland Health and/or Table 2-2 Habitat Standards.

The Proposed Action for the Cow Canyon Allotment would allow native, along with any desirable non-native plant communities, to maintain or improve their health as well as protect and maintain healthy, productive soils and riparian sites. Adhering to these management practices would provide opportunity to achieve and/or make significant progress toward achieving Standards for Rangeland Health and/or Table 2-2 Habitat Standards by maintaining or improving key ecological processes and native vegetative composition.

Clan Alpine

This alternative is designed to allow for continued progress towards or achievement of Standards for Rangeland Health and/or Table 2-2 Habitat Standards. The Proposed Action continues the current grazing rotation system with some modifications. Two weeks flexibility between pasture rotations would be allowed. The Cold Springs Pasture would continue be used as a gathering/trailing pasture in November with proposed use in April also. The number of cattle would be decreased to keep the AUMs at their current level. Existing Range Improvements are noted (see Table 14) with listed mitigation measures needed for fully operational improvements and timetables for meeting these obligations. Range Improvements are an integral part of the rotational grazing systems. These actions are vital to obtaining proper grazing management and the achievement of the Standards for Rangeland Health and/or Table 2-2 Habitat Standards.

The construction of two spring developments, Dirt Spring and Rock Creek Spring, would exclude animals from the springs and guard against further hoof action. Water would be available outside the spring exclosures. These actions would be expected to promote benefits

to plant physiology; there would be additional soil protection because of increased leaf and litter cover; the plant quality and volume of existing forage species would increase; the potential for the loss of desired plant species, along with the potential for loss of the spring source altogether, would decline. Overall, this would have a positive impact on the riparian and surrounding areas.

The reinstatement of 1600 AUMs would be considered only if the criteria mentioned in the Proposed Action (Section 2.0) were met. The additional grazing would be conducted during the winter season when plants are in the dormant stage. Snow would assist in the distribution of cattle over previously unused portions of the pasture. Additionally, this grazing would be monitored annually for five years prior to final approval and reinstatement of the AUMs to the permit.

The Proposed Action for the Clan Alpine Allotment would allow native, along with any desirable non-native plant communities, to maintain or improve their health as well as protect and maintain healthy, productive soils and riparian sites. Adhering to these management practices would provide opportunity to achieve and/or make significant progress toward achieving Standards for Rangeland Health and Table 2-2 Habitat Objectives (in GRSG habitat areas) by maintaining or improving key ecological processes and native vegetative composition.

Dixie Valley

This alternative is designed to allow for continued progress towards or achievement of Standards for Rangeland Health and/or Table 2-2 Habitat Standards. The Proposed Action continues the current grazing rotation system with some modifications. Fifteen days flexibility would be allowed for movement between pastures as well as rotating the grazing use annually between the High Country and Mid-Slope Pastures. Existing Range Improvements are noted (see Table 14) with listed mitigation measures needed for fully operational improvements and timetables for meeting these obligations. Range Improvements are an integral part of the rotational grazing systems. These actions are vital to obtaining proper grazing management and the achievement of the Standards for Rangeland Health and/or Table 2-2 Habitat Standards.

The construction of the Unnamed Spring development on the Dixie Valley side of Cherry Valley would exclude animals from the springs and guard against further hoof action. Water would be available outside the spring enclosure. This action would be expected to promote benefits to plant physiology; there would be additional soil protection because of increased leaf and litter cover; the plant quality and volume of existing forage species would increase; the potential for the loss of desired plant species, along with the potential for loss of the spring source altogether, would decline. Overall, this would have a positive impact on the riparian and surrounding areas.

The construction of a well in the Camp Creek area would allocate additional water which would aid in the distribution of the livestock. This would help lower utilization levels as cattle would disperse over a larger area, utilizing forage not currently accessible.

These actions would be expected to promote benefits to plant physiology; there would be additional soil protection because of increased leaf and litter cover; the plant quality and volume of existing forage species would increase; and the potential for the loss of desired plant species, would decline. Overall, this would have a positive impact on the vegetative community.

The Proposed Action for the Dixie Valley Allotment would allow native, along with any desirable non-native plant communities, to maintain or improve their health as well as protect and maintain healthy, productive soils and riparian sites. Adhering to these management practices would provide opportunity to achieve and/or make significant progress toward achieving Standards for Rangeland Health and/or Table 2-2 Habitat Standards by maintaining or improving key ecological processes and native vegetative composition.

Common to All Allotments

The issuance of a TNR permit would allow for an increase in flexibility for the use of specific areas on an annual, temporary basis when it is determined by the ID team that there is an overabundance of additional forage or there is a need to control cheatgrass and other invasive plant species.

Cattle could be used as a tool for decreasing the height, quantity, and distribution of areas of heavy cheatgrass, other invasive plant species, and perennial grasses, reducing the risk of wildfires. This in turn, could reduce the risk of having to close a portion of the allotment after a fire event while the burned area is rested and/or seeded.

Issuing a TNR permit would not result in a permanent increase in active preference. Utilization levels as a result of authorizing TNR are likely to be in the light use category (21 – 40 percent).

3.2.2.2 *Alternative 2: Dixie Valley Reduction in Livestock and Change in Season of Use*

Under this alternative for the Dixie Valley Allotment the grazing season would be changed from March 1 through February 28 to June 1 through February 28 due to the closing of the Dixie Valley North Pasture. Spring grazing would be excluded. The Dixie Valley South Pasture would receive annual winter grazing November thru February. Defoliation during winter months while plants are dormant has been shown to have little to no effect on plant vigor (Riesterer et al. 2000). The effects for this alternative would be similar as discussed in the Proposed Action. There would be benefits to plant physiology; there would be additional soil protection because of increased leaf and litter cover; the plant quality and volume of existing forage species would be promoted; riparian areas would experience less use allowing for recuperation and regeneration; and the potential for loss of desired plant species, due to repeated grazing during the critical growing period for plants would decline. Effects to the Cow Canyon and Clan Alpine Allotments would be the same as Alternative 1.

3.2.2.3 *Alternative 3: Cherry Valley Closure to Hot Season Grazing*

Under this alternative for the Cherry Valley Pasture of the Clan Alpine Allotment, the season of use would be changed from July 1 through August 31 to September 1 through October 31. The effects for this alternative would be similar as discussed in the Proposed Action. There would be benefits to plant physiology; additional soil protection because of increased leaf and litter cover; plant quality and volume of existing forage species would be promoted; riparian areas

would experience less use during the hot season allowing for recuperation and regeneration; and the potential for loss of desired plant species, due to repeated grazing during the critical growing period for plants would decline. However, wild horse use would likely increase in this area due to the availability of forage and water. The Cow Canyon and Dixie Valley Allotments would not be affected by this alternative.

3.2.2.4 Alternative 4: Cow Canyon Change in Season of Use and Clan Alpine Reduction of AUMs

Cow Canyon

Under this alternative the season of use on the Cow Canyon Allotment would be changed from May 1 through November 15 to October 1 through April 15. Restricting livestock grazing to the winter months when plants are dormant and removing prior to the critical growing period would allow the native perennials to regenerate and produce seeds along with strengthening their root reserves. Defoliation during winter months while plants are dormant has been shown to have little to no effect on plant vigor (Riesterer et al. 2000). The effects for this alternative would be similar as discussed in the Proposed Action. There would be benefits to plant physiology; there would be additional soil protection because of increased leaf and litter cover; the plant quality and volume of existing forage species would be promoted; riparian areas would experience less use allowing for recuperation and regeneration; and the potential for loss of desired plant species, due to repeated grazing during the critical growing period for plants would decline. This livestock grazing management system would be expected to meet and/or make significant progress towards meeting Rangeland Health Standards over the life of the permit.

Clan Alpine

Under this alternative authorized livestock grazing within the Clan Alpine allotment would be reduced by approximately 50% resulting in a reduction of 5095 total AUMs. As a result, there would be benefits to plant physiology; additional soil protection from increased leaf and litter cover; plant quality and volume of existing forage species would be promoted; and the potential for loss of desired plant species would decline. This livestock grazing management system would be expected to continue to meet and/or make significant progress towards meeting Rangeland Health Standards over the life of the permit.

Dixie Valley

Effects to the Dixie Valley Allotment would be the same as Alternative 1.

3.2.2.5 Alternative 5: No Domestic Sheep Grazing

Under this alternative the domestic sheep grazing from December 1 through March 15 would be prohibited in the New Pass area of the Clan Alpine Allotment. The effects for this alternative would be similar to those discussed in the Proposed Action. There would be benefits to plant physiology; additional soil protection because of increased leaf and litter cover; plant quality and volume of existing forage species would be promoted; and the potential for loss of desired plant species, due to both cattle and domestic sheep grazing in the same locale, would decline. The Cow Canyon and Dixie Valley Allotments would not be affected by this alternative.

3.2.2.6 *Alternative 6: No Grazing*

Under the No Grazing Alternative, no livestock would be authorized on the Cow Canyon, Clan Alpine, and Dixie Valley Allotments at this time. The construction of spring developments, fencing, and a well would not be authorized. In the short term there would be benefits to plant physiology; additional soil protection because of increased leaf and litter cover; plant quality and volume of existing forage species would be promoted; and the potential for loss of desired plant species, due to livestock grazing, would decline.

Under the No Grazing Alternative, wild horses would continue to utilize forage and water within these allotments. Populations of wild horses would be expected to increase due to the lack of competition for forage and water. As populations increase there would be increased pressure on forage and water within the allotments and the short-term beneficial impacts would decrease.

3.2.2.7 *Alternative 7: No Action*

Under the No Action Alternative, the stocking rate for cattle within the Cow Canyon Allotment would remain at 365 cattle from May 1 to November 15, for a total of 2388 AUMs; 927 cattle from May 1 to March 31, for a total of 10210 AUMs on the Clan Alpine Allotment; and 528 cattle yearlong, for a total of 6341 AUMs on the Dixie Valley Allotment.

The riparian exclosures and the well would not be constructed. Development of improvements could be completed only after being analyzed in another site-specific environmental analysis at a later date. Existing improvements described in the Proposed Action Alternative as needing maintenance could be repaired at some future date under this Alternative after undergoing a Section 106 of the National Historic Preservation Act review; however, a delay would not be desirable since the riparian areas would go unprotected for a longer period of time. Under this alternative it would be more difficult to meet the Standards for Rangeland Health and/or Table 2-2 Habitat Standards.

3.3 Wild Horses

3.3.1 Affected Environment

Detailed information about the history of the Clan Alpine HMA and the wild horse herd is provided in the Clan Alpine, Pilot Mountain and Pine Nut Herd Management Areas Gather Plan No. NV-C010-2010-0019 (October 2010).

The 2007 MOU between NASF and BLM states the management responsibilities of the BLM for livestock grazing on the Navy withdrawn lands:

- Manage wild horses and burros in all areas according to the Wild Free-Roaming Horse and Burro Act.
- Continue to manage the Clan Alpine HMA, a portion of which includes the Dixie Valley training area, in a manner compatible with current and future military training requirements.

The Clan Alpine HMA has not been designated as “range” under 43 CFR 4710.3-2. There are currently four designated Wild Horse and Burro Ranges in the Western United States that are managed principally for wild horses and burros consistent with 43 CFR 4170.3-2. These are the Pryor Mountain Wild Horse Range in Montana; the Little Book Cliffs Wild Horse Range in Colorado; the Nevada Wild Horse Range and the Marietta Wild Burro Range in Nevada. Only the BLM Director or Assistant Director (as per BLM Manual 1203: Delegation of Authority), may establish a Wild Horse and Burro Range after a full assessment of the impact on other resources through the land-use planning process.

The Clan Alpine HMA was last gathered to remove excess wild horses in 2006. A total of 88 horses were gathered and removed in response to a wildfire which burned a portion of the HMA. In 2000, 233 excess wild horses were removed from the Clan Alpine HMA and 96 mares were treated with Porcine Zona Pellucida (PZP-22) and released back into the HMA. This gather was also in response to a wildfire which burned a substantial portion of the HMA. The non-gathered population was estimated at 68 animals. A total of 111 mares and 114 stallions (225 animals) were released back into the Clan Alpine HMA, resulting in an estimated post-gather population of 293 horses within the HMA in 2000.

Table 30: Removals, Releases and Treatment – Clan Alpine HMA

Gather Years	2000 Gather	2006 Gather
Wild Horses Gathered	458	88
Wild Horses Removed	233	88
Males Released	114	0
Females Released	111	0
Not Captured	68	519
Total Released	225	0
Treated with PZP	96	0
Total Remaining Post Gather Population	293	519

A population inventory was completed for the Clan Alpine HMA in June 2010, when 524 horses were counted, or 5 more horses than were counted in 2007. The Clan Alpine HMA is difficult to inventory because of substantial tree cover and broken terrain. The ideal time to inventory this HMA is during the winter when the majority of horses move to relatively open areas at lower elevations to avoid deep snow cover facilitating detection. However, it has not been possible to inventory during the winter. The BLM observer indicated that 200 horses could easily have been missed which would be equivalent to a 10 percent rate of increase since 2007. Currently the BLM is proposing to bait/water trap and treat mares with PZP-22 vaccine. If a more current census finds the number of wild horses to be above AML a helicopter gather would be implemented when funding was available.

The Clan Alpine HMA is within the AML range and generally the vegetative community is in good condition. There are a few areas receiving heavy use, though overall utilization is within acceptable levels. Horses within this HMA are in good health.

The AML for the Clan Alpine HMA was determined by allocating available forage between wild horses, livestock, and wildlife by allotment. The AMLs within the Cow Canyon, Clan Alpine and Dixie Valley Allotments for the Clan Alpine HMA were established through the approval of the 1992 FMUD for these allotments. The HMA is comprised of approximately 314,986 acres with roughly 20% of those acres being contained within the Cow Canyon Allotment, 49% within the Clan Alpine Allotment, and 31% within the Dixie Valley Allotment.

Table 31: County in Which the HMA is Located

HMA Name	County	Acres	Multiple Use Decision Date	AML Range	Distance from Nearest Town
Clan Alpine	Churchill	314,986	1992	612 - 979	45 miles E of Fallon

See Map in Appendix A

3.3.2 Environmental Consequences

3.3.2.1 *Alternative 1: Proposed Action*

Should a gather be deemed necessary, fertility control would be applied to all the released mares to decrease fertility and future annual wild horse population growth within the HMAs. The detailed procedures to be followed for the implementation of fertility control are described in Appendix C. Each released mare would receive a single dose of the two-year PZP contraceptive vaccine. When injected, PZP (antigen) causes the mare’s immune system to produce antibodies and these antibodies bind to the mare’s eggs, which effectively blocks sperm binding and fertilization (Zoo, Montana, 2000). PZP is relatively inexpensive, meets BLM requirements for safety to mares and to the environment, and can be easily administered in the field. Based on behavioral studies, PZP-22 does not cause significant changes in behavior at the individual or herd levels (USGS). Additionally, PZP contraception appears to be completely reversible.

The highest success for fertility control has been obtained when applied during the timeframe of November through February. The efficacy for the application of the two-year PZP vaccine (representing the percent of vaccinated mares that do not foal) based on winter applications follows:

<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>
Normal	94%	82%	94%

One-time application at the capture site would not affect normal development of a fetus, hormone health of the mare or behavioral responses to stallions, should the mare already be pregnant when vaccinated (Kirkpatrick, 1995). The vaccine has also proven to have no apparent effect on pregnancies in progress, the health of offspring, or the behavior of treated mares (Turner, 1997). Mares would foal normally in 2016 (Year 1).

Ransom et al. (2010) found no differences in how PZP-treated and control mares allocated their time between feeding, resting, travel, maintenance, and social behaviors in 3 populations of wild horses, which is consistent with Powell’s (1999) findings in another population. Likewise, body condition of PZP-treated and control mares did not differ between treatment

groups in Ransom et al.'s (2010) study. Turner and Kirkpatrick (2002) found that PZP-treated mares had higher body condition than control mares in another population, presumably because energy expenditure was reduced by the absence of pregnancy and lactation.

In two studies involving a total of 4 wild horse populations, both Nunez et al. (2009) and Ransom et al. (2010) found that PZP-treated mares were involved in reproductive interactions with stallions more often than control mares, which is not surprising given the evidence that PZP-treated females of other mammal species can regularly demonstrate estrus behavior while contracepted (Shumake and Wilhelm 1995, Heilmann et al. 1998, Curtis et al. 2002). Ransom et al. (2010) found that control mares were herded by stallions more frequently than PZP-treated mares, and Nunez et al. (2009) found that PZP-treated mares exhibited higher infidelity to their band stallion during the non-breeding season than control mares. Madosky et al. (in press) found this infidelity was also evident during the breeding season in the same population that Nunez et al. (2009) studied, resulting in PZP-treated mares changing bands more frequently than control mares. Long-term implications of these changes in social behavior are currently unknown.

The fertility control treatment would be controlled, handled, and administered by a trained BLM employee or contractor. Mares receiving the vaccine would experience slightly increased stress levels associated with handling while being vaccinated and freeze-marked. Serious injection site reactions associated with fertility control treatments are rare in treated mares. Any direct impacts associated with fertility control, such as swelling or local reactions at the injection site, would be minor in nature and of short duration. Most mares recover quickly once released back to the HMA, and none are expected to have long term consequences from the fertility control injections.

Injuries could be sustained by wild horses when captured through bait and/or water trapping, as the animals still need to be sorted, aged, possibly transported, and otherwise handled following their capture. These injuries result from kicks and bites, or from collisions with corral panels or gates.

Through the capture and sorting process, wild horses are examined for health, injury and other potential physical defects. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy. BLM Euthanasia Policy IM-2009-041 is used as a guide to determine if animals meet the criteria and should be euthanized (refer to SOPs, Appendix A). Animals that are euthanized for non-gather related reasons include those with old injuries (broken or deformed limbs) that cause lameness or prevent the animal from being able to maintain an acceptable body condition (greater than or equal to BCS 3); old animals that have serious dental abnormalities or severely worn teeth and are not expected to maintain an acceptable body condition, and wild horses that have serious physical defects such as club feet, severe limb deformities, or sway back. Some of these conditions have a causal genetic component and the animals should not be returned to the range in order to prevent suffering, as well as to avoid amplifying the incidence of the problem in the population.

It is not expected that genetic health would be impacted by the Proposed Action as the AML ranges should provide for acceptable genetic diversity.

By maintaining wild horse population size within the AMLs, there would be a lower density of wild horses across the HMA, reducing competition for resources and allowing wild horses to utilize their preferred habitat. Maintaining population size within the established AMLs would be expected to improve forage quantity and quality and promote healthy, self-sustaining populations of wild horses in a thriving natural ecological balance and multiple use relationship on the public lands in the area. Deterioration of the range associated with wild horse overpopulation would be avoided. Managing wild horse populations in balance with the available habitat and other multiple uses would lessen the potential for individual animals or the herd to be affected by drought, and would avoid or minimize the need for emergency gathers, which would reduce stress to the animals and increase the success of these herds over the long-term.

Over the next 11 years, implementation of the Proposed Action could result in as many as 516 fewer excess wild horses which would require removal from the range. For every excess horse not adopted or sold, a cost to the American taxpayer of up to \$12,000 per animal over 20 years would accrue.

The potential authorization of TNR would likely have little to no effect on the wild horses. The AML range of 612 – 979 was set in the 1992 FMUD. The amount of AUMs allotted to wild horses in the FMUD was based on vegetation use from livestock grazing, as well as wildlife. It took into account the amount of forage available in wet, dry, and average precipitation years. Temporary livestock grazing on excess vegetation produced during an above average or exceptional year would likely not cause a decrease of available forage AUMs within the HMA.

3.3.2.2 Alternative 2: Dixie Valley Reduction in Livestock and Change in Season of Use

Under this alternative, the Dixie Valley Allotment livestock numbers would be reduced and the grazing season would be changed from March 1 through February 28 to June 1 through February 28. The effects to the wild horse population would be the same as described in the Proposed Action.

3.3.2.3 Alternative 3: Cherry Valley Closure to Hot Season Grazing

Under this alternative, the Cherry Valley Pasture of the Clan Alpine Allotment season of use would be changed from July 1 through August 31 to September 1 through October 31. The effects to the wild horse population would be the same as described in the Proposed Action.

3.3.2.4 Alternative 4: Cow Canyon Change in Season of Use and Clan Alpine Reduction of AUMs

Cow Canyon Allotment

Under this alternative the season of use on the Cow Canyon Allotment would be changed from May 1 through November 15 to October 1 through April 15. The effects to the wild horse population within the Cow Canyon Allotment would be the same as described in the Proposed Action.

Clan Alpine Allotment

Under this alternative authorized livestock grazing within the Clan Alpine allotment would be reduced by approximately 50% resulting in a reduction of 5095 total AUMs. Wild horse herds could see an increase in population due to additional forage availability through reduction in competition with livestock inside and outside of the HMA. Managing the herds within AML to “*protect the range from the deterioration associated with overpopulation*” and “*to preserve and maintain a thriving natural ecological balance and multiple-use relationship in that area*” would continue to remain an important factor for healthy rangelands.

Dixie Valley

Effects to the Dixie Valley Allotment would be the same as Alternative 1: Proposed Action.

3.3.2.5 Alternative 5: No Domestic Sheep Grazing

Under this alternative the domestic sheep grazing from December 1 through March 15 would be prohibited in the New Pass area of the Clan Alpine Allotment. The Clan Alpine HMA would not be affected by this alternative as the boundary does not extend to this area. The New Pass Mountains on the Clan Alpine Allotment are located within the boundaries of the New Pass – Ravenswood HMA and is administered by the BMDO.

3.3.2.6 Alternative 6: No Grazing

Under this alternative, the horse population could increase due to an increase in available forage leading to surplus numbers. Wild horses over AML would lead to various problems on the landscape associated with excess population amounts. This could necessitate an increase of bait/water trapping in order to administer PZP-22 to mares to assist in keeping populations within AML thereby allowing the allotments to achieve or make significant progress towards achieving Standards and Guidelines.

3.3.2.7 Alternative 7: No Action

Under the No Action Alternative, there would be no active management to maintain the population size within the established AML at this time. In the absence of bait/water trapping and/or a gather, wild horse populations would continue to grow at an average rate of at least 10% per year. Without bait/water trapping and treating with PZP now, the population would grow to the upper limit of AML in seven years’ time based on the average annual growth rate for the Clan Alpine HMA. In order to bring the HMA back to AML, the BLM would be required in the next 10 years to gather and remove 380 excess wild horses from the Clan Alpine HMA that would otherwise not be present under the Proposed Action. The excess animals would be transported to BLM short-term corral facilities where they would be prepared for adoption, sale or long-term holding. Any excess animals not adopted or sold would be maintained at a cost of up to \$12,000 per horse over 20 years.

Wild horses are a long-lived species with documented survival rates exceeding 92% for all age classes. Predation and disease have not substantially regulated wild horse population levels within the project area. Throughout the HMA few predators exist to control wild horse populations. Some mountain lion predation occurs, but does not appear to be substantial. Coyotes are not prone to prey on wild horses unless young, or extremely weak. Other predators, such as wolves, do not inhabit the area. Being a non-self-regulating species, there

would be a steady increase in wild horse numbers for the foreseeable future, which would continue to exceed the carrying capacity of the range. Individual horses would be at risk of death by starvation and lack of water as the population continues to grow. The wild horses would compete for the available water and forage resources, affecting mares and foals most severely. Social stress would increase. Fighting among stud horses would increase as they protect their position at scarce water sources, as well as injuries and death to all age classes of animals.

Significant loss of the wild horses in the HMA due to starvation or lack of water would have obvious consequences to the long-term viability of the herd. Allowing horses to die of dehydration and starvation would be inhumane treatment and would be contrary to the WFRHBA, which mandates removal of excess wild horses. The damage to rangeland resources that results from excess numbers of wild horses is also contrary to the WFRHBA, which mandates the Bureau to “*protect the range from the deterioration associated with overpopulation*”, “*remove excess animals from the range so as to achieve appropriate management levels*”, and “*to preserve and maintain a thriving natural ecological balance and multiple-use relationship in that area*”. Once the vegetative and water resources are at these critically low levels due to excessive utilization by an over population of wild horses, the weaker animals, generally the older animals and the mares and foals, are the first to be impacted. It is likely that a majority of these animals would die from starvation and dehydration. The resultant population would be heavily skewed towards the stronger stallions which would lead to significant social disruption in the HMA. By managing the public lands in this way, the vegetative and water resources would be impacted first and to the point that they have no potential for recovery. This degree of resource impact would lead to management of wild horses at a greatly reduced level if BLM is able to manage for wild horses at all on the HMA in the future. As a result, the No Action Alternative would not ensure healthy rangelands that would allow for the management of a healthy wild horse population, and would not promote a thriving natural ecological balance.

As populations increase beyond the capacity of the habitat, more bands of horses would also leave the boundaries of the HMA in search of forage and water, thereby increasing impacts to rangeland resources outside the HMA boundaries as well. This alternative would result in increasing numbers of wild horses in areas not designated for their use, and would not achieve the stated objectives for wild horse herd management areas, namely to “prevent the range from deterioration associated with overpopulation”, and “preserve and maintain a thriving natural ecological balance and multiple use relationship in that area”. Additionally, there would be no active management to maintain the population size within the established AML at this time. In the absence of bait/water trapping to treat the mares, wild horse populations would continue to grow at an average rate of at least 10% per year.

3.4 Minerals

3.4.1 Affected Environment

Within the Cow Canyon, Clan Alpine and Dixie Valley Allotments there are existing historical mining features in the mountains, new mining exploration, geothermal projects, and mineral material sales. The designation of one new mineral material site along Antelope Valley Road

in the Edwards Creek Valley area and the continued use of this site as a community pit for sand and gravel material extraction would not have a noticeable effect on visual quality. The new pit would encompass the footprint of two existing older pits, effectively using areas that have been previously disturbed. Other pits in the planning area are located adjacent to existing roads, are relatively small, and are used infrequently for maintenance of local roads. Visual quality concerns can be adequately addressed by following established mitigation measures in the permit stipulations and conditions.

One new proposed Community Pit is located in the northeast portion of Churchill County in Edwards Creek Valley. The site is located in the Basin and Range Province. This province is characterized by north-northeast trending mountain ranges separated by down-faulted alluvial valleys. Average distance between mountain ranges is about 15 miles. The valley bottom consists entirely of younger alluvium playa deposits and young fan gravels of Quaternary age. The sand and gravel material eroded from the adjacent mountain bedrock and was reworked by wave action during a stage of the prehistoric lake creating a gravel beach geomorphologic feature. This process takes ordinary materials and improves their quality because the wave action, over time, removes deleterious fines and other softer, less competent material leaving behind a higher quality aggregate. The granular deposit is concentrated in a raised linear feature compared to the surrounding topography. The proposed community pit is within this granular geomorphologic deposit.

3.4.2 Environmental Consequences

3.4.2.1 *Alternative 1: Proposed Action*

Under the Proposed Action, mineral resources would not be affected by those actions except for the proposed Edwards Creek Valley community pit. Within the proposed pit potentially several hundred thousand cubic yards of sand and gravel material could be permanently removed from the site, depending upon the demand in the valley. Removal of sand and gravel materials would result in the removal of the raised gravel beach geomorphological feature within the project area. However, there is no substantial topography within the project area; therefore this impact would be minimal.

3.4.2.2 *Alternative 2: Dixie Valley Reduction in Livestock and Change in Season of Use*

The effects of this Alternative would be similar to those under the Proposed Action.

3.4.2.3 *Alternative 3: Cherry Valley Closure to Hot Season Grazing*

The effects of this Alternative would be similar to those under the Proposed Action.

3.4.2.4 *Alternative 4: Cow Canyon Change in Season of Use and Clan Alpine Reduction of AUMs*

The effects of this alternative would be similar to those under the Proposed Action

3.4.2.5 *Alternative 5: No Domestic Sheep Grazing*

The effects of this alternative would be similar to those under the Proposed Action.

3.4.2.6 *Alternative 6: No Grazing*

Under the No Grazing Alternative, the proposed community pit as described in the Proposed Action could still be completed.

3.4.2.7 *Alternative 7: No Action*

Under the No Action Alternative, the proposed community pit would remain as two separate existing gravel pits and sales would be completed with separate environmental review. There would be less efficiency in processing individual sales out of the existing pits than that under the Proposed Action.

3.5 Water Quality

3.5.1 Affected Environment

No waters within the Cow Canyon, Clan Alpine or Dixie Valley Allotments have designated classes as per NAC 445A.123 or designated beneficial uses; therefore the state's numeric water quality standards cannot be used. As per the Nevada Department of Environmental Protection, springs are defined as a surface expression of groundwater but any flowing portion of the spring can be evaluated under the narrative water quality standards as per NAC 445A.121. The narrative standards pertaining to all surface waters in Nevada apply to these springs to determine whether water quality meets the standard for rangeland health.

Cow Canyon

Seven water sources in this allotment were evaluated for PFC; three in 2009, one each in 2010, and three in 2011. All PFC water sources that contained water were reassessed in 2015.

No class waters or beneficial uses are designated within the Cow Canyon Allotment, therefore, only the descriptive water quality standards pertaining to all surface waters in Nevada (NAC 445A.121) apply to these water sources. All the springs/springbrook systems and creeks were determined to be meeting water quality standards.

Clan Alpine

Seven water sources were evaluated in this allotment for PFC; five in 2010 and two in 2011. All PFC water sources that contained water were reassessed in 2015.

No class waters or beneficial uses are designated within the Clan Alpine Allotment, therefore, only the descriptive water quality standards pertaining to all surface waters in Nevada (NAC 445A.121) apply to these water sources. All the springs/springbrook systems and creeks were determined to be meeting water quality standards.

Dixie Valley

Six water sources were evaluated in this allotment for PFC; four in 2009 and two in 2010, with two follow-up site visits in 2011 to Mud and Willow Springs. All PFC water sources that contained water were reassessed in 2015.

No class waters or beneficial uses are designated within the Dixie Valley Allotment, therefore, only the descriptive water quality standards pertaining to all surface waters in Nevada (NAC

445A.121) apply to these water sources. All the springs/springbrook systems and creeks were determined to be meeting water quality standards.

3.5.2 Environmental Consequences

3.5.2.1 *Alternative 1: The Proposed Action*

Under the Proposed Action, the BLM would issue the applicants 10-year term livestock grazing permits with specific changes to grazing schedules pertaining to each allotment.

Cow Canyon

The intent of the Proposed Action Alternative is to help facilitate the removal of livestock from the allotment by extending the gathering period from 15 to 30 days and the current grazing season by 15 days, thereby reducing the number of permitted livestock from 365 to 340 in order to keep the AUMs at relatively the same level as currently authorized. Additionally there is proposed maintenance of all existing range improvements including wells, pipelines at developed springs, and fences protecting riparian areas. This alternative would continue compliance and progress toward meeting the RAC Standards for Water Quality and the narrative standards as per NAC 445A.121. All springs evaluated during PFC assessments were meeting water quality standards. For springs that were not assessed, but that may have functionality or water quality issues, this alternative is likely to achieve both standards noted above. With maintenance of existing range improvements, water quality is expected to remain at standard levels or improve.

Clan Alpine

The intent of the Proposed Action Alternative is to grant the permittee permission to move livestock from one pasture to another two weeks prior to the end/beginning of the authorized pasture use and extend grazing into April, keeping AUMs at relatively the same level as before. In addition, there is proposed maintenance of all existing range improvements including wells, pipelines at developed springs, and fences protecting riparian areas, as well as new range improvements to address management concerns. This alternative would continue compliance and progress toward meeting the RAC Standards for Water Quality and the narrative standards as per NAC 445A.121. All springs evaluated during PFC assessments were meeting water quality standards. For springs that were not assessed, but that may have functionality or water quality issues, this alternative is likely to achieve both standards noted above. With new range improvements and maintenance of existing range improvements, water quality is expected to remain at standard levels or improve.

Dixie Valley

The intent of the Proposed Action Alternative is to grant the permittee 15 days of flexibility for cattle movement between pastures and rotate grazing use between the high country and mid-slope pasture annually, while decreasing pressure on natural spring sources in order to continue to meet, or make significant progress towards meeting the RAC Standards for Water Quality and narrative standards, as per NAC 445A.121. In addition, there is proposed maintenance of all existing range improvements including wells, pipelines at developed springs, and fences protecting riparian areas, as well as new range improvements to address management concerns. Strict adherence to the grazing rotation schedule as described in the permit would contribute towards making progress to achieve standards.

All springs evaluated during PFC assessments were meeting water quality standards. For springs that were not assessed, but that may have functionality or water quality issues, this alternative is likely to achieve both standards noted above. With new range improvements and maintenance of existing range improvements, water quality is expected to remain at standard levels or improve.

3.5.2.2 Alternative 2: Dixie Valley Reduction in Livestock and Change in Season of Use

Under this alternative for the Dixie Valley Allotment, livestock numbers would be reduced and the grazing season would be changed from March 1 through February 28 to June 1 through February 28. The consequences for this alternative would be the same as discussed in Alternative 1 and overall water quality conditions would be even less impacted than under Alternative 1. Cow Canyon and Clan Alpine Allotments would not be affected by this alternative.

3.5.2.3 Alternative 3: Cherry Valley Closure to Hot Season Grazing

Under this alternative for the Cherry Valley Pasture of the Clan Alpine Allotment, the season of use would be changed from July 1 through August 31 to September 1 through October 31. The consequences for this alternative would be the same as discussed in Alternative 1. Overall water quality conditions would see less impact than under Alternative 1 due to decreased use during the hot season, which is the critical growing season for riparian vegetation (Bureau of Land Management, 2006). The Dixie Valley and Cow Canyon Allotments would not be affected by this alternative.

3.5.2.4 Alternative 4: Cow Canyon Change in Season of Use and Clan Alpine Reduction of AUMs

Cow Canyon Allotment

Under this alternative the season of use on the Cow Canyon Allotment would be changed from May 1 through November 15 to October 1 through April 15. The impacts to water quality would be similar to those discussed in Alternative 1. Removal of livestock grazing during summer months would result in fewer impacts to the waterways as the need for cattle to loiter in and around water sources would be reduced. Water quality in this allotment would be expected to continue to meet Rangeland Health Standards.

Clan Alpine Allotment

Under this alternative the Clan Alpine Allotment AUMs/livestock numbers would be reduced. The impacts to water quality would be similar to those discussed in Alternative 1. This alternative would result in an increase in the rate of improvement to fish habitat, riparian, and water quality conditions when compared to Alternative 1, as stocking levels would be reduced. Reduced stocking levels would result in less grazing related impacts to fish habitat, riparian areas, and water quality throughout the allotment. The water quality in this allotment would be expected to continue to meet Rangeland Health Standards with the reduction in livestock use.

Dixie Valley Allotment

Impacts to water quality in the Dixie Valley Allotment would be similar to that discussed in Alternative 1.

3.5.2.5 *Alternative 5: No Domestic Sheep Grazing*

Under this alternative for the Clan Alpine Allotment, no domestic sheep would be allowed to graze in the New Pass area of the Clan Alpine Allotment. The consequences for this alternative would be the same as discussed in the Proposed Action. Because there are no springs or natural waters in the New Pass area of the Clan Alpine Allotment, overall water quality would not be affected and there would be no change in impact compared to the Proposed Action. The Cow Canyon and Dixie Valley Allotments would not be affected by this alternative.

3.5.2.6 *Alternative 6: No Grazing*

Common to all Allotments

Water quality impacts would be expected to remain the same or improve over time.

3.5.2.7 *Alternative 7: No Action*

Common to all Allotments

The current grazing regime and range improvement maintenance has led to acceptable water quality conditions. Therefore, the consequences regarding springs meeting the standard, as well as springs that were not assessed but that may have functionality or water quality issues, would be similar to what is described for the Proposed Action.

3.6 Wetlands/Riparian Zones

3.6.1 Affected Environment

The RAC Standards and Guidelines for Rangeland Health for the Sierra Front-Northwestern Great Basin Area states for Standard 2, “Riparian/Wetland systems are in properly functioning condition”. Standards refer to the goal to be achieved, and indicators assist in determining whether Standards are met or Guidelines are followed. Indicators for Standard 2 relate to diversity, distribution, and abundance of appropriate plant species (for lentic and lotic systems), and adequacy of the sinuosity, width/depth ratio, and gradient to dissipate streamflow (for lotic systems) without excessive erosion or deposition. PFC assessments are a qualitative evaluation of natural water sources conducted to help determine issues and to help guide what changes in management might be needed to effectively meet or maintain the established Standards and Guidelines. A rating of PFC does not necessarily mean that a particular water source is in perfect condition, or that it has no management concerns/needs.

Cow Canyon

Five water sources were evaluated for PFC, three in 2009, one in 2010, and one in 2011 (two different reaches were assessed, see Table 32: PFC Assessment data for the Cow Canyon Allotment). Deep Canyon and Lower Bob Canyon were assessed in 1988 but in 2010 were found to be dry so no PFC assessments were completed. Deep Canyon supported no riparian vegetation so it was presumed it had been dry for quite some time. Lower Bob Canyon supported cottonwood, willows, and wild rose but the streambed showed no sign of recent water in 2010. However, in 2011 water was running so assessments at two different reaches were completed. All water sources containing water were reassessed in 2015. Overall, the allotment is not meeting the standard because not all water sources are in PFC (Table 32: PFC Assessment data for the Cow Canyon Allotment).

Table 32: PFC Assessment data for the Cow Canyon Allotment

Name	Date Assessed	Rating
Sand Dune Spring #1	08/18/2009	PFC
Sand Dune Spring #2	08/18/2009	FAR – downward trend
Dyer Canyon Creek	08/19/2009	FAR – trend not apparent
Cow Canyon Creek	07/7/2010	PFC
Lower Bob Creek Reach #1	8/19/2011	PFC
Lower Bob Creek Reach #2	8/19/2011	FAR – downward trend

Sand Dune Spring #1 was rated PFC and vegetation consisted of sedges, rushes, bluegrass species, green foxtail, and alkali sacaton. Monkey flower, a non-native species, was present and occurs only when conditions are reasonably good. Several species of aquatic invertebrates, dragonflies and damselflies were also present, which indicates good habitat conditions. Sand Dune Spring #1 was reassessed in 2015 and maintained the PFC rating received in 2009. The spring continued to contain high vegetative and aquatic diversity.

Sand Dune Spring #2 was rated FAR with downward trend. However, a small earthen berm had been constructed at some point in the past to pond the water indicating that this is not a natural spring-fed pond. Riparian vegetation consisted of rushes and sedges, all of which had seen heavy use. Surface soil “punching” was evident around the pond edges. Cattle manure and urine were found to be present around the water source. The presence of back water swimmers and water boatmen indicate that aquatic conditions are still somewhat favorable. A return visit in June 2011 indicated upward trend compared to the 2009 downward trend. Aquatic invertebrates, hundreds of tadpoles, dragonflies, and damselflies were present. This spring was reassessed again in 2015 and retained the FAR rating while continuing the upward trend noted in 2011.

In 2009 the mid and lower reaches of Dyer Canyon Creek rated FAR with trend not apparent. Slight entrenchment observed by the road but the system is vertically stable with very sparse riparian stabilizer species along the bank. In addition, shrubs are encroaching into the riparian zone. Minor livestock and wild horse trampling was observed in some areas. The FAR rating is due to the presence of salt cedar and hoary cress, both Category C noxious weeds in Nevada, as well as the encroachment of shrubs. Dyer Canyon was revisited in 2015 but not assessed due to lack of water.

The Cow Canyon and Deep Canyon watershed represents the largest and most heavily utilized drainages in this allotment. The Cow Canyon Springbrook was rated PFC, supporting willows, wild rose, sedges and rushes, which are stabilizer species. Watercress is the dominant herbaceous riparian species. Cow Canyon was revisited in 2015 but not assessed due to lack of water.

Lower Bob Canyon Creek Reach #1 was rated as PFC and was dominated by several species of willow that, along with rocks, promote stream stability and the ability to dissipate high flow energy. Lower Bob Creek Reach #2 was rated FAR with a downward trend because this section is dominated by saltcedar which has crowded out almost all other riparian vegetation.

Clan Alpine

From 2010 to 2011, seven water sources were evaluated for PFC. Three water sources were rated PFC and four were rated FAR. All water sources containing water were reassessed in 2015. Overall, the allotment is not meeting the standard because not all water sources are in PFC (Table 33: PFC Assessment Data for Clan Alpine Allotment).

Table 33: PFC Assessment Data for Clan Alpine Allotment

Name	Date Assessed	Rating
Rock Creek Spring	07/28/2010	FAR-not apparent
Cherry Valley wet meadow near S. fork of Cherry Creek (before exclosure fixed)	09/22/2010	FAR-downward trend
Convergence of 3 unnamed springs near upper N. fork of War Creek	09/22/2010	FAR-downward trend
Unnamed Spring near upper N. fork of War Creek	09/22/2010	PFC
War Creek	09/22/2010	FAR-upward trend
Rock Creek	06/28/2011	PFC
Pony Creek	07/28/2011	PFC

The south fork of Cherry Creek was rated FAR with a downward trend. Exclosures in Cherry Valley were repaired in late fall 2010, and upon reexamination in August 2011 substantial progress towards meeting standards was noted. This area was revisited in 2015 but not assessed due to lack of water.

Rock Creek Spring was rated FAR due to down cutting of the meadow related to livestock hoof action. Juniper trees and shrubs were observed to be encroaching on the site. This spring was reassessed in 2015 and maintained the FAR rating but trend was noted as downward. Livestock trampling along with pinyon/juniper and shrub encroachment continue to be an issue.

War Creek was rated FAR with an upward trend. The creek has a robust willow canopy and supports a healthy population of brook trout along with several species of aquatic invertebrates. In 2015, War Creek was divided into three reaches for reassessment. Reach 1 and Reach 3 were rated FAR with trend not apparent while Reach 2 was rated PFC. The entire creek supports a high diversity of riparian species, all of which exhibited high vigor, and supports a healthy population of brook trout along with several species of aquatic invertebrates. Slight amounts of hoof action were observed in Reaches 1 and 3 which has contributed to minor stream bank degradation.

The convergence of three springs near the north fork of War Creek was rated FAR with a downward trend. Lateral bank erosion is occurring accompanied by upland shrub encroachment into the channel. Stabilizer riparian species such as sedges and rushes appear to be in decline from excessive livestock hoof action and are not in sufficient quantity to dissipate high stream flow. In the 2015 reassessment this area retained the FAR rating with a downward trend. Lateral bank erosion and upland shrub encroachment are still occurring. Stabilizer riparian species such as sedges and rushes have further declined. Excessive hoof action has continued along the banks.

Rock Creek, Pony Creek, and the unnamed spring near the upper N. fork of War Creek were rated PFC. In 2015 Rock and Pony Creek were revisited but not assessed due to lack of water. The unnamed spring near the upper N. fork of War Creek retained its PFC rating.

Dixie Valley

Six water sources were evaluated for PFC, four in 2009 and two in 2010 (Table 34: PFC Assessment Data for the Dixie Valley Allotment). Though the allotment was not meeting standards in some locations, reevaluations/revisits in 2011 show improvement at most of these riparian sites. All water sources containing water were reassessed in 2015. Overall, the allotment is not meeting the standard because not all water sources are in PFC.

Table 34: PFC Assessment Data for the Dixie Valley Allotment.

Name	Date Assessed	Rating
Silver Hill Canyon Creek	08/19/2009	FAR – trend not apparent
Horse Creek	09/21/2009	PFC
East Job Canyon Creek	07/07/2010	FAR – trend not apparent
Unnamed Spring near Cherry Valley	09/22/2010	FAR – downward trend
Willow Spring	08/18/2009 & 8/19/2011	FAR – upward trend in 2011
Mud Spring	08/18/2009 & 8/19/2011	FAR – upward trend in 2011

Riparian areas in the Dixie Valley North Pasture (Mud Spring, Willow Spring, East Job Canyon Creek, and Silver Hill Canyon Creek) received a season of rest from livestock grazing between site visits. The Mud and Willow Springs PFC reevaluation showed signs of recovery in 2011. East Job Canyon was revisited in 2011 and although a formal PFC assessment was not conducted signs of recovery were apparent. Silver Hill Canyon was rated FAR stemming from both livestock grazing and an invasion of salt cedar (Nevada Category C noxious weed). A return visit in 2011 indicated some vegetation recovery but salt cedar was still intact in high densities.

Remaining assessed riparian areas include Horse Creek and an unnamed spring in Cherry Valley. Horse Creek received a PFC rating. The Unnamed spring in Cherry Valley was rated FAR with a downward trend due to livestock grazing and wild horse utilization.

All PFCs stated in Table 34 were reassessed in 2015. Mud and Willow Springs retained the FAR rating though the trend was slightly downward. The riparian areas have shrunk due to drought which has resulted in more impact to the saturated areas.

Silver Hill Canyon Creek maintained the FAR rating with a downward trend largely due to the infestation of salt cedar. The area contained high vegetative diversity along with good species vigor. Utilization from livestock was appropriate for the area.

Horse Creek retained its PFC rating. The vegetation exhibited good vigor with a high diversity of riparian plant species.

The unnamed spring in Cherry Valley kept the FAR with a downward trend rating. Livestock grazing and wild horse utilization continues to be heavy with detrimental impacts to the spring.

In the 2015 reassessment East Job Canyon Creek was divided into four reaches. The upper most and lowest reaches were rated FAR with trend not apparent. The upper-middle reach was FAR with an upward trend and the lower-middle was rated PFC. Wild horse and livestock use were most notable on the upper most and the lowest reach. The entire creek area contained high vegetative diversity along with good species vigor.

3.6.2 Environmental Consequences

3.6.2.1 *Alternative 1: The Proposed Action*

Under the Proposed Action, the BLM would issue the applicants 10-year term livestock grazing permits with specific changes to grazing schedules pertaining to each allotment.

Cow Canyon

The intent of the Proposed Action Alternative is to help facilitate the removal of livestock from the allotment by extending the gathering period from 15 to 30 days and extending the current grazing season by 15 days, reducing livestock numbers from 365 to 340 while keeping AUMs the same. Alternative 1 proposes maintenance of existing range improvements including wells, pipelines at developed springs, and fences protecting riparian areas that would address management concerns in areas that are not currently achieving standards and guidelines within the project area.

Decreasing pressure on natural waters and riparian areas would allow for areas to continue to meet, or make significant progress towards meeting the RAC Standards for Riparian/Wetlands. For waters not currently meeting the standard, including areas determined to have livestock grazing practices as significant factors, and areas that were not assessed but have known functionality issues, this alternative is likely to make significant progress towards meeting the standard. For waters not meeting the standard where livestock grazing practices are not significant factors, it is unlikely a change in grazing practices would decrease the presence of Class C noxious weeds, including saltcedar and hoary cress.

Clan Alpine

The intent of the Proposed Action Alternative is to grant the permittee permission to move livestock from one pasture to another two weeks prior to the end/beginning of the authorized pasture use and extend grazing into April, keeping AUMs at relatively the same level as before. Alternative 1 also proposes maintenance of existing range improvements, including wells, pipelines at developed springs, and fences protecting riparian areas, as well as new range improvements that would address management concerns in areas that are not currently achieving standards and guidelines within the project area.

Decreasing pressure on natural waters and riparian areas would allow for areas to continue to meet, or make significant progress towards meeting the RAC Standards for Riparian/Wetlands. For waters not currently meeting the standard, including areas that were not assessed but have known functionality issues, this alternative is likely to make significant progress towards meeting the standard. Fencing the spring areas would help in protecting the water sources

from further degradation and allow for natural rehabilitation. Grazing pressure in the area would be reduced because water would be available downstream or piped to a trough outside of the fenced area, distributing the livestock into areas that were previously used very little due to lack of available water.

Dixie Valley

The intent of the Proposed Action Alternative is to grant the permittee 15 days of flexibility for cattle movement between pastures and rotate grazing use between the high country and mid-slope pasture annually. Alternative 1 also proposes maintenance of existing range improvements, including wells, pipelines at developed springs, and fences protecting riparian areas, as well as new range improvements that would address management concerns in areas that are not currently achieving standards and guidelines within the project area.

Decreasing pressure on natural waters and riparian areas would allow for significant progress towards meeting the RAC Standards for Riparian/Wetlands. Fencing the spring area would help protect the water source from further degradation and allow for natural rehabilitation. Grazing pressure in the area would be reduced because water would be piped to a trough outside of the fenced area, distributing the livestock into other areas.

The prescribed grazing system had not been strictly followed prior to 2010, which is a primary cause of degradation because cattle were able to utilize water sources year round, particularly during the hot season. Passive continuous grazing rarely improves a deteriorated riparian area, particularly in the hot season, which is the critical growing season for riparian vegetation (Bureau of Land Management, 2006). With active management of undeveloped riparian areas, progress towards meeting standards would likely occur.

3.6.2.2 Alternative 2: Dixie Valley Reduction in Livestock and Change in Season of Use

Under this alternative for the Dixie Valley Allotment, livestock numbers would be reduced and the grazing season would be changed from March 1 through February 28 to June 1 through February 28. The consequences for this alternative would be the same as discussed in Alternative 1 and overall riparian area condition would be even less impacted than under Alternative 1. Cow Canyon and Clan Alpine Allotments would not be affected by this alternative.

3.6.2.3 Alternative 3: Cherry Valley Closure to Hot Season Grazing

Under this alternative for the Cherry Valley Pasture of the Clan Alpine Allotment, the season of use would be changed from July 1 through August 31 to September 1 through October 31. The consequences for this alternative would be the same as discussed in Alternative 1. Overall riparian area conditions would be even less impacted than under Alternative 1 due to no use during the hot season, which is the critical growing season for riparian vegetation. Passive continuous grazing rarely improves a deteriorated riparian area, particularly in the hot season, which is the critical growing season for riparian vegetation (Bureau of Land Management, 2006). Cow Canyon and Dixie Valley Allotments would not be affected by this alternative.

3.6.2.4 *Alternative 4: Cow Canyon Change in Season of Use and Clan Alpine Reduction of AUMs*

Cow Canyon Allotment

Under this alternative the season of use on the Cow Canyon Allotment would be changed from May 1 through November 15 to October 1 through April 15. The impacts to wetlands and riparian zones would be similar to those discussed in Alternative 1. Wetland vegetation in this allotment would be expected to maintain or improve in condition with the removal of livestock grazing during the summer months.

Clan Alpine Allotment

Under this alternative the Clan Alpine Allotment AUMs/livestock numbers would be reduced. The impacts to wetlands and riparian zones would be similar to those discussed in Alternative 1. Wetland vegetation in this allotment would be expected to maintain or improve in condition with the reduction in livestock use.

Dixie Valley Allotment

Impacts to these resources in the Dixie Valley Allotment would be similar to those discussed in Alternative 1.

3.6.2.5 *Alternative 5: No Domestic Sheep Grazing*

Under this alternative for the Clan Alpine Allotment, no domestic sheep would be allowed to graze in the New Pass area of the Clan Alpine Allotment. The consequences for this alternative would be the same as discussed in Alternative 1. Because there are no riparian areas/wetlands in the New Pass area of the Clan Alpine Allotment, riparian areas/wetlands would not be affected and there would be no change in impact compared to Alternative 1. Cow Canyon and Dixie Valley Allotments would not be affected by this alternative.

3.6.2.6 *Alternative 6: No Grazing*

Common to all Allotments

Over time, the No Grazing Alternative would likely result in improved water source conditions on the Cow Canyon, Clan Alpine and Dixie Valley Allotments by eliminating livestock grazing impacts to riparian vegetation, in particular during the hot season (as described in Alternative 2 and 3). Under the No Grazing Alternative, no new fencing would be constructed, range improvements that are currently in disrepair would remain and, without continued maintenance, intact range improvements could become nonfunctional over time. Where wild horses are impacting water sources, improvements to riparian areas and vegetation would be highly unlikely. Wild horses would continue to utilize forage and water within these allotments. Populations of wild horses would be expected to increase due to the lack of competition for forage and water. As populations increase there would be increased pressure on forage and water within the allotments and the short-term beneficial impacts would decrease.

3.6.2.7 *Alternative 7: No Action*

Common to All Allotments

The consequences regarding areas meeting the standard would be similar to what is described for Alternative 1. The consequences for riparian areas/wetlands that do not currently meet the standard, including areas determined to have livestock grazing practices as significant factors

and areas that were not assessed but have known functionality issues, would continue to have poor conditions and not be expected to improve over time. For waters not meeting the standard where livestock grazing practices are not significant factors, the No Action Alternative would continue the spreading of noxious weeds and standards would continue to not be met.

3.7 Vegetation

3.7.1 Affected Environment

Plants have both community and individual responses to defoliation by grazing animals. Plant growth is largely fed by carbohydrate reserves stored within the plant materials, which is resupplied by photosynthesis conducted by new growth areas. Defoliation of the plant by any means, including fire or grazing by wildlife or livestock, forces the plant to use more of its reserves to re-grow to replace the removed portions. Plants in the Great Basin ecosystem generally did not evolve, at least in recent eras, under heavy grazing pressures. Part of this evolution had to do with the general absence of large ungulate herbivores, which was in turn influenced by climate and possibly native hunting pressures. As a result of lack of adaption to heavy grazing pressure, the growing points (the parts of the plant that produce new plant growth) in the native grasses are elevated in the plant structure; if a growing point is removed, the grass must regenerate the growing point, which is extremely costly in terms of energy output and use of carbohydrate reserves. This makes the key grass species in the Great Basin susceptible to repeated grazing damage occurring during the growing season, especially when the plants have to compete with other plants for resources while trying to grow or re-grow. Plants that did evolve under grazing pressure have their growing points at or below ground level, which allows them to tolerate grazing pressures during the growing season.

Repeated defoliations during the critical growing seasons can weaken native grass plants as they devote higher percentages of their stored energies to regrowth. This can eventually lead to plant mortality. A niche opened by a grazed or recovering plant can provide openings for other species in the community to occupy, either through a decrease in shade or a sudden increase in the availability of moisture and nutrients in the soil. Native grasses tend to produce lower numbers of seeds, and the seeds produced have low viability and generally do not survive more than a season. The lack of a seed bank in the soil can mean the eventual disappearance of species from a plant community, creating openings for other species, particularly shrubs or invasive species in the Great Basin.

Most grasses and forbs start growth in early to mid-Spring (April) and complete flowering by late spring or early summer. Annual plants complete their life cycle by mid- to late summer, while perennial plants enter a period of dormancy that lasts through the summer. Some regrowth in perennial grasses may occur in the fall if sufficient moisture is present.

Cow Canyon

The major grass species found on the lower elevations of the allotment are Indian ricegrass (*Achnatherum hymenoides*), and Alkali sacaton (*Sporobolus airoides*). Higher elevations dominant grass component consists of Sandberg bluegrass (*Poa secunda*), squirreltail (*Elymus elymoides*), Idaho fescue (*Festuca idahoensis*) and Thurber's needlegrass (*Achnatherum thurberianum*).

The major shrub species found on the lower elevations of the allotment are greasewood (*Sarcobatus vermiculatus*), Fourwing saltbush (*Atriplex canescens*), Rubber rabbitbrush (*Ericameria nauseosa*), and Big sagebrush (*Artemisia tridentata*). The higher elevation dominate shrub component is Big sagebrush (*Artemisia tridentata*).

Riparian vegetation that occurs around the springs on the allotment consists of sedges (*Carex* species), rushes (*Juncus* species), willows (*Salix* species), saltgrass (*Distichlis spicata*), bulrush (*Scirpus* species), watercress (*Nasturtium* species), and rose (*Rosa* species).

Clan Alpine

The vegetation in the lower valley country is a variety of mixtures of shadscale (*Atriplex confertifolia*), Big sagebrush (*Artemisia tridentata*), black sagebrush (*Artemisia nova* A.), spiny hopsage (*Grayia spinosa*), and greasewood (*Sarcobatus vermiculatus*). The major grass species found on the lower elevations are Indian ricegrass (*Achnatherum hymenoides*), squirreltail (*Elymus elymoides*), needlegrass (*Achnatherum*), and bluegrass (*Poa*). In the southeast portion, between the playa and U.S. Highway 50, there is an area dominated by winterfat (*Krascheninnikovia lanata*). The dominant grasses here include Indian ricegrass (*Achnatherum hymenoides*), squirreltail (*Elymus elymoides*), needlegrass (*Achnatherum*), and bluegrass (*Poa*).

The mountains are dominated by pinyon (*Pinus monophylla*) and juniper (*Juniperus osteosperma*) trees with an understory of big sagebrush (*Artemisia tridentata*) and perennial grasses. Also found in areas are willow (*Salix*), snowberry (*Symphoricarpos albus*), rabbitbrush (*Chrysothamnus*), cottonwood (*Populus balsamifera*) and aspen (*Populus tremuloides*). The high meadows of the Cherry Valley area contain sedges (*Carex*), Idaho fescue (*Festuca idahoensis*), needlegrass (*Achnatherum*), bluegrass (*Poa*), mountain big sagebrush (*Artemisia tridentata* var. *vaseyana*), snowberry (*Symphoricarpos albus*), willows (*Salix*), aspen (*Populus tremuloides*) and numerous forbs.

Riparian vegetation that occurs around the springs on the allotment consists of sedges (*Carex* species), rushes (*Juncus* species), willows (*Salix* species), saltgrass (*Distichlis spicata*), bulrush (*Scirpus* species), cattails (*Typha latifolia*), watercress (*Nasturtium* species), and rose (*Rosa* species).

The Bell Flat pasture vegetation includes Bailey's greasewood (*Sarcobatus baileyi*), shadscale (*Atriplex confertifolia*), spiny hopsage (*Grayia spinosa*), fourwing saltbush (*Atriplex canescens*), budsage (*Picrothamnus desertorum*), black sagebrush (*Artemisia nova* A.) and big sagebrush (*Artemisia tridentata*). The western valley contains large areas of winterfat (*Krascheninnikovia lanata*). The dominant perennial grasses are Indian ricegrass (*Achnatherum hymenoides*) and needlegrass (*Achnatherum*).

Dixie Valley

The major grass species found on the allotment are Indian ricegrass (*Achnatherum hymenoides*), needle-and-thread (*Hesperostipa comata*), Thurber's needlegrass (*Achnatherum thurberianum*), squirreltail (*Elymus elymoides*), Basin wildrye (*Leymus cinereus*), and Idaho fescue (*Festuca idahoensis*).

The major forb species found on the allotment are globemallow (*Sphaeralea* spp.), arrowleaf balsamroot (*Balsamorhiza sagittata*), and tapertip hawksbeard (*Crepis acuminata*).

The major shrub species found on the allotment are fourwing saltbush (*Atriplex canescens*), winterfat (*Krascheninnikovia lanata*), Mormon tea (*Ephedra nevadensis*), bud sagebrush (*Picrothamnus desertorum*), and spiny hopsage (*Grayia spinosa*).

Riparian vegetation that occurs around the springs on the allotment consists of sedges (*Carex* species), rushes (*Juncus* species), willows (*Salix* species), saltgrass (*Distichlis spicata*), bulrush (*Scirpus* species), watercress (*Nasturtium* species), and rose (*Rosa* species).

3.7.2 Environmental Consequences

3.7.2.1 Alternative 1: Proposed Action

Cow Canyon

Under this alternative the grazing season would be extended two weeks from November 15 to November 30. The number of animals would decrease from 365 to 340 in order to keep the AUMs at the current level therefore the amount of forage removed from the allotment would not change.

Clan Alpine

Under this alternative the grazing season would be extended to include the month of April. The number of animals would decrease from 927 to 848 in order to keep the AUMs at the current level therefore the amount of forage removed from the allotment would not change. Construction of range improvements at Rock Creek Spring and Dirt Spring should help to increase vegetation diversity and vigor while promoting benefits to plant physiology.

The reinstatement of 1600 AUMs for winter dormant season grazing in the Shoshone Pasture would be monitored annually for five years prior to final approval of the AUMs onto the permit. This would help to ensure the additional use would not impact the ability of the vegetative community to maintain, achieve or make significant progress toward achieving the Standards for Rangeland Health and/or Table 2-2 Habitat Standards.

Dixie Valley

Under this alternative grazing use between the High Country and the Mid-Slope Pastures would rotate annually. This rotation proposal allows key upland plant species to be rested from continuous critical season grazing allowing for them to complete their life cycle, increasing plant vigor, cover, productivity and diversity. Vegetation conditions should improve.

Construction of the proposed well would serve to create new zones of potentially intense disturbance in the immediate vicinity of the water troughs associated with the well. However, this intense zone of grazing impacts around water sources would be relatively small (approximately 2 acres around the well). Overall impacts to vegetation would be highly beneficial, as cattle would not be forced to continuously trail back and forth to only one spot for water. Livestock would be able to spread themselves across a much larger area, thus resulting in a more even utilization distribution pattern than what is currently occurring.

Common to All Allotments

The health, vigor, recruitment, and production of perennial grasses, forbs, and shrubs would be expected to improve with the authorization of TNR to reduce cheatgrass and other invasive plant species. Grazing when the cheatgrass plants are actively growing would reduce the competition for water, sunlight, and nutrients, making these resources more available to desirable species. Also, seed production of the cheatgrass (or other invasive species) would be reduced. Permitted use would be the same; however, there would be the flexibility to authorize additional use that would target infestations of cheatgrass, other invasives, or above normal grass growth.

Cheatgrass is highly flammable, and densely growing populations provide ample, fine-textured fuels that increase fire intensity and often decrease the intervals between fires. If fire should strike cheatgrass-infested land, native plant communities can be inextricably altered. This may result in erosion and damage to water resources (CSU 2012).

Maintenance of existing range improvements is necessary to control livestock movements in accordance with the grazing schedules, exclude animals from sensitive areas, and allow for better distribution through strategic placement of waters. The vegetative community would be expected to improve with continuous maintenance of these key management components.

3.7.2.2 Alternative 2: Dixie Valley Reduction in Livestock and Change in Season of Use

Under this alternative for the Dixie Valley Allotment the grazing season would be changed from March 1 through February 28 to June 1 through February 28. The consequences for this alternative would be the same as discussed in the Proposed Action. The plant communities would be even less impacted than under the Proposed Action. The Cow Canyon and Clan Alpine Allotments would not be affected by this alternative.

3.7.2.3 Alternative 3: Cherry Valley Closure to Hot Season Grazing

Under this alternative for the Cherry Valley Pasture of the Clan Alpine Allotment, the season of use would be changed from July 1 through August 31 to September 1 through October 31. The consequences for this alternative would be the same as discussed in the Proposed Action. The plant communities would be even less impacted than under the Proposed Action due to the elimination of hot season grazing in the pasture. The Cow Canyon and Dixie Valley Allotments would not be affected by this alternative.

3.7.2.4 Alternative 4: Cow Canyon Change in Season of Use and Clan Alpine Reduction of AUMs

Cow Canyon

Under this alternative the season of use on the Cow Canyon Allotment would be changed from May 1 through November 15 to October 1 through April 15. The impacts to vegetation for this alternative would be similar to those discussed in the Proposed Action. The plant communities would be grazed when dormant which has less of an impact on the health of the plant. Overall, the vegetative community within the allotment would be anticipated to maintain or improve in condition and would also be expected to meet or make significant progress towards meeting all applicable Rangeland Health Standards over the 10-year life of the permit.

Clan Alpine

Under this alternative for the Clan Alpine Allotment permitted AUMs would be reduced, the Bell Flat Pasture removed, and the season of use would be changed from May 1 through March 31 to March 1 through February 28. The impacts to vegetation for this alternative would be similar to those discussed in the Proposed Action. The plant communities would receive less defoliation as the amount of forage consumed by the reduced number of cattle would likewise decrease. Reduced utilization levels would also result in an increase in ground cover of grass species close to water with the composition and production of species maintaining or improving. Overall, the vegetative community within the allotment would be anticipated to maintain or improve in condition and would also be expected to meet or make significant progress towards meeting all applicable Rangeland Health Standards over the 10-year life of the permit.

Dixie Valley

Impacts to these resources in the Dixie Valley Allotment would be similar to those discussed in Alternative 1.

3.7.2.5 Alternative 5: No Domestic Sheep Grazing

Under this alternative the domestic sheep grazing from December 1 through March 15 would be prohibited in the New Pass area of the Clan Alpine Allotment. The effects for this alternative would be similar to those discussed in the Proposed Action. The plant communities would be even less impacted than under the Proposed Action due to the elimination of domestic sheep grazing in the New Pass area of the Clan Alpine Allotment. The Cow Canyon and Dixie Valley Allotments would not be affected by this alternative.

3.7.2.6 Alternative 6: No Grazing

Under the No Grazing Alternative, vegetation would not be affected by livestock. No cattle or sheep would trample or eat vegetation within the Cow Canyon, Clan Alpine, and Dixie Valley Allotments; however, wild horses would continue to utilize the plants. Heavy to excessive utilization of the available forage would be expected over time, but regular gathers could assist in properly managing the wild horses so that there would be a balance with the available forage and other multiple uses.

The recovery of ungrazed plant communities are not expected to surpass recovery rates of moderately grazed plant communities (Courtois et al 2004). The removal of managed livestock grazing would not directly cause a change in the ecological condition of plant communities. Sites within the Allotment would continue to be dominated by shrub species in unburned areas and by fire tolerant shrubs or annual species in burned areas. Without fire, plant community trends would be expected to be static to upward under the No Grazing Alternative. However, the removal of managed livestock grazing would increase the risk of fire by increasing the amount of available fine fuels. Plant communities are at risk of transitioning to new ecological states following fire, due to the high abundance of desirable fire intolerant species and low abundance of desirable fire tolerant species. Plant community trends would be expected to be static to downward following fire without successful rehabilitation.

Under the No Grazing Alternative, domestic livestock would not disturb biological crusts. However, exclusion of domestic grazing would not prevent the risk of other animals stepping through shrubs onto soil crusts. Belnap, et al (2001) report that biological soil crusts experience vulnerability decreases and recovery rate increases whenever there is increased site stability, effective precipitation and infrequent disturbance.

Plants obtain food for their maintenance and growth from the photosynthetic process that occurs in plant leaves. By not authorizing livestock grazing and by keeping the wild horse population within the AML, the available vegetative leaf area would be increased. Available vegetative leaf area would be utilized for food production (photosynthesis), which would increase food storage (root reserves).

3.7.2.7 Alternative 7: No Action

Under the No Action Alternative, on the Cow Canyon Allotment, 365 cattle could utilize up to 2,388 AUMs from May 1 to November 15, on the Clan Alpine Allotment 927 cattle could utilize up to 10,210 AUMs from May 1 to March 31, and on the Dixie Valley Allotment 528 cattle could utilize up to 6,341 AUMs from March 1 to February 28.

Under this alternative, upland rangeland health conditions for soils would likely be maintained since the plant communities appear to be stable, albeit lacking in diversity, under the current terms and conditions; however, the continual population growth in wild horses could cause a decrease in desirable plant species.

If the new range improvements named previously were not completed, cattle and wild horse impacts would likely continue on these riparian areas. In the Camp Creek area the cattle would not disperse over a larger area due to a lack of water, causing more stress on vegetation closer to the existing water sources. Under this alternative, it may be more difficult to make progress toward and/or continue to meet the Standards for Rangeland Health and/or Table 2-2 Habitat Standards.

In 2009, four sites across the Cow Canyon Allotment were evaluated for soil and site stability, hydrologic function, and biotic integrity. In 2010 – 2011, fourteen sites on the Clan Alpine Allotment and 9 sites on the Dixie Valley Allotment were evaluated for soil and site stability, hydrologic function, and biotic integrity. The findings from these evaluations showed that the majority of the sites exhibited a slight to moderate deviation for each indicator observed.

There were slight to moderate deviations in plant community composition and functional/structural groups, with annual vegetative production low in some areas. However, overall hydrologic processes are normal, and no accelerated erosion was observed at any site. There is no evidence of soil compaction. Hydrologic nutrient cycling and plant reproduction are occurring in all areas.

In addition to upland health evaluations, trends in vegetative attributes have been monitored utilizing photo trend plot methodology, and key areas have been monitored via frequency methodology. Refer to Appendix F, Standards Determination Document for details about each site and the findings.

3.8 Invasive, Non-native and Noxious Species

3.8.1 Affected Environment

Invasive species are defined by Executive Order 13112 as “an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health”. Alien refers to a species that did not evolve in the environment in which it is found or in other words, non-native. This includes plants, animals, and microorganisms. The definition makes a clear distinction between invasive and non-native species because many non-natives are not harmful (i.e. most U.S. crops). However, many invasive species have caused great harm (National Invasive Species Council 2005).

Noxious weeds in Nevada are classified by the Nevada Department of Agriculture and the Plant Protection Act (2000) and are administered by the United States Department of Agriculture’s (USDA) Animal and Plant Health Inspection Service (APHIS). Table 35: Examples of Noxious Weeds) gives examples and definitions of noxious weeds in Nevada.

Table 35: Examples of Noxious Weeds

Type	Definition	Examples
Category A	Weeds not found or limited in distribution throughout the state; actively excluded from the state and actively eradicated wherever found; actively eradicated from nursery stock dealer premises; control required by the state in all infestations.	Dyer’s woad (<i>Isatis tinctoria</i>) Spotted Knapweed (<i>Centaurea masculosa</i>)
Category B	Weeds established in scattered populations in some counties of the state; actively excluded where possible, actively eradicated from nursery stock dealer premises; control required by the state in areas where populations are not well established or previously unknown to occur	Russian Knapweed (<i>Acroptilon repens</i>) Scotch Thistle (<i>Onopordum acanthium</i>)
Category C	Weeds currently established and generally widespread in many counties of the state; actively eradicated from nursery stock dealer premises; abatement at the discretion of the state quarantine officer	Hoary cress (<i>Cardaria draba</i>) Saltcedar (tamarisk) (<i>Tamarix spp</i>)

For more information on noxious weeds visit: http://agri.nv.gov/nwac/PLANT_NoxWeedList.htm.

Off-highway vehicles (OHVs), overgrazing by livestock, wild horses and wildlife can disturb native plant communities, which can bring about the establishment and proliferation of noxious weeds. Dispersal of noxious weeds occurs when motorized vehicles, livestock, wild horses and wildlife transport weed seeds from infested areas to other sites. There are three known noxious weed species on the Cow Canyon, Clan Alpine, and Dixie Valley Allotments, and they are described below.

Saltcedar (*Tamarix spp.*) is classified in Nevada as a Category C noxious weed. There are 54 known species of saltcedar which are native to North Africa, the Mediterranean, and the Middle East. Saltcedar is fire adapted, each plant can produce up to 500,000 wind-blown seeds, the leaves and flowers contain few nutrients for wildlife, and it tends to grow in riparian areas or

where water is near the surface. Native aquatic systems are disrupted because of long tap roots that are capable of intercepting deep water tables and increased salinity of the surrounding soil after leaves drop. In turn, native species such as willow and cottonwood are displaced leaving poor habitat and forage for wildlife. After burning or cutting, saltcedar can easily resprout making it difficult to eliminate (Muzika and Swearingen 2006). The plant's dominance in many of the riparian areas is a major factor in this Standard not being met.

Hoary cress (*Cardaria draba*) is also classified in Nevada as a Category C noxious weed and is a native to the Balkan Peninsula, Armenia, Turkey, Israel, Syria, Iraq, and Iran. It is a deep-rooted perennial that produces from root segments and seeds. Seedlings of the plant begin to germinate and establish a root system that consists of vertical and lateral roots in the spring and fall. Both of these root systems can produce adventitious buds that develop into rhizomes and new shoots. One plant can produce between 1,200 to 4,800 seeds each year, with a single flowering stem capable of producing as many as 850 seeds. Seeds can remain viable in the soil for up to three years.

Hoary cress is an aggressive plant that can form dense monocultures, and is commonly found on disturbed, alkaline soils with moderate moisture areas. It can displace native plant species, reducing biodiversity and forage production (UNR 2007).

Russian knapweed (*Acroptilon repens*) is classified as a Category B noxious weed in Nevada. A native of Eurasia, this perennial forb produces extensive vertical and horizontal roots. These roots penetrate the soil several meters deep and produce buds that develop into new shoots. This weed is very difficult to control since it reproduces by seeds and vegetatively. Even small root pieces created by soil disturbance can generate new shoots and spread.

Russian knapweed is highly adaptable, is a strong competitor, forms dense colonies, and is resistant to drought once established. This species emerges earlier than other plants, giving it a competitive advantage over desired native species (UNR 2004).

Although not considered noxious, cheatgrass (*Bromus tectorum*) is an invasive, non-native, annual grass currently scattered throughout the Cow Canyon, Clan Alpine, and Dixie Valley Allotments. This invasive annual grass displaces native perennial shrub, grass, and forb species because of its ability to germinate quicker and earlier than native species, thus outcompeting natives for water and nutrients. Cheatgrass is also adapted to recurring fires that are perpetuated in part by the fine dead fuels that it leaves behind. In general, native plants have a difficult time thriving in these altered fire regimes.

3.8.2 Environmental Consequences

3.8.2.1 *Alternative 1: Proposed Action*

Common to All Allotments

Intact healthy native plant communities are more resistant to the establishment and spread of noxious weeds. Under the Proposed Action, the slight change in the timing of cattle movement between pastures would have little or no effect on these plant communities or the establishment of invasive, non-native and noxious weeds. Also, reducing the wild horse numbers to the lower limit of the AML and maintaining the population within the proper range

would decrease overall utilization on desirable perennial plant species, making it more difficult for noxious weeds and other invasive species to become established.

Habitat Change

Herbicide treatments are a disturbance to vegetation that returns all or a portion of the treated areas to an early successional stage. However, under the Proposed Action, the herbicide applications would be limited to spot treatments within the larger treatment area. This would keep the amount of bare ground to a minimum, reducing the level of habitat change. Since the noxious weeds are already displacing the native vegetation, the potential for negative effects to the native perennials that may be in close proximity to the treated plants would be negligible compared to the positive effects of reducing or eradicating the invasive, non-native and noxious species.

After treated areas recover from the initial disturbance of controlling weeds, native and beneficial vegetation is expected to increase. Because the weed species targeted for control are of little value to wildlife, livestock, or horses, habitat and rangeland conditions would be improved as areas move from weed-dominated to rangeland dominated by native and more valuable vegetation.

There have been locations identified where accessibility to the saltcedar may be extremely limited due to the density of the infestations and the lack of roads to these sites, mainly up steep and narrow canyons. For these infestations, the amount of treatment and control would be limited to locations accessible by utility terrain vehicles (UTVs), all-terrain vehicles (ATVs) or trucks.

Disturbance

Human disturbance, such as driving UTVs, ATVs, or trucks and even walking during spray and/or tree-cutting operations has the potential to disrupt wildlife, wild horses, and livestock behavior. Disruptions during breeding seasons of wildlife have the highest potential to cause harm because animals are more sensitive during this time, and any effects have the potential to decrease reproductive success. Driving motorized vehicles would be conducted in a slow and methodical manner, reducing the disturbance. No extraordinary noise would be emitted other than the running of a single vehicle (UTV, ATV, or truck) and spray pump, which would be similar to other administrative uses of vehicles on BLM land. If the cut-stump method is used to treat saltcedar, there would be a slightly higher noise level.

There may be some short-term disturbance on the soil surface from spraying activities and some additional exposure of the soil surface from eliminated individual noxious weed plants that may lead to a slight temporary increase in soil erosion and sediment in streams, degrading aquatic wildlife habitat. The removal of noxious weed species through herbicide use could help to restore a more complex and beneficial plant community, stabilizing these sites to eventually reduce sedimentation and erosion. Only herbicides approved for application around aquatic habitats would be used by springs and streams so there would be a very low potential for disturbance by chemicals to these areas.

There may be an increased threat of noxious weeds being introduced into the range improvement project areas by administrative vehicles associated with conducting the mechanical activities, but this would be negligible.

The occurrence of invasive and noxious weeds would decrease in the long term as there would be less competition between these plants and the desirable perennial plants. The invasive plants would be treated if observed, allowing more light, water, and nutrients for the desirable perennial species. In addition, more monitoring would be completed as part of this treatment, and this would prevent further spreading of weeds, resulting in a more timely eradication.

Herbicide Toxicity

There is always some level of risk to the health of the public, the pesticide applicator, and to animals that are present when applying herbicides. The three herbicides described in Section 2.1, chlorsulfuron (Telar® DF), imazapyr (Habitat®), and metsulfuron (Escort®) are low in toxicity. With the low toxicity and conservative spot treatments, the potential for negative effects would be minimal. All SOPs would be adhered to, to include following all herbicide labels (Appendix D).

Adaptive Management – The Use of a TNR Permit

There would be an added benefit to site conditions and native vegetation in the Cow Canyon, Clan Alpine, and Dixie Valley Allotments if invasive, non-native or noxious species are targeted under a TNR Permit in addition to the grazing permit. This could reduce the amount and spread of weeds, such as cheatgrass, and maintain or improve rangeland health, which would reduce the risk of crossing ecological thresholds that would increase further weed spread.

The health, vigor, recruitment, and production of perennial grasses, forbs, and shrubs would be expected to improve with the authorization of TNR to reduce cheatgrass and other invasive plant species. Grazing when the cheatgrass plants are actively growing would reduce the competition for water, sunlight, and nutrients, making them more available to desirable species. Also, seed production of invasive species would be reduced.

Cheatgrass is highly flammable, and densely growing populations provide ample, fine-textured fuels that increase fire intensity and often decrease the intervals between fires. If fire should strike cheatgrass-infested land, native plant communities can be inextricably altered. This may result in erosion and damage to water resources (CSU 2012).

Authorizing TNR during a year when the native, perennial grass growth is abundant would have a negligible effect on the weed population since this additional use would only be granted after an interdisciplinary review of the application is conducted, field visits completed to verify the availability of additional forage, and a determination made that the additional use would not impact the ability of the area to achieve or make significant progress toward achieving the Standards for Rangeland Health and/or Table 2-2 Habitat Standards and other multiple use/resource objectives.

3.8.2.2 *Alternative 2: Dixie Valley Reduction in Livestock and Change in Season of Use*

The effects would be similar as those under the Proposed Action; however, closing the Dixie Valley North Pasture could reduce the spread of invasive, non-native, and noxious weed species by allowing the desired native species to become more established. The desired perennials would have an opportunity to develop an adequate amount of photosynthetic material for the production of carbohydrates to meet the vegetation's growth and respiration demands. These plants would enter dormancy with more root reserves for next year's growth and reproduction. Eventually, the competition for water, sunlight, and nutrients from invasive species would be reduced making these resources more available to desirable plants.

3.8.2.3 *Alternative 3: Cherry Valley Closure to Hot Season Grazing*

The effects of this Alternative would be similar to those under the Proposed Action; however, the spread of invasive, non-native and noxious weeds could be reduced with the Cherry Valley closure.

3.8.2.4 *Alternative 4: Cow Canyon Change in Season of Use and Clan Alpine Reduction of AUMs*

Cow Canyon

Impacts to the Cow Canyon Allotment would be similar to those discussed in Alternative 1.

Clan Alpine

The effects of this alternative would be similar to those under the Proposed Action; however, the spread of invasive, non-native and noxious weeds could be reduced with the reduction of cattle grazing in the Clan Alpine Allotment. Desired perennials could have more opportunity to develop and grow thereby entering dormancy with increased root reserves.

Dixie Valley

Impacts to the Dixie Valley Allotment would be similar to those discussed in Alternative 1.

3.8.2.5 *Alternative 5: No Domestic Sheep Grazing*

The effects of this Alternative would be similar to those under the Proposed Action; however, the spread of invasive, non-native and noxious weeds could be reduced with the elimination of sheep grazing.

3.8.2.6 *Alternative 6: No Grazing*

Under the No Grazing Alternative, the proposed treatments as described in the Proposed Action Alternative could still be completed, but it would likely occur over a longer period of time and may not receive the commitment and funding necessary to be as beneficial to the vegetative community.

If these weed infestations go untreated, they would increase their dominance on the sites where they currently exist. They may start out as isolated or light infestations, but in time they could become monocultures and spread to adjacent lands. Not treating these weeds could result in further habitat degradation on BLM and other lands.

3.8.2.7 *Alternative 7: No Action*

Under the No Action Alternative, the effects would be the same as for the No Grazing Alternative.

3.9 Cultural Resources

3.9.1 Affected Environment

Section 106 of the National Historic Preservation Act of 1966, as amended (see 16 U.S.C. 470 et seq.), requires Federal agencies to take into account the effects of their undertaking on historic properties (36 CFR Part 800.1(a)). By definition, a historic property is a “prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places” and includes “artifacts, records, and remains that are related to and located within such properties” (36 CFR 800.16 (l)(1)). An undertaking, among other things, includes a project or activity under the jurisdiction of a Federal agency requiring a Federal permit, such as a grazing allotment permit renewal (36 CFR 800.16(y)).

Per 36 CFR Part 800 and 43 CFR Part 8100 (BLM), as amended, the BLM is required to identify and evaluate cultural resources within the area of potential effect from an undertaking, which would include any proposed actions that involve ground disturbance. Any historic properties identified, documented, and evaluated as eligible for inclusion in the NRHP within an area of potential effect would be avoided during the undertaking. If this cannot be accomplished, specific project undertakings would be cancelled, or the allotment use would be modified to result in no adverse effect to the historic properties pursuant to 36 CFR Part 800, and in consultation with the local tribes as identified and the Nevada State Historic Preservation Office (SHPO).

During Section 106 review, a cultural resources literature review was conducted by Kristin Bowen, SWFO Archaeologist, and the following is the result of that assessment. As of 2014, 28,611 acres have been covered by prior cultural resource surveys, approximately 3.6% of the allotments 790,187 acres, however not all were done to modern inventory standards. Those previous cultural resource inventories have documented 263 cultural sites and 79 isolated finds within the Clan Alpine, Cow Canyon, and Dixie Valley Allotments. While numerous sites and artifacts are known more than half of them were recorded more than 20 years ago, and so the documentation may not be entirely reliable or meet present standards. For example, over half of the sites were documented prior to the introduction of the present site documentation form, the IMACS form, in the mid-1980s.

Within the three allotments, the documented cultural resources represent significant past human use of the landscape. These include but are not limited to the following site types: rockshelters, rock art, habitation sites including pit features, hearths, flaked stone, and ground stone, lithic procurement/quarry sites, rock cairns, a wickiup, hunting blinds, mining and mine camp sites, historical refuse scatters associated with mining and other activities, corrals, homesteads, water related (ex: ditch, water tank), transportation sites (ex: highway, stagecoach route) and communication related sites (ex: Pony Express trail, telegraph stations). At present within the three allotments there are three sites listed on the National Register of Historic Places (NRHP), 30 sites recorded as eligible for the NRHP, 101 unevaluated sites,

and 207 ineligible sites and/or isolated finds. For management purposes, the BLM treats unevaluated cultural resources as if they are NRHP eligible/ historic properties.

BLM cultural resource staff surveyed the proposed repairs to existing range improvements and new improvements as well as the proposed mineral material pit, and conducted field checks in areas of heavy use, in order to analyze effects to historic properties, both known and unknown per the *State Protocol Agreement between the Bureau of Land Management, Nevada and the Nevada State Historic Preservation Office for Implementing the National Historic Preservation Act, 2012, Appendix F., K. 1., a.-g.*

The heavy livestock impact areas, and the three unsurveyed proposed range improvement projects (Unnamed Spring in Cherry Valley, Rock Creek Spring Enclosure, and Camp Creek Well) were all surveyed, at the Class III level, during the summer of 2014 by SWFO Archaeologist Kristin Bowen, assisted by SWFO District Archaeological Technician (DAT) Matt Simons (Bowen 2015). One proposed range improvement, Dirt Spring, had been surveyed by a prior SWFO archaeologist in 2012, so it was not surveyed again (Bowen 2014a). The proposed mineral pit location was also surveyed by SWFO Archaeologist Kristin Bowen, assisted by DAT Matt Simons during 2014 (Bowen 2014b). No historic properties were recorded at any of the locations of proposed development. One previously recorded Eligible site, CrNV-03-3730, was documented at one of the existing range improvements in the Clan Alpine Allotment during the field checks of heavy livestock use areas. No additional degrading damage is likely to occur to the prehistoric component and therefore the eligibility of site CrNV-03-3730. Therefore, no further treatment (fencing, removing of water developments) is thought to be necessary, even though past grazing impacts to the ground surface are evident within the site boundary. The BLM is instituting a schedule of monitoring to insure the continued livestock grazing use of the site would have No Adverse Effect to the eligible component of the property. If in the future additional degrading damage is documented, mitigation of adverse effects shall be addressed pursuant to 36 CFR §§ 800.5 and 800.6.

If historic properties are located during any subsequent field inventories in the allotments, and the BLM determines that grazing activities are adversely impacting the properties, mitigation would be identified and implemented in consultation with the SHPO.

3.9.2 Environmental Consequences

Cultural resources are non-renewable resources; any loss or degradation of cultural resources is permanent. It is important that there is no net loss of scientific information regarding cultural resources, and that NRHP eligible sites (historic properties) are managed to prevent or minimize adverse effects. Cultural resource concerns regarding livestock grazing and related effects focus on NRHP eligibility of historic properties, site type, and the potential impacts from livestock grazing related activities. Current or future livestock related activities have the potential to affect historic properties. Impacts would be viewed relative to the elements that make these properties eligible for inclusion in the NRHP.

The BLM recognizes the potential for grazing to impact historic properties through: (1) improper grazing activity; (2) the concentration of livestock on historic properties where the natural conditions of shade, shelter, forage, or water attract the animals; (3) the concentration

of livestock on historic properties where construction and maintenance of grazing facilities or improvements have attracted the animals; and (4) other grazing-related operations such as access roads.

Site types thought to be most susceptible to grazing related activities include sites with exposed structural features. Standing walls, rock alignments, and rock rings at historic and prehistoric sites can attract cattle as rubbing areas, resulting in impacts to those structures. Concentrated livestock grazing can severely and adversely affect these site types by forcing individual animals to walk into the confined area of a structural feature, whereas dispersed individual animals would tend to walk around them.

Also very susceptible to impacts are sites at sensitive locations, such as where soils lack natural vegetative cover or in areas that tend to concentrate the presence of livestock (such as watering locations both naturally occurring springs and water haul sites, corrals, trails, or salt licks), and sites with discrete features such as hearths, artifact concentrations, soil staining, middens, and other features that are susceptible to trampling. Sites in erosive sediments suffer from natural weathering impacts that are exacerbated by livestock hoof action and vegetation removal. Features such as middens, hearths, fire-cracked rock, and stone artifact concentrations are easily disturbed by hoof action and soil chemistry alteration, and once disturbed, lose integrity and scientific value.

At stable sites not prone to erosion, continuing additional adverse effects might not be expected, as livestock are probably re-mixing the upper few centimeters of site sediments that have been previously mixed. Scattered flaked and ground stone artifacts at these sites would eventually become reduced to a minimum size likely to be impacted by trampling and would probably suffer only a minimal amount of additional damage (Gifford-Gonzales et al. 1985; Nielson 1991; Osborn et al. 1987; Roney 1977).

The direct impacts that occur where livestock concentrate, during normal livestock grazing activity, include trampling, chiseling, and churning of site soils, cultural features, and cultural artifacts, artifact breakage, and impacts from standing, leaning, and rubbing against historic structures, above-ground cultural features, and rock art (Broadhead 2001, Osbourn et al. 1987). Indirect impacts include soil erosion, gulying, and increased potential for unlawful collection and vandalism (Broadhead 2001, Osbourn et al. 1987). Continued livestock use in these concentration areas may cause substantial ground disturbance and cause irreversible adverse effects to historic properties. Continued livestock management is appropriate, as long as identified grazing impacts are properly mitigated.

For the Cow Canyon, Clan Alpine and Dixie Valley Allotments permit renewals; the potential exists for adverse impacts to cultural resources in general, including historic properties, due to the continuation of livestock grazing with or without modifications to the grazing permit. Based upon a cultural resource analysis for the current and proposed utilization of the Cow Canyon, Clan Alpine, and Dixie Valley Allotments, the concentration of livestock adjacent to basins/playas, canyons and naturally occurring water resources can adversely affect the significant values of historic properties. Mitigation measures such as site exclosures and

relocation of water haul sites can be used to eliminate adverse effects to known cultural resources.

3.9.2.1 Alternative 1: Proposed Action

Common to All Allotments

Overall, the Proposed Action should reduce the adverse impacts to historic properties throughout the allotment. Adding additional range improvements, the repair of existing nonfunctional range improvements associated with water and a schedule to disperse livestock, or basically any activity that aids in the dispersal and movement of livestock should reduce the potential to adversely affect sites.

As stated above, the BLM is instituting a schedule of monitoring to insure the continued livestock grazing use of the one documented historic property at a water development site, CrNV-03-3730, would have No Adverse Effect to the eligible component of the property. If in the future additional degrading damage is documented, mitigation of adverse effects shall be addressed pursuant to 36 CFR §§ 800.5 and 800.6.

There could be an increase in adverse effects without measureable control with the inclusion of the TNR component. The weed treatment proposals do not have the potential to impact historic properties. The proposed mineral pit location was examined during a cultural survey, and due to the negative results of the survey, the pit would not affect any historic properties (Bowen 2014b).

Reducing the wild horse population would reduce the adverse impacts happening to cultural resources at water source locations and elsewhere. Horse gather activities themselves should cause no adverse effect to historic properties as locations of potential impacts, such as trap locations, would be inventoried prior to use and relocated if historic properties were located. Overall, the proposed action should reduce the adverse impacts to cultural resources.

3.9.2.2 Alternative 2: Dixie Valley Reduction in Livestock and Change in Season of Use

Similar to the Proposed Action, this alternative should reduce the adverse impacts to historic properties throughout the allotment. Adoption of this Alternative would result in a reduced number of livestock in Dixie Valley and as a result continual adverse effects to historic properties in Dixie Valley may be reduced.

3.9.2.3 Alternative 3: Cherry Valley Closure to Hot Season Grazing

Similar to the Proposed Action, this alternative should reduce the adverse impacts to historic properties throughout the allotment. Adoption of this Alternative would result in closing Cherry Valley to hot-season grazing, shifting the use to a different time of year when water is less in demand, and as a result continual adverse effects to historic properties in Cherry Valley may be reduced.

3.9.2.4 Alternative 4: Cow Canyon Change in Season of Use and Clan Alpine Reduction of AUMs

Cow Canyon and Clan Alpine Allotments

Similar to the Proposed Action, this alternative should reduce the adverse impacts to historic properties throughout the allotment. Adoption of this Alternative would result in a reduced

number of livestock in Clan Aline and only winter use in Cow Canyon which would result in a reduction in continual adverse effects to historic properties. Areas near natural water sources would continue to have the highest potential for the presence of and impacts to cultural sites, however there would be less use by livestock in these areas under this alternative.

Dixie Valley Allotment

Impacts to the Dixie Valley Allotment would be similar to those discussed in Alternative 1.

3.9.2.5 Alternative 5: No Domestic Sheep Grazing

Similar to the Proposed Action, this alternative should reduce the adverse impacts to historic properties throughout the allotment as there would be less livestock impacting the resources.

3.9.2.6 Alternative 6: No Grazing

While a no grazing alternative alleviates potential damage from livestock activities, there could still be impacts to cultural resources from cultural and natural processes. Cultural processes include any activities directly or indirectly caused by humans. Natural processes include chemical, physical, and biological processes of the natural environment that impinge and or modify cultural materials. Cultural resources are constantly being subjected to site formation processes or events after creation (Binford 1981, Schiffer 1987). These processes can be both cultural and natural and take place in an instant or over thousands of years.

3.9.2.7 Alternative 7: No Action

Under the No Action Alternative, there would be no changes to the current conditions throughout the Cow Canyon, Clan Alpine, and Dixie Valley Allotments. Continuation of the current level of livestock grazing is not expected to differ substantially from the Proposed Action in terms of its effect to cultural resources. Under this alternative, the wild horse population would continue to grow. As a result, the areas currently experiencing heavy utilization by wild horses would increase over time. Additionally new areas would be impacted as the growing wild horse population move into new areas to utilize needed forage and water. This would be expected to result in increasing damage to cultural resources and water sources. There would be an increase in adverse effects to cultural resources with this alternative.

3.10 Native American Religious Concerns

3.10.1 Affected Environment

One Native American Tribe has cultural affiliation within or adjacent to the Cow Canyon, Clan Alpine, and Dixie Valley Allotments, the Fallon Paiute-Shoshone Tribe (FPST) (Bengston 2002; Pendleton et al. 1982). Per 36 CFR Part 800 and 43 CFR Part 8100 (BLM), as amended, correspondence including a general summary and a map of the allotments was provided to the FPST in November of 2010, and then again in June of 2011. During a face to face meeting (December 12, 2010) with FPST and previous consultation with the Tribe, information was shared concerning the grazing activities within their aboriginal territory. The Tribe has stated that adverse effects to cultural resources, natural water sources, and native plants should be avoided.

3.10.2 Environmental Consequences

3.10.2.1 *Alternative 1: Proposed Action*

Overall, the Proposed Action should reduce the adverse impacts to cultural resources throughout the allotment. Adding additional range improvements, repairing existing nonfunctional range improvements associated with water, and a schedule to disperse livestock, or basically any activity that aids in the dispersal and movement of livestock should reduce the potential to adversely affect cultural resources. There could be an increase in adverse effects with the inclusion of the TNR component. The weed treatment proposals do not have the potential to impact cultural resources. The proposed mineral pit location was examined during a cultural survey, and it would not affect any cultural resources (Bowen 2014b).

Reducing the wild horse population would reduce the adverse impacts happening to cultural resources at water source locations, and to the actual water source locations. Horse gather activities themselves should cause no adverse effect to cultural resources as locations of potential impacts, such as proposed trap locations, would be inventoried prior to use and relocated if historic properties were located. Overall, the proposed action should reduce the adverse impacts to cultural resources.

The BLM has been and would continue to conduct government to government consultation with the FPST during the life of this term grazing permit renewal. Per 36 CFR Part 800 and 43 CFR Part 8100, as amended, BLM would review tribal concerns as identified and conduct Native American coordination and consultation for all proposed range improvements brought forward during the term grazing permit renewal for each project proposal including, but not limited to, correspondence including a general summary and map, results of each cultural resource inventory(s), face-to-face meetings, and field trips to the proposed project area, as necessary, and as requested .

3.10.2.2 *Alternative 2: Dixie Valley Reduction in Livestock and Change in Season of Use*

Similar to the Proposed Action, this alternative should reduce the adverse impacts to cultural resources throughout the allotment. Adoption of this Alternative would result in a reduced number of livestock in Dixie Valley and as a result continual adverse effects to cultural resources in Dixie Valley may be reduced.

3.10.2.3 *Alternative 3: Cherry Valley Closure to Hot Season Grazing*

Similar to the Proposed Action, this alternative should reduce the adverse impacts to cultural resources throughout the allotment. Adoption of this alternative would result in closing Cherry Valley to hot-season grazing, shifting the use to a different time of year when water is less in demand, and as a result continual adverse effects to historic properties in Cherry Valley may be reduced.

3.10.2.4 *Alternative 4: Cow Canyon Change in Season of Use and Clan Alpine Reduction of AUMs*

Cow Canyon and Clan Alpine Allotments

Similar to the Proposed Action, this alternative should reduce the adverse impacts to cultural resources throughout the allotment as there would be less livestock impacting the resources.

Dixie Valley Allotment

Impacts to the Dixie Valley Allotment would be similar to those discussed in Alternative 1.

3.10.2.5 Alternative 5: No Domestic Sheep Grazing

Similar to the Proposed Action, this alternative should reduce the adverse impacts to cultural resources throughout the allotment as there would be less livestock impacting the resources.

3.10.2.6 Alternative 6: No Grazing

Canceling the term grazing permit would reduce impacts to historic properties and Traditional Cultural Places. If no livestock are on the landscape adverse effects would be reduced, however, not completely eliminated due to the presence of the wild horse and wildlife use, specifically at existing range improvements and naturally occurring water sources.

3.10.2.7 Alternative 7: No Action

Under the No Action Alternative, there would be no changes to the current conditions throughout the Cow Canyon, Clan Alpine, and Dixie Valley Allotments. Continuation of the current level of livestock grazing is not expected to differ substantially from the Proposed Action in terms of its effect to cultural resources. Under this alternative, the wild horse population would continue to grow. As a result, the areas currently experiencing heavy utilization by wild horses would increase over time. Additionally new areas would be impacted as the growing wild horse population move into new areas to utilize needed forage and water. This would be expected to result in increasing damage to cultural resources and water sources. Concerns brought forward during prior government to government consultation with the FPST, about adverse effects to cultural resources, water sources, and plant collection areas would not be addressed with this alternative.

3.11 General Wildlife

3.11.1 Affected Environment

Key Habitats by Allotment:

Cow Canyon Allotment

Intermountain Cold Desert Scrub—Within the Intermountain cold desert scrub key habitat, annual rainfall tends to be low (3-8 in) and wildlife are generally not found in great densities. Lizards are the most diverse and abundant assemblage of species found. Winterfat (*Krascheninnikovia lanata*) is a key forage species for some wildlife species, in particular, pronghorn. Desert pavement and/or microbial crusts, which help stabilize soil, can be found in the shrub interspaces.

The Intermountain cold desert scrub habitat covers approximately 40% of the Cow Canyon Allotment. Five assessments were conducted in this key habitat. Some areas of winterfat were in poor condition, and Russian thistle (*Salsola iberica*) was common on many of the sites. Native grasses were lacking in quantity and species diversity throughout the key habitat. The intermountain cold desert scrub key habitat is not meeting standards with drought, wild horse utilization, and livestock grazing all contributing factors.

Sagebrush—The sagebrush key habitat primarily occurs at higher elevations in the Cow Canyon Allotment (Clan Alpine Mountains) and covers approximately 25% of the total area within the allotment. Two assessments were conducted in this key habitat. Sufficient diversity, distribution, and abundance of native plant species were present in higher elevations, while native grasses were deficient in lower elevations. Cheatgrass was found to be scattered throughout the habitat. Overall, the standard is being met in this habitat.

Lower Montane Woodland—Approximately 25% of the allotment contains the lower montane woodland habitat, which consists of a pinyon/juniper dominated community. Understory layers are variable depending on tree density. No assessments were conducted in this key habitat.

Desert Playas and Ephemeral Pools —Approximately 10% of the allotment contains the desert playa and ephemeral pool habitat. Dixie Meadows hot spring and a variety of other springs provide the Dixie Meadows Salt Marsh with a permanent water source. Soils adjacent to the playa support species such as fourwing saltbush, saltgrass, and greasewood. No assessments were conducted adjacent to this key habitat.

Springs and Springbrook/Intermountain Rivers and Streams—Nevada has the most known springs of any state in the U.S. with over 4,000 mapped. They are of various temperatures and flow and are extremely important in maintaining Nevada's wildlife diversity (WAPT 2012). Springbrooks refer to areas of flowing water linked to the spring source such as Cow Canyon Spring (rated PFC). The three main categories of springs are warm, cold, and hot; with some springs being ephemeral in nature. Even small springs and/or flows can support important endemic gastropods and other aquatic invertebrates, as well as a diverse plant community including various species of forbs, sedges, and rushes. While the actual amount of riparian/spring habitat is small in Nevada (<5%), about 80% of all vertebrate species require this habitat. Consequently, meeting the standard in this key habitat is especially critical for wildlife.

Two springs/springbrooks and three perennial creeks were formally assessed. In general, the riparian areas are not meeting standards for plant and animal habitat, with livestock grazing a contributing factor.

Dixie Valley Allotment

Intermountain Cold Desert Scrub—General characteristics of the Intermountain cold desert scrub key habitat are described above under Cow Canyon Allotment.

Approximately 45% of the allotment contains the Intermountain cold desert scrub habitat. Five assessments were conducted in this key habitat. Some areas of winterfat were in poor condition, and Russian thistle was common on many of the sites. Furthermore, native grasses were lacking in quantity and species diversity throughout the key habitat. The Intermountain cold desert scrub key habitat is not meeting standards with drought, wild horse utilization, and livestock grazing all contributing factors.

Sagebrush—The sagebrush key habitat encompasses approximately 40% of the Dixie Valley Allotment. Two assessments were conducted in this key habitat. Sufficient diversity,

distribution, and abundance of native plant species were present in higher elevations, while native grasses were deficient in lower elevations. The majority of the sagebrush key habitat in the allotment occurs within the higher elevations (Clan Alpine Mountains and Stillwater Range). Cheatgrass is scattered throughout the key habitat. Overall, the standard is being met in this habitat.

Lower Montane Woodland—Approximately 11% of the allotment contains the lower montane woodland habitat, which consists of a pinyon/juniper dominated community. Understory layers are variable depending on tree density. No assessments were conducted in this key habitat.

Desert Playas and Ephemeral Pools —Approximately 2% of the allotment encompasses this key habitat. Dixie Meadows hot spring and a variety of other springs provide the Dixie Meadows Salt Marsh with a permanent water source. Soils adjacent to playa support species such as fourwing saltbush, saltgrass, and greasewood. No assessments were conducted adjacent to this key habitat.

Springs and Springbrooks/Intermountain Rivers and Streams—A general description of this key habitat is described in Cow Canyon Allotment above.

Three springs/springbrooks and three perennial creeks were formally assessed. In general, the riparian areas are not meeting standards for plant and animal habitat, with livestock grazing being a contributing factor.

Marshes—This key habitat is considered one of the most diverse and critical for some species of migratory birds for both breeding and migratory needs. Only a few hundred acres of the key habitat exist within the allotment. However, most of these areas are on Navy lands and are protected by fencing. No assessments were conducted in these areas.

Clan Alpine Allotment

Intermountain Cold Desert Scrub— General characteristics of the Intermountain cold desert scrub key habitat are described above under Cow Canyon Allotment.

Approximately 28% of the Clan Alpine Allotment contains the Intermountain cold desert scrub key habitat. Five assessments were conducted in this key habitat. Some areas of winterfat were in poor condition, and Russian thistle was common on many of the sites. Furthermore, native grasses were lacking in quantity and species diversity throughout the key habitat. The Intermountain cold desert scrub key habitat is not meeting standards with drought, wild horse utilization, and livestock grazing all contributing factors.

Sagebrush— The sagebrush key habitat primarily occurs at higher elevations in the Clan Alpine Allotment (Clan Alpine Mountains, Desatoya Mountains, and New Pass Range) and covers approximately 48% of the total area within the allotment. Two assessments were conducted in this key habitat. Sufficient diversity, distribution, and abundance of native plant species were present in higher elevations, while native grasses were deficient in lower elevations. Cheatgrass was found to be scattered throughout the habitat. Overall, the standard is being met in this habitat.

Lower Montane Woodland—Approximately 14% of the allotment contains the lower montane woodland habitat, which consists of a pinyon/juniper community dominated community. Understory layers are variable depending on tree density. No assessments were conducted in this key habitat.

Desert Playas and Ephemeral Pools —Approximately 3.5% of the allotment encompasses this key habitat. The playas associated with the allotment do not contain a large permanent water source. No assessments were conducted adjacent to this key habitat.

Springs and Springbrook/Intermountain Rivers and Streams— A general description of this key habitat is described in Cow Canyon Allotment above.

PFC assessments were conducted at four springs/springbrooks and three perennial creeks. In general, the riparian areas do not meet standards for plant and animal habitat, with livestock grazing and wild horse utilization being contributing factors.

Big Game Species:

Mule Deer

Although mule deer occur in various ecosystems, there are many parallels in diet and habitat composition. Mule deer are secondary successional species that prefer areas containing plant species resulting from some type of disturbance (Wasley 2004). Ideal mule deer habitat is characterized by areas of thick brush or trees interspersed with open areas. The thick brush and trees provide the ungulate with both thermal and protective cover, while the openings provide available forage (UDWR 2008). A mule deer's diet consists of a variety of browse, grass, and forb species, with forbs and grasses being the most important in spring and early summer, while shrubs are most utilized during winter and the dry summer months.

Though winter range is often identified as the most critical habitat in influencing mule deer population numbers (Cox et al. 2009), Austin and Urness (1985) and Clements and Young (1997) equated the importance of maintaining quality summer and transitional ranges. The overall quality of summer and transitional ranges, which includes the ability to provide highly nutritious forage in the spring and early summer, can have significant effects on mule deer body condition entering the winter months. Tollefson et al. (2011) states that the lack of quality forage in summer and autumn resulting from habitat degradation, lack of rainfall, or habitat loss has the potential to negatively impact individual survival during the winter and fawning success in the upcoming spring.

Healthy riparian areas are essential components of quality mule deer habitat. This is due to the fact that proper functioning riparian systems can provide high quality forage, protection from predators, and thermal cover (Carson and Peek 1987). The ability to provide high quality forage and hiding cover from predators makes riparian areas critical to fawn-rearing success (Leckenby et al. 1982, Wasley 2004).

Suitable mule deer habitat occurs within the boundaries of the Cow Canyon, Dixie Valley, and Clan Alpine Allotments. More specifically, suitable habitat within the Cow Canyon Allotment occurs in portions of the Clan Alpine Mountains, suitable habitat within the Dixie Valley Allotment occurs in sections of the Stillwater Range and Clan Alpine Mountains, and suitable

habitat within the Clan Alpine Allotment occurs in portions of the Clan Alpine Mountains, Desatoya Mountains, and New Pass Range. The Nevada Department of Wildlife (NDOW) has classified the suitable mule deer habitat within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments as crucial summer range, crucial winter range, or year-round habitat. The approximate acres of each habitat type within the allotments are displayed below (Table 36, Table 37 and Table 38).

Table 36: Approximate Acres of Mule Deer Crucial Summer Range, Crucial Winter Range, and, Year-round Habitat within the Cow Canyon Allotment

Habitat Classification	Acres on BLM Land Within Cow Canyon Allotment	Percentage of BLM Land Within Cow Canyon Allotment
Crucial Summer	10,812	7.5%
Crucial Winter	23,187	15.9%
Year-round	17,049	11.7%

Table 37: Approximate Acres of Mule Deer Crucial Summer Range, Crucial Winter Range, and, Year-round Habitat within the Dixie Valley Allotment

Habitat Classification	Acres on BLM Land Within Dixie Valley Allotment	Percentage of BLM Land Within Dixie Valley Allotment
Crucial Summer	21,179	8.5%
Crucial Winter	45,256	18.1%
Year-round	16,170	6.5%

Table 38: Approximate Acres of Mule Deer Crucial Summer Range, Crucial Winter Range, and, Year-round Habitat within the Clan Alpine Allotment

Habitat Classification	Acres on BLM Land Within Clan Alpine Allotment	Percentage of BLM Land Within Clan Alpine Allotment
Crucial Summer	18,432	5.2%
Crucial Winter	22,282	6.2%
Year-round	58,260	16.3%

NDOW hunt units 181-184 (Area 18 mule deer herd) occur within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments. Since 2007, the fawn to adult ratio for the Area 18 herd has exhibited a slight downward trend (Table 39 and Figure 2). Environmental factors greatly contribute to the fawn to adult ratio, as a mild 2009/2010 winter and increased precipitation in 2010 contributed to a higher fawn/adult ratio in 2010 and drought during conditions since 2012, as well as extreme cold temperatures during the 2012-2013 winter, have contributed to the lower fawn to adult ratio observed from 2012-2014. The overall population trend has remained relatively stable since 2008 (Table 40).

Table 39: Fawn/adult Ratio for the Area 18 Mule Deer Herd from 2007-2013 (NDOW Big Game Status Reports 2006-2014)

Survey Year	Fawn/Adult Ratio
2007	41/100
2008	35/100
2009	34/100
2010	41/100
2011	39/100
2012	32/100
2013	34/100
2014	29/100

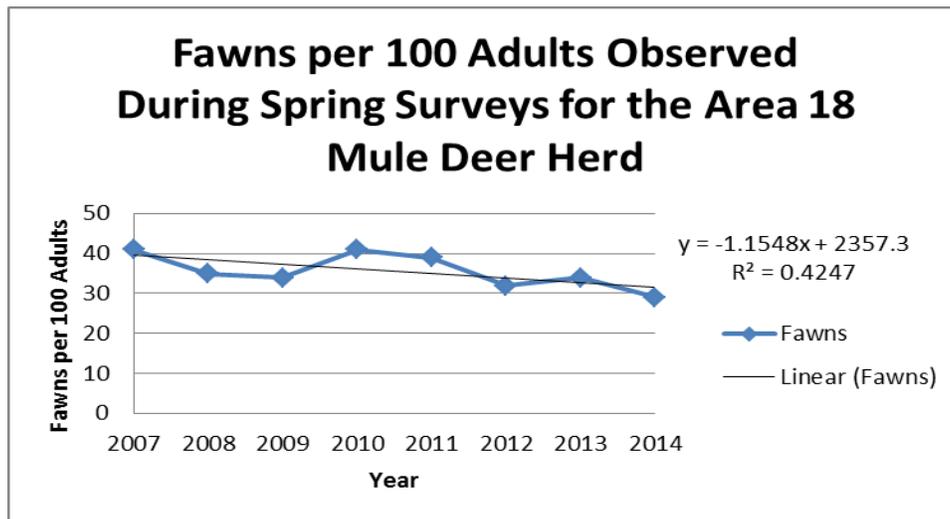


Figure 2: Fawns per 100 adults observed during spring surveys for the Area 18 mule deer herd from 2007-2013 (NDOW Big Game Status Reports 2006-2014).

Table 40: Mule Deer Population Estimates for the Area 18 Herd (Units 181-184) Since 2008 (NDOW 2008-2014 Big Game Statistics Appendices)

Year	Population Estimate
2008	1600
2009	1600
2011	1600
2012	1500
2013	1500
2014	1500

Estimates - Values generated from computer models that reconstruct age and sex classes based on sampled herd composition, harvest data, and population demographic variables. The confidence limits around these estimates may be as high as + or - 20%.

Pronghorn Antelope

The vegetative height, cover, and community type, as well as the elevation, topography, and distance to water, influence pronghorn habitat selection. Pronghorn generally prefer shrub communities with the vegetation structure averaging about 38.1 cm (15 in) in height, in areas with flat terrain or rolling topography from 914-1,829 m (3,000-6,000 ft) in elevation. More

specifically, preferred ranges consist of approximately 50% living vegetation, with the vegetative composition consisting of 20-50% grasses, 10-30% forbs, and 10-30% shrubs (Yoakum 1980). The proximity to water can influence pronghorn habitat use within ranges containing suitable topography and vegetation. For example, while conducting a study in northern Arizona, Bright and Van Riper III (1999) found that 84% of all pronghorn locations were located within 6 km (3.8 miles) from a water source.

Table 41: Pronghorn Habitat Rating in Regards to Vegetative Cover (Yoakum 1980)

Vegetation Type	Good	Fair	Poor
Forbs	10-30% ground cover	5-10% ground cover	<5% ground cover
Grass	20-50% ground cover	10-20% ground cover	<10% ground cover
Shrubs	10-30% ground cover	5-10% ground cover	>30% ground cover

It is important to have the appropriate vegetative structure and composition within a range to provide both protective cover and forage for pronghorn populations. Vegetation height is important, as pronghorn prefer areas with lower vegetation to provide long-range visibility of predators. The exception is during the fawning period, in which pronghorn does utilize areas with above average shrub height (Alldredge et al. 1991, Howard 1995) and/or tall grasses and forbs (>25 cm (9.8 in)) to provide protective cover for fawns (Barrett 1981). According to Yoakum (1980) which summarized a variety of foraging studies conducted on pronghorn in California, Oregon, Idaho, and Nevada, browse species were the most preferred year-round. The highest forb use occurred during the summer months, followed by spring, and then fall (Table 42). Beale and Smith (1970) documented a relationship between precipitation and diet in western Utah, where forbs provided over 90% of a pronghorn’s summer diet when they were abundant as a result of above average rainfall. When forbs were absent due to below average rainfall, the primary dietary component for pronghorn during the summer was browse species. Furthermore, Beale and Smith (1970) documented that grass was more commonly utilized during the spring, and browse species were the most utilized during the fall and winter.

Table 42: Percent Volume of Forage Consumed by Season for Pronghorn in California, Oregon, Idaho, and Nevada (Yoakum 1980)

Vegetation Type	Winter	Spring	Summer	Fall	Mean
Grass	6%	10%	1%	13%	7%
Forbs	8%	24%	34%	22%	22%
Browse	86%	66%	65%	66%	71%

Suitable pronghorn habitat occurs within the boundaries of the Cow Canyon, Dixie Valley, and Clan Alpine Allotments. More specifically, NDOW has classified the suitable pronghorn habitat as agricultural habitat, crucial summer range, or year-round habitat. The approximate acres of each habitat type within the allotments are displayed below (Table 43, Table 44 and Table 45).

Table 43: Approximate Acres of Pronghorn Antelope Year-round Habitat within the Cow Canyon Allotment

Habitat Classification	Acres on BLM Land Within Cow Canyon Allotment	Percentage of BLM Land Within Cow Canyon Allotment
Year-round	72,939	49.9%

Table 44: Approximate acres of pronghorn antelope year-round habitat within the Dixie Valley Allotment

Habitat Classification	Acres on BLM Land Within Dixie Valley Allotment	Percentage of BLM Land Within Dixie Valley Allotment
Year-round	215,512	86.1%

Table 45: Approximate acres of pronghorn antelope agricultural habitat, crucial summer range, and year-round habitat within the Clan Alpine Allotment

Habitat Classification	Acres on BLM Land Within Clan Alpine Allotment	Percentage of BLM Land Within Clan Alpine Allotment
Agricultural	3,587	1.0%
Crucial Summer	15,305	4.3%
Year-round	256,430	71.6%

NDOW hunt units 181-184 occur within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments. The fawn to doe ratio for this management unit increased from 2008-2010 but has decreased significantly since 2010 (Table 46 and Figure 3). Environmental factors have greatly contributed to the fawn to doe ratio observed since 2008. For example, increased precipitation in 2010 contributed to a high fawn to adult ratio (60/100), and extreme drought influenced the extremely low fawn to doe ratio observed during 2012 and 2013. Though the population estimates illustrate a significant increase in numbers from 2008-2011 and a steady population from 2011-2013 (Table 47), poor recruitment in 2012 and 2013 would most likely result in declining population estimate in the near future.

Table 46: Fawn/doe Ratio for the Pronghorn Population Encompassing Hunt Units 181-184 from 2008-2012 (NDOW Big Game Status Reports 2008-2014)

Survey Year	Fawn/Doe Ratio
2008	34/100
2009	48/100
2010	60/100
2011	54/100
2012	24/100
2013	24/100

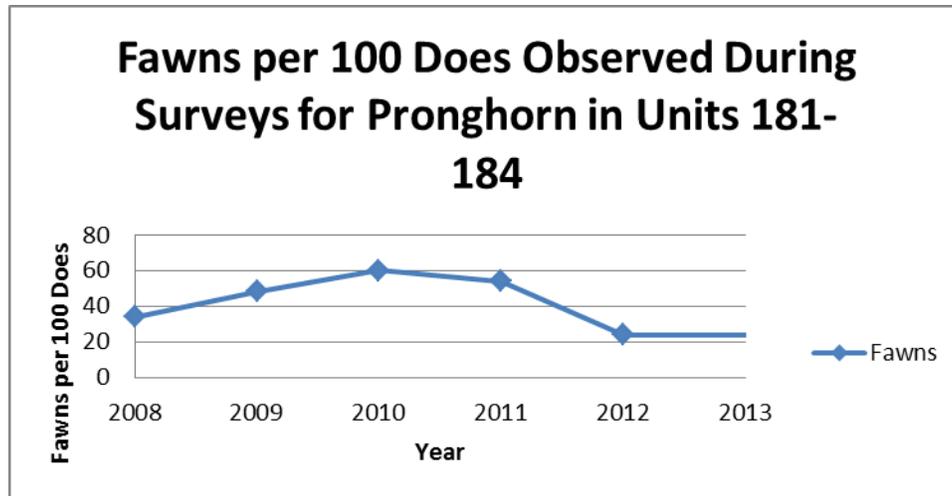


Figure 3: Pronghorn fawns per 100 does observed during surveys in units 181-184 from 2008-2012 (NDOW Big Game Status Reports 2008-2014).

Table 47: Estimated Pronghorn Populations since 2008 within Hunt Units 181-184 (NDOW 2008-2014 Big Game Statistics Appendices)

Survey Year	Population Estimate
2008	380
2009	390
2011	600
2012	600
2013	600

Estimates - Values generated from computer models that reconstruct age and sex classes based on sampled herd composition, harvest data, and population demographic variables. The confidence limits around these estimates may be as high as + or - 20%.

Bighorn Sheep

The subspecies of bighorn sheep (*Ovis canadensis*) found in the Cow Canyon, Dixie Valley, and Clan Alpine Allotments is the desert bighorn sheep (*O. c. Nelsoni*). They prefer rough, rocky, and steep terrain; require freestanding water in the summer months or during drought; and eat a variety of grasses, shrubs, and forbs. Due to the dry environments they occupy, browse is generally the dominant dietary component for desert bighorn sheep (Tesky 1993).

Suitable desert bighorn habitat occurs within the boundaries of the Cow Canyon, Dixie Valley, and Clan Alpine Allotments. More specifically, NDOW has classified portions of the Clan Alpine Mountains within the Cow Canyon Allotment as year-round habitat, portions of the Clan Alpine Mountains within the Dixie Valley Allotment as year-round habitat and lambing habitat, the Stillwater Range within the Dixie Valley Allotment as year-round habitat, portions of the Desatoya Mountains within the Clan Alpine Allotment as lambing habitat; crucial summer habitat; and year-round habitat, and the eastern portion of the New Pass Range within the Clan Alpine Allotment as potential habitat. The approximate acres of each habitat type within the allotments are displayed below (Table 48, Table 49 and Table 50).

Table 48: Approximate Acres of Desert Bighorn Sheep Year-round Habitat within the Cow Canyon Allotment

Habitat Classification	Acres on BLM Land Within Cow Canyon Allotment
Year-round	60,839

Table 49: Approximate Acres of Desert Bighorn Sheep Crucial Summer, Lambing, and, Year-round Habitat within the Clan Alpine Allotment

Habitat Classification	Acres on BLM Land Within Clan Alpine Allotment
Crucial Summer	2,758
Lambing	4,096
Year-round	86,360

Table 50: Approximate Acres of Desert Bighorn Lambing and Year-round Habitat within the Dixie Valley Allotment

Habitat Classification	Acres on BLM Land Within Dixie Valley Allotment
Lambing	1,719
Year-round	138,635

NDOW Hunt Unit 181 encompasses portions of the Clan Alpine Allotment, and Hunt Unit 183 contains the Cow Canyon, Clan Alpine, and Dixie Valley Allotments. The number of lambs per 100 ewes in Hunt Unit 181 declined from 2007 to 2008, primarily due to poor range conditions (NDOW 2009). After 2008, the lamb to ewe ratio increased each year until low lamb numbers were observed in 2012, followed by an increase in 2013 (Table 51 and Figure 4). The low lamb to ewe ratio observed in 2012 was attributed to the drought (NDOW 2013). For Hunt Unit 183, a downward trend was observed from 2007-2011. Since 2011, the lambs per 100 ewes in Hunt Unit 183 have exhibited an upward trend (Table 52 and Figure 4).

Table 51: Lamb/ewe Ratio for Desert Bighorn Sheep in Hunt Unit 181 from 2007-2013 (NDOW Big Game Status Reports 2006-2014)

Survey Year	Lamb/Ewe Ratio
2007	51/100
2008	20/100
2009	38/100
2010	42/100
2011	50/100
2012	19/100
2013	42/100

Table 52: Lamb/ewe Ratio for Desert Bighorn Sheep in Hunt Unit 183 from 2007-2013 (NDOW Big Game Status Reports 2006-2014)

Survey Year	Lamb/Ewe Ratio
2007	60/100
2008	39/100
2009	36/100
2010	38/100
2011	23/100
2012	34/100
2013	44/100

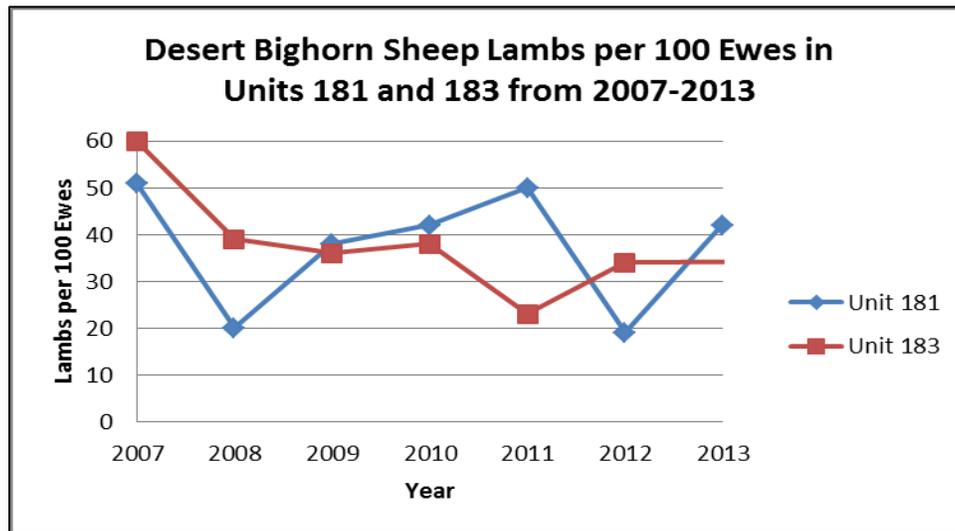


Figure 4: Desert Bighorn Sheep Lambs per 100 Ewes Observed during Surveys in Units 181 and 183 from 2007-2012 (NDOW Big Game Status Reports 2008-2014).

Upland Game

The primary upland game species within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments are Chukar Partridge (*Alectoris chukar*) and mourning dove (*Zenaida macroura*). Springs and springbrooks are important for the survival of these game birds.

Other Species Occurring Within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments
 Wildlife species known to occur within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments not discussed in previous sections in the document include a variety of fish, mammalian, avian, and reptilian species. One fish species that has been observed within the allotments is the brook trout. Mammalian species that have been found within the allotments and not been discussed in previous sections of this document are the black-tailed jackrabbit (*Lepus californicus*), desert woodrat (*Neotoma lepida*), white-tailed antelope ground squirrel (*Ammospermophilus leucurus*), Merriam’s kangaroo rat (*Dipodomys merriami*), northern pocket gopher (*Thomomys talpoides*), American badger (*Taxidea taxus*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), kit fox (*Vulpes macrotis*), western spotted skunk (*Spilogale gracilis*), and Great Basin pocket mouse (*Perognathus parvus*). Additional avian species recorded within the allotment include the red-tailed hawk (*Buteo jamaicensis*), sharp-shinned hawk (*Accipiter striatus*), great horned owl (*Bubo virginianus*), horned lark (*Eremophila*

alpestris), common nighthawk (*Chordeiles minor*), mountain chickadee (*Poecile gambeli*), white-breasted nuthatch (*Sitta carolinensis*), and spotted towhee (*Pipilo maculatus*). Reptilian species that have been observed within the allotments include the zebra-tailed lizard (*Callisaurus draconoides*), Great Basin rattlesnake (*Crotalus oreganus lutosus*), western fence lizard (*Sceloporus occidentalis*), sagebrush lizard (*Sceloporus graciosus*), common side-blotched lizard (*Uta stansburiana*), coachwhip (*Masticophis flagellum*), desert horned lizard (*Phrynosoma platyrhinos*), and California kingsnake (*Lampropeltis getula californiae*).

3.11.2 Environmental Consequences

3.11.2.1 Alternative 1: Proposed Action

Within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments, implementing the livestock grazing and wild horse and burro components of the Proposed Action should result in the spring and springbrook, Intermountain rivers and streams, and Intermountain cold desert scrub habitats to make progress towards achieving RAC Standards. Individual springs and streams that are already meeting standards within the allotments should continue to meet standards. Furthermore, the livestock grazing and wild horse and burro components of the Proposed Action should result in improved conditions within the sagebrush key habitat, especially on the lower elevations.

Livestock distribution throughout the allotments would be controlled by adhering to the pasture rotation/grazing system. This would include placing all salt and/or supplements at least ¼ mile from all riparian areas, repairing and developing range improvement projects, implementing drought actions when and where appropriate and enforcing utilization triggers in both the upland and riparian habitats. Using techniques (e.g. bait/water trapping and fertility control) to ensure that the wild horse population in the Clan Alpine HMA is within AML should result in sustainable utilization of the vegetation within the Intermountain cold desert scrub, sagebrush, and spring and springbrook key habitats by wild horses.

Reinstating the lost AUMs within the Shoshone Pasture in the Clan Alpine Allotment should have negligible impacts on the Intermountain cold desert scrub, spring and springbrook, Intermountain Rivers and streams, and sagebrush key habitats within the area. AUMs would only be reinstated if the permittee complies with all grazing permit conditions, it is determined that conditions on the allotment allow for the additional use, and annual monitoring ensures that the additional use is not impacting the ability of the area to achieve or make significant progress towards achieving RAC Standards.

The use of a TNR permit should have negligible to positive benefits to wildlife that utilize the Intermountain cold desert scrub, sagebrush, spring and springbrook, and Intermountain rivers and streams key habitats. TNR would only be authorized if field visits determine that the additional use would not impact the ability of the area to achieve or make significant progress towards achieving RAC Standards. During years when cheatgrass or other invasive plant species flourish, allowing the undesirable species to be flash grazed could be beneficial, as it would give the native plants a better chance to outcompete the more aggressive invasive plant species. Additionally, this would decrease the likelihood of an intense wildfire that could initially eliminate the shrub component within the key habitats.

Dirt Spring, the unnamed spring in Cherry Valley, and Rock Creek Spring are currently degraded and not functioning as high quality habitat for wildlife that utilize these areas. Constructing perimeter fences around these springs would protect them from continued overutilization and trampling by wild horses and livestock which would benefit wildlife. This protection should result in improvements (i.e. an increase in aquatic vegetation used as forage and/or protective cover, an improvement in water quality, a decrease in erosional potential, etc...) to the degraded conditions within the springs.

Pinyon pine and juniper trees are encroaching into the wet meadow at Rock Creek Spring. This is a concern, since the trees are contributing to the overall decline in water availability and riparian vegetation within the spring. Removing the encroaching pinyon pine and juniper trees could result in increased soil moisture and riparian vegetation within the spring (Gedney et al. 1999 and Zouhar 2001), as well as improve overall riparian functions which would also benefit wildlife that utilize the spring.

Implementing the invasive and noxious weeds program should improve the habitat for wildlife within the allotments over the long-term, as the intent of the program is to reduce the occurrence of the weed species and increase the occurrence of native vegetation used by wildlife for forage and/or cover. Short-term impacts for the salt cedar removal would be a loss in vertical structure that some wildlife species could use for protective cover.

Constructing the proposed mineral material pit in Edwards Creek Valley should have negligible impacts to wildlife species that utilize the Clan Alpine Allotment. The area of the proposed pit functions as low quality habitat, as it is adjacent to an existing gravel pit and predominantly composed of cheatgrass. The potential increase in vehicle traffic, which could result in increased noise (therefore causing wildlife to avoid the areas in and around the gravel pits) and potential of wildlife mortality as a result of being run over by vehicles (primarily for small mammals), is not a major concern due to the low quality of the habitat.

Big Game

Specific impacts to bighorn sheep from the Proposed Action are discussed in the Sensitive Species Section.

Pronghorn are associated with the spring/springbrook, sagebrush, and Intermountain cold desert scrub key habitats. General impacts to these habitats from the livestock, wild horse, range improvement, and noxious and invasive weed components of the Proposed Action are described above. Although the pronghorn population in Hunt Units 181-184 have remained stable (Table 47), the concern with pronghorn within these units is the reduced recruitment levels (Table 46). Implementing the drought, horse, livestock, noxious and invasive weed, and range improvement components of the Proposed Action should address some of the factors (e.g. drought, lack of native grasses, degradation of riparian areas, abundance of noxious and invasive weeds, etc...) that are contributing to the decreased recruitment rates. Furthermore, improving the riparian conditions at Rock Creek Spring should benefit pronghorn that utilize the spring.

The proposed mineral material pit in Edwards Creek is within pronghorn year-round habitat. Due to the amount of pronghorn year-round habitat within and around Edwards Creek Valley, constructing the new gravel pit and designating the area as a community pit would have negligible impacts to the pronghorn population within Hunt Units 181-184.

General impacts to the key habitats (e.g. sagebrush, spring/springbrook, etc...) occupied by mule deer within the Clan Alpine, Cow Canyon, and Dixie Valley Allotments from the livestock, wild horse, range improvement, and noxious and invasive weed components of the Proposed Action are described above. Although the population for the Area 18 mule deer herd has remained relatively stable over recent years (Table 40), Figure 2 illustrates an overall declining trend for the number of fawns per 100 does since 2010. Implementing the drought, wild horse, livestock, noxious and invasive weed, and range improvement components of the Proposed Action should address some of the factors (e.g. drought, lack of native grasses, degradation of riparian areas, abundance of noxious and invasive weeds, etc...) that are contributing to the decreased recruitment rates. Furthermore, improving the riparian conditions at Rock Creek Spring, Dirt Spring, and the unnamed spring in Cherry Valley should benefit mule deer that utilize these springs.

The proposed mineral material pit in Edwards Creek Valley is not within suitable habitat for mule deer; therefore, the pit would not have any effects on mule deer.

Upland Game

Chukar should benefit from implementing the Proposed Action, as the spring and springbrook key habitat should make progress towards achieving RAC Standards.

3.11.2.2 Alternative 2: Dixie Valley Reduction in Livestock and Change in Season of Use

The wild horse, mineral, and invasive, nonnative, and noxious weed management under this alternative would be the same as described under the Proposed Action; therefore, the impacts on the key habitats are the same as described under the Proposed Action above. The difference is that under this alternative, the key habitats (e.g. sagebrush, Intermountain cold desert scrub, and spring/springbrook) within the Dixie Valley North Pasture would receive additional resource protection, as 1600 AUMs would be placed in suspended non-use for the protection of the resources on public lands. Grazing the Dixie Valley South Pasture from 11/1-2/28 during odd and even years, instead of alternating the grazing schedule to winter grazing in even years and spring grazing in odd years, should ensure additional vegetation within the pasture during the spring that wildlife would be able to use for forage and cover.

Big Game

Specific impacts to bighorn sheep from Alternative 2 are discussed in the Sensitive Species Section.

Pronghorn year-round habitat and mule deer habitat are located within the Dixie Valley North and South pastures. Providing additional resource protection to the Dixie Valley North Pasture (by placing 1600 AUMs in suspended nonuse) should result in increased vegetation year-round within the pasture that pronghorn and mule deer could use for forage and cover. In comparison to the current grazing schedule within the Dixie Valley South Pasture, only grazing

the pasture from 11/1-2/28 should result in an increase in vegetation within the pasture during the spring. This increase in vegetation within the pasture during the spring would provide additional forage and hiding cover for pronghorn and mule deer using the area during the timeframe.

Upland Game

Chukar should benefit from implementing Alternative 2, as the spring and springbrook key habitats within the Dixie Valley North and South pastures should make progress towards achieving or achieve RAC Standards.

3.11.2.3 Alternative 3: Cherry Valley Closure to Hot Season Grazing

The wild horse, mineral, and invasive, nonnative, and noxious weed management under this alternative would be the same as described under the Proposed Action; therefore, the impacts on the key habitats are the same as described under the Proposed Action above. Under this alternative, the livestock season of use within the Cherry Valley Pasture of the Clan Alpine Allotment would be changed from July 1 through August 31 to September 1 through October 31 due to management concerns. Since livestock tend to congregate around riparian areas during the hot season, grazing during this time period can result in significant degradation to these areas (BLM Technical Reference 1737-20) and negatively impact wildlife. As a result closing the Cherry Valley Pasture to livestock grazing during the hot season should result in the key habitats, particularly springs and springbrooks, progressing towards or achieving RAC Standards and benefit wildlife that utilize the riparian areas within the pasture.

Big Game

Specific impacts to bighorn sheep from Alternative 3 are discussed in the Sensitive Species Section.

Mule deer crucial summer, crucial winter, and year-round habitat occurs within the Cherry Valley Pasture. Closing the Cherry Valley Pasture to livestock grazing during the hot season should result in the riparian key habitats progressing towards or achieving RAC Standards and benefit mule deer that utilize the pasture. More specifically, not grazing the Cherry Valley Pasture during the hot season should result in an increase in riparian vegetation that mule deer would utilize for forage and cover.

3.11.2.4 Alternative 4: Cow Canyon Change in Season of Use and Clan Alpine Reduction of AUMs

Cow Canyon and Clan Alpine Allotments

The impacts to wildlife and their associated key habitats (from cattle grazing, wild horses, minerals, and invasive, nonnative, and noxious weed components of Alternative 4) would be similar to those described in the Proposed Action. Changing the grazing season of use on the Cow Canyon Allotment from summer/fall to winter and reducing cattle grazing in the Clan Alpine Allotment should result in additional vegetation available for wildlife that could be used as forage and/or cover.

Dixie Valley Allotment

Impacts to the Dixie Valley Allotment would be similar to those discussed in Alternative 1.

3.11.2.5 Alternative 5: No Domestic Sheep Grazing

The impacts to wildlife and their associated key habitats from the cattle grazing, wild horse and burro, minerals, and invasive, nonnative, and noxious weed components of Alternative 5 are the same as described in the Proposed Action.

Eliminating domestic sheep grazing from the New Pass area of the Clan Alpine Allotment should result in additional vegetation available for wildlife from 12/1 – 3/15 that could be used as forage and/or cover.

3.11.2.6 Alternative 6: No Grazing

Under the No Grazing Alternative, there would be no impacts from livestock to the key habitats (e.g. Intermountain salt desert scrub, sagebrush, spring/springbrook, and Intermountain rivers/streams) and the wildlife species that utilize these habitats. No vegetation would be trampled or consumed by cattle within the allotments; therefore, there should be additional vegetation available to wildlife that could be used for forage and/or cover. Wild horses would continue to trample and utilize the plants; however they should continue to be managed within AML to maintain/reduce these impacts.

Alternative 6 would most likely result in the key habitats progressing towards, achieving, or maintaining RAC Standards; therefore, wildlife species within the allotments should benefit from Alternative 6.

Big Game

Specific impacts to bighorn sheep from Alternative 6 are discussed in the Sensitive Species Section.

Under this alternative, the forage originally allocated for livestock would become available to wildlife such as mule deer and pronghorn. As a result, both pronghorn and mule deer could experience increased recruitment levels due to the increase in available vegetation that could be used for forage and/or cover.

Upland Game

Chukar should benefit from implementing Alternative 6, as spring and springbrook key habitats should make progress towards achieving or achieve RAC Standards.

3.11.2.7 Alternative 7: No Action

The current grazing operations have led to not meeting the standards in the Intermountain cold desert scrub key habitat, a lack of native grasses in the sagebrush key habitat (on the lower elevations), and generally not meeting standards within the spring and springbrook and Intermountain river and stream key habitats within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments. Under the No Action Alternative, there would be no additional range improvements, so springs not meeting RAC Standards would likely realize further degradation. Horse populations would continue to increase, eventually going beyond AML, causing increased degradation to native plant communities. Overall ecosystem health and species diversity could decline.

The allotments would continually be surveyed along roadways and other disturbed areas for new weed infestations. Treatment methods could include biological, mechanical, and chemical control. When applicable, several of these methods would be combined into an integrated pest management program in order to reduce the costs and risks to humans and the environment. Areas previously treated with herbicides would continue to be monitored. Wildlife would benefit from the weed treatments, as the long-term goal would be to decrease the amount of invasive, noxious, and nonnative weeds and increase the amount of native vegetation.

No new mineral material pits would be constructed under this alternative. There would be no additional loss of wildlife habitat, though the habitat that would have been eliminated from the construction of the new gravel pit is considered very low quality since it is primarily composed of cheatgrass.

Big Game

Specific impacts to bighorn sheep from the No Action Alternative are discussed in the Sensitive Species Section.

Since the key habitats (e.g. Intermountain cold desert scrub, sagebrush, spring/springbrook, and Intermountain rivers/streams) would likely not improve under the No Action Alternative, it is highly likely that the recent downward trends in recruitment levels for both mule deer and pronghorn (Figure 2 and Figure 3) would continue.

Upland Game

Chukar would not benefit from implementing the No Action Alternative, as spring and springbrook key habitats would likely not make progress towards achieving RAC Standards.

3.12 Neo-tropical Migratory/Song Birds

3.12.1 Affected Environment

On January 11, 2001, President Clinton signed Executive Order 13186 (Land Bird Strategic Project) placing emphasis on the conservation and management of migratory birds. Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918, and the EO addresses the responsibilities of federal agencies to protect them by taking actions to implement the MBTA. BLM management for these species is based on Instruction Memorandum No. IM 2008-050 dated December 18, 2007.

The Nevada Comprehensive Bird Conservation Plan (2010) and the USFWS Birds of Conservation Concern (BCC) (2008) were used to determine which avian species known to occur, or potentially occur, in the allotments have been classified as priority species by the USFWS and/or the state of Nevada. The ecological tenet underlying the process is that actions focused on priority species would impact other avian species that utilize similar habitats.

Table 53: The Nevada Comprehensive Bird Conservation Plan (2010) and the U.S. Fish and Wildlife Service’s Birds of Conservation Concern (BCC) (2008) priority species that occur, or could potentially occur, within the Cow Canyon, Dixie Valley, or Clan Alpine Allotment.

Key Habitats	Species	Notes
Desert Playas and Ephemeral Pools	American Avocet (<i>Recurvirostra americana</i>)	One of the main threats to the species is the dewatering of playas or springs from drought or water diversions (GBBO 2010).
Desert Playas and Ephemeral Pools	Black-Necked Stilt (<i>Himantopus mexicanus</i>)	One of the main threats to the species is the dewatering of playas or springs from drought or water diversions (GBBO 2010).
Intermountain Cold Desert Scrub/Sagebrush	Brewer’s Sparrow (<i>Spizella breweri</i>)	Though they primarily breed in shrub steppe habitats and are considered to be shrub steppe obligates, they are also associated with salt desert scrub habitats. Nests are usually constructed in the mid to upper canopy of tall, dense sagebrush or greasewood. Insects comprise the majority of the bird’s diet in the spring and summer (GBBO 2010, WAPT 2012).
Intermountain Cold Desert Scrub/Sagebrush	Burrowing Owl (<i>Athene cunicularia</i>)	Within these habitat types, suitable areas for the owl consists of shrubs spaced far apart or low stature vegetation that allows the bird to see for long distances. Ideal habitats are also closely associated with burrowing animals such as ground squirrels (<i>Spermophilus</i> spp.) and badgers (<i>Taxidea taxus</i>), as burrowing owls use holes created by these species as nest sites. Prey for burrowing owls consists of small rodents and insects (GBBO 2010, WAPT 2012).
Intermountain Cold Desert Scrub/Sagebrush/Lower Montane Woodlands/Cliffs and Canyons	Ferruginous Hawk (<i>Buteo regalis</i>)	Dispersed juniper trees found at the ecotone of pinyon-juniper and desert shrub communities provide ideal nesting trees for ferruginous hawks. The hawk is also commonly observed nesting in cliffs. Ideal ferruginous hawk hunting territory consists of brush communities containing a variety of native grasses and forbs, as these communities generally support a high density of ground squirrels and lagomorphs (GBBO 2010, WAPT 2012).
Sagebrush/Intermountain Cold Desert Scrub/Cliffs and Canyons	Golden Eagle (<i>Aquila chrysaetos</i>)	The bird feeds on a variety of small mammals, snakes, birds, juvenile ungulates, and carrion. Nests are generally constructed on rock ledges or in large trees (WAPT 2012).
Lower Montane Woodlands	Lewis’s Woodpecker (<i>Melanerpes lewis</i>)	The bird is a cavity nester that uses dead aspen, cottonwood, and pinyon trees. Conserving grasses and shrubs in riparian and aspen habitats, in order to maintain a high density of insects, is important to conserving the species (Neel 1999).
Intermountain Cold Desert Scrub/Lower	Loggerhead Shrike (<i>Lanius ludovicianus</i>)	Loggerhead shrikes nest in isolated trees or large shrubs and use scattered, tall shrubs and

Key Habitats	Species	Notes
Montane Woodlands/Sagebrush		fences as perches to feed on a variety of prey, which includes small birds, lizards, and mice (Neel 1999).
Lower Montane Woodlands	Pinyon Jay (<i>Gymnorhinus cyanocephalus</i>)	Pinyon jays are known as semi-colonial nesters and pinyon pine woodland obligates (Neel 1999).
Sagebrush/Intermountain Cold Desert Scrub/Climbs and Canyons	Prairie Falcon (<i>Falco mexicanus</i>)	Nests are generally constructed on the ledges of rocky cliffs, but prairie falcons will also nest in trees utilizing old hawk and raven nests. Prairie falcon populations are strongly correlated with the populations of ground squirrels and other small mammals (GBBO 2010).
Intermountain Cold Desert Scrub/Sagebrush	Sage Sparrow (<i>Amphispiza belli</i>)	Preferred habitat includes areas with shrubs at least 45 cm (18 in) tall with 10-25% crown cover mixed with a sparse grass and forb component to support insects (Neel 1999, GBBO 2010).
Intermountain Cold Desert Scrub/Sagebrush	Sage Thrasher (<i>Oreoscoptes montanus</i>)	Primarily inhabits sagebrush areas, but can also be found in salt desert scrub habitat where it integrates with sagebrush or greasewood dominates. Nests are either constructed in the branches of sagebrush (or occasionally greasewood) or placed underneath the shrub. Insects comprise the majority of a sage thrasher's diet, but the bird will also forage on fruits and berries (GBBO 2010, WAPT 2012).
Desert Playas and Ephemeral Pools	Snowy Plover (<i>Charadrius alexandrinus</i>)	One of the main threats to the species is the dewatering of playas or springs from drought or water diversions (GBBO 2010).
Sagebrush/Agricultural lands/Intermountain Rivers and Streams	Swainson's Hawk (<i>Buteo swainsoni</i>)	Nesting generally occurs within these habitats from 915-1372 m (3,000-4,500 ft) in elevation, but individual pairs have been observed nesting at elevations up to 1,829 m (6,000 ft). Isolated cottonwood trees are generally the preferred nesting tree, but nests located in junipers and aspen have been documented. The primary food sources for the bird are small mammals and large insects (Neel 1999).

3.12.2 Environmental Consequences

3.12.2.1 Alternative 1: Proposed Action

While livestock can directly impact the reproductive success of migratory songbirds through the trampling of nests, it is more likely that they indirectly influence reproductive success by altering vegetation (e.g. species composition, height, and cover) through trampling and grazing.

In the Cow Canyon, Dixie Valley, and Clan Alpine Allotments, the primary key habitats that are impacted by livestock grazing are spring and springbrooks, Intermountain rivers and streams, Intermountain cold desert scrub, and sagebrush. Aerial foragers correlated with open habitats

and ground foragers favoring areas with less cover seem to benefit from some grazing in riparian habitats. Bock et al. (1993) did state that species that appear to benefit from livestock grazing in riparian areas tended to be habitat generalists and therefore not necessarily restricted to riparian communities. Avian species requiring a dense shrub and/or herbaceous component in riparian areas for nesting and/or foraging tend to respond negatively to livestock grazing in these areas. Furthermore, improper livestock grazing practices (e.g. allowing excessive hummocking of the soil from hoof action and overutilization of riparian vegetation) can eventually result in the complete loss of riparian areas, which would negatively impact migratory birds that depend on this habitat. In shrub steppe habitats, avian species reliant on herbaceous cover for nesting and/or foraging (whether it be songbirds reliant on insects or raptors dependent on rodents) would often respond negatively to heavy grazing. In general, if livestock grazing is conducted in a manner that would result in the key habitats achieving or maintaining RAC Standards, livestock would most likely have negligible impacts on the nesting and/or foraging habitat of the majority of priority avian species listed in Table 53.

Within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments, implementing the livestock grazing and wild horse and burro components of the Proposed Action should result in the spring and springbrook, Intermountain rivers and streams, and Intermountain cold desert scrub habitats to make progress towards achieving RAC Standards. Individual springs and streams that are already meeting standards within the allotments should continue to meet standards. The livestock grazing and wild horse and burro components of the Proposed Action should result in improved conditions within the sagebrush key habitat, especially on the lower elevations.

Livestock distribution throughout the allotments would be controlled by adhering to the pasture rotation/grazing system. This would include placing all salt and/or supplements at least ¼ mile from all riparian areas, repairing and developing range improvement projects, implementing drought actions when and where appropriate and enforcing utilization triggers in both the upland and riparian habitats. Using techniques (e.g. bait/water trapping and fertility control) to ensure that the wild horse population in the Clan Alpine HMA is within AML should result in sustainable utilization of the vegetation within the Intermountain cold desert scrub, sagebrush, and spring and springbrook key habitats by wild horses.

Reinstating the lost AUMs within the Shoshone Pasture in the Clan Alpine Allotment should have negligible impacts on the Intermountain cold desert scrub, spring and springbrook, Intermountain Rivers and streams, and sagebrush key habitats within the area. AUMs would only be reinstated if the permittee complies with all grazing permit conditions, it is determined that conditions on the allotment allow for the additional use, and annual monitoring ensures that the additional use is not impacting the ability of the area to achieve or make significant progress towards achieving RAC Standards.

The use of a TNR permit should have negligible to positive benefits on migratory bird populations that utilize the Intermountain cold desert scrub, sagebrush, and spring and springbrook/Intermountain rivers and streams key habitats TNR would only be authorized if field visits determine that the additional use would not impact the ability of the area to achieve or make significant progress towards achieving RAC Standards. During years when

cheatgrass or other invasive plant species flourish, allowing the undesirable species to be flash grazed could be beneficial, as it would give the native plants a better chance to outcompete the more aggressive invasive plant species. Additionally, this would decrease the likelihood of an intense wildfire that could initially eliminate the shrub component within the key habitats and negatively impact shrub nesting birds.

Dirt Spring, the unnamed spring in Cherry Valley, and Rock Creek Spring are currently degraded and not functioning as high quality habitat for migratory birds. Constructing perimeter fences around these springs would protect them from continued overutilization and trampling by wild horses and livestock, which should result in improvements (i.e. an increase in aquatic vegetation, an improvement in water quality, a decrease in erosional potential, etc...) to the degraded conditions within the springs. Therefore, constructing the perimeter fences around the springs should benefit migratory birds that utilize these areas.

Pinyon pine and juniper trees are encroaching into the wet meadow at Rock Creek Spring. This is a concern since the trees are contributing to the overall decline in water availability and riparian vegetation within the spring. Removing the encroaching pinyon pine and juniper trees could result in increased soil moisture and riparian vegetation within the spring (Gedney et al. 1999 and Zouhar 2001), as well as improve overall riparian functions, migratory bird species that utilize the spring would benefit.

Avian species that utilize pinyon pine and juniper for nesting and/or perching could be negatively impacted as a result of removing these trees that have encroached into Rock Creek Spring. The negative impact from lost trees used for nesting and/or perching would be negligible due to the amount of trees immediately adjacent to the spring. Allowing the riparian area to recover should result in increased food abundance for many avian species.

Implementing the invasive and noxious weeds program should improve the habitat for migratory bird species within the allotments over the long-term, as the intent of the program is to reduce the occurrence of the weed species and increase the occurrence of native vegetation used by migratory birds for nesting and/or foraging. Short-term impacts from the salt cedar removal would be a loss in vertical structure that some avian species would use for perching, cover, and nesting. To prevent negative impacts to migratory birds from treatments, only herbicides with low acute toxicity to avian species would be used.

Constructing the proposed mineral material pit in Edwards Creek Valley would impact migratory birds, though these impacts should be negligible. The direct loss of habitat resulting from the construction of the new mineral material pit would have negligible impacts on migratory bird populations, since the vegetation is predominantly cheatgrass and the area functions as low quality foraging and nesting habitat. Designating the area as a community pit could result in increased noise from additional traffic, though impacts would be minimal.

3.12.2.2 Alternative 2: Dixie Valley Reduction in Livestock and Change in Season of Use

Under this alternative, the period of use for livestock on the Dixie Valley Allotment would be changed and 1600 AUMs in the Dixie Valley North Pasture would be placed into suspended non-use. Although livestock can directly impact the reproductive success of migratory

songbirds through the trampling of nests; it is more likely that they indirectly influence reproductive success by altering vegetation (e.g. species composition, height, and cover) through trampling and grazing. Not allowing livestock to graze in the Dixie Valley North Pasture until the authorized officer deems acceptable should result in the key habitat types within the pasture to make progress towards meeting RAC Standards. This would have positive impacts on the migratory bird populations that utilize the key habitats within the pasture.

3.12.2.3 Alternative 3: Cherry Valley Closure to Hot Season Grazing

Under this alternative, the livestock season of use within the Cherry Valley Pasture of the Clan Alpine Allotment would be changed from July 1 through August 31 to September 1 through October 31 due to management concerns. Since livestock tend to congregate around riparian areas during the hot season, grazing during this time period can result in significant degradation to these areas (BLM Technical Reference 1737-20) and impact migratory bird populations that are dependent on riparian zones. As a result, closing the Cherry Valley Pasture to livestock grazing during the hot season should result in the key habitats, particularly springs and springbrooks, progressing towards or achieving RAC Standards and benefit avian populations that utilize the pasture.

3.12.2.4 Alternative 4: Cow Canyon Change in Season of Use and Clan Alpine Reduction of AUMs

Cow Canyon

Under this alternative, the season of use on the Cow Canyon Allotment would be changed from May 1 through November 15 to October 1 through April 15. Impacts to the Cow Canyon Allotment would be similar to those discussed in Alternative 1.

Clan Alpine

Under this alternative, the Clan Alpine Allotment permitted AUMs would be reduced, the Bell Flat Pasture removed, and the season of use would be changed from May 1 through March 31 to March 1 through February 28. Although livestock can directly impact the reproductive success of migratory songbirds through the trampling of nests; it is more likely that they indirectly influence reproductive success by altering vegetation (e.g. species composition, height, and cover) through trampling and grazing. Permitting livestock grazing in the Cow Canyon Allotment only when plants are dormant along with reducing the number of livestock allowed to graze in the Clan Alpine Allotment and permitting a more flexible grazing system should result in the key habitat types making progress towards meeting RAC Standards. This alternative would have positive impacts on the migratory bird populations that utilize the key habitats within the allotment.

Dixie Valley Allotment

Impacts to the Dixie Valley Allotment would be similar to those discussed in Alternative 1.

3.12.2.5 Alternative 5: No Domestic Sheep Grazing

The impacts to neo-tropical migratory/song birds and their associated key habitats from the cattle grazing, wild horse and burro, minerals, and invasive, nonnative, and noxious weed components of Alternative 5 are the same as described in the Proposed Action.

Eliminating domestic sheep grazing from the New Pass area of the Clan Alpine Allotment during the winter should benefit the key habitats within the area. Additional vegetation available during the winter should result in the New Pass area supporting more small rodents during this time period, which would benefit raptors that winter in the area. There would be no grazing pressure by sheep in the winter within the New Pass area of the Clan Alpine Allotment, allowing the area to have improved nesting/foraging habitat for migratory bird species the upcoming spring.

3.12.2.6 Alternative 6: No Grazing

Under the No Grazing Alternative, there would be no impacts from livestock grazing to the key habitats (e.g. Intermountain cold desert scrub, sagebrush, Intermountain rivers/streams, and spring/springbrook) and the migratory birds that use them. Livestock would not trample any bird nests or consume vegetation utilized by avian species for forage or cover. Wild horses would continue to trample and utilize the plants; however they should continue to be managed within AML to maintain/reduce these impacts.

Alternative 6 would most likely result in the key habitats progressing towards, achieving, or maintaining RAC Standards; therefore, implementing this alternative would benefit local avian populations.

3.12.2.7 Alternative 7: No Action

The current grazing operations have led to not meeting the standards in the Intermountain cold desert scrub habitat, a lack of native grasses in the sagebrush key habitat (on the lower elevations), and generally not meeting standards within the spring and springbrook and Intermountain river and stream key habitats within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments. Under the No Action Alternative, there would be no additional range improvements, so springs not meeting RAC Standards would likely realize further degradation. Horse populations would continue to increase, eventually going beyond AML, causing increased degradation to native plant communities. Overall ecosystem health and vegetative species diversity would likely continue to decline, resulting in negative impacts to migratory birds.

The allotments would continually be surveyed along roadways and other disturbed areas for new weed infestations. Treatment methods could include biological, mechanical, and chemical control. When applicable, several of these methods would be combined into an integrated pest management program in order to reduce the costs and risks to humans and the environment. Areas previously treated with herbicides would continue to be monitored. Migratory bird species would benefit from the weed treatments.

No new mineral material pits would be constructed under this alternative. There would be no additional loss of habitat for migratory birds, though the habitat is considered very low quality.

3.13 Nevada BLM Sensitive Species

3.13.1 Affected Environment

BLM sensitive species are defined by BLM Manual 6840 as species that normally occur on Bureau administered lands for which the Agency has the capability to significantly affect the conservation status of the species through management. The State Director may designate additional categories of special status species as appropriate and applicable to his or her state's needs. The sensitive species designation may include such native species as those that:

- Could become endangered in or extirpated from a state, or within a significant portion of its distribution in the foreseeable future,
- Are under status review by USFWS and/or NMFS,
- Are undergoing significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution,
- Are undergoing significant current or predicted downward trends in population or density, such that federally listed, proposed, candidate, or state listed status may become necessary,
- Have typically small and widely dispersed populations,
- Inhabit ecological refugia, specialized, or unique habitats, or
- Are state listed but which may be better conserved through the application of BLM sensitive species status.

Table 54: BLM Nevada Sensitive Species that Occur, or Could Potentially Occur, within the Dixie Valley, Cow Canyon, and Clan Alpine Allotments

Key Habitats	Species	Notes
Avian		
Intermountain Cold Desert Scrub/Sagebrush	Brewer's Sparrow	Habitat described in the Migratory Birds Section.
Intermountain Cold Desert Scrub/Sagebrush	Burrowing Owl	Habitat described in the Migratory Birds Section.
Intermountain Cold Desert Scrub/Sagebrush/Lower Montane Woodlands/Cliffs and Canyons	Ferruginous Hawk	Habitat described in the Migratory Birds Section.
Sagebrush/Intermountain Cold Desert Scrub	Golden Eagle	Habitat described in the Migratory Birds Section.
Lower Montane Woodlands	Lewis's Woodpecker	Habitat described in the Migratory Birds Section.
Intermountain Cold Desert Scrub/Lower Montane Woodlands/Sagebrush	Loggerhead Shrike	Habitat described in the Migratory Birds Section.
Lower Montane Woodlands	Pinyon Jay	Habitat described in the Migratory Birds Section.
Sagebrush	Greater Sage-grouse (<i>Centrocercus urophasianus</i>)	Habitat described below.
Desert Playas and Ephemeral	Snowy Plover	Habitat described in the Migratory Birds

Key Habitats	Species	Notes
Pools		Section.
Sagebrush/Intermountain Rivers and Streams	Swainson's Hawk	Habitat described in the Migratory Birds Section.
Mammals		
Intermountain Cold Desert Scrub/Sagebrush/Intermountain Rivers and Streams/Marsh/Lower Montane Woodlands/Springs and Springbrooks	California Myotis (<i>Myotis californicus</i>)	The species is found at lower to middle elevations in a variety of habitats in Nevada, which includes lowland riparian, desert scrub, sagebrush steppe, montane grassland, pinyon-juniper woodland, and mixed-conifer. Mines, caves, rock crevices, and hollow trees are used as roosting sites, and small moths, flies, and beetles comprise the majority of their diet (Bradley et al. 2006).
Sagebrush/Intermountain Cold Desert Scrub	Dark Kangaroo Mouse (<i>Microdipodops megacephalus</i>)	Dark kangaroo mice are found in sandy and gravelly soils in desert scrub, sagebrush, grassland, and desert playa habitats in Nevada. Although the rodent will feed on insects, its diet primarily consists of seeds.
Cliffs and Canyons	Desert Bighorn Sheep (<i>O. c. Nelsoni</i>)	Habitat and recruitment trends described under Big Game within the General Wildlife Section.
Intermountain Rivers and Streams/Marsh/Lower Montane Woodlands/Cliffs and Canyons/Spring and Springbrooks	Little Brown Myotis (<i>Myotis lucifugus</i>)	The bat primarily forages on aquatic insects such as caddis flies, midges, and mayflies (WAPT 2012)
Lower Montane Woodlands/Cliffs and Canyons	Long-Eared Myotis (<i>Myotis evotis</i>)	The species is predominately found in coniferous forests and gleans prey off of foliage, tree trunks, rocks, and the ground (WAPT 2012).
Intermountain Cold Desert Scrub	Pale Kangaroo Mouse (<i>Microdipodops pallidus</i>)	Pale kangaroo mice are found in sandy soils in valley bottoms dominated by greasewood and saltbush (WAPT 2012).
Intermountain Cold Desert Scrub, Sagebrush, Lower Montane Woodlands	Pallid Bat (<i>Antrozous pallidus</i>)	Pallid bats are found throughout Nevada in low to mid elevations in habitats that include pinyon-juniper, blackbrush, creosote, sagebrush, and salt desert scrub. Foraging occurs both in vegetation and on the ground surface, and the bat's diet primarily consists of ground-dwelling arthropods (Bradley et al. 2006).
Sagebrush	Pygmy Rabbit-Only known to occur in the Clan Alpine Allotment (<i>Brachylagus idahoensis</i>)	Pygmy rabbits can be found in areas with tall, dense sagebrush and loose soils. They primarily eat sagebrush and are the only rabbits in North America to dig their own burrows. The primary threat to pygmy rabbits is the loss of shrub-steppe habitat

Key Habitats	Species	Notes
		due to fire, improper grazing practices, invasion of exotic annuals, and agricultural conversion (WAPT 2012).
Lower Montane Woodlands/Cliffs and Canyons/Intermountain Rivers and Streams/Springs and Springbrooks	Spotted Bat (<i>Euderma maculatum</i>)	Spotted bats display a scattered distribution within Nevada, as their distribution is closely associated to the availability of cliff-roosting sites. The species has been found in pinyon-juniper, sagebrush, and riparian areas that range from 540-2,130 m (1,772-6,988 ft) in elevation. Over-grazing, recreational climbing, and mining operations are threats to the species (Bradley et al. 2006).
Lower Montane Woodlands, Cliffs and Canyons/Intermountain Rivers and Streams/Springs and Springbrooks	Townsend's Big-eared Bat (<i>Corynorhinus townsendii</i>)	Townsend's big-eared bats are highly adaptable and inhabit a variety of habitats in Nevada that range from 210-3,500 m (689-11,483 ft) in elevation. Primary threats to the species includes disturbance during the hibernation and maternity periods (Bradley et al. 2006).
Plants		
	Lahontan Beardtongue (<i>Penstemon palmeri</i> var. <i>macranthus</i>)	Found along washes, roadsides, and canyon floors, predominately on carbonate-containing substrates and where moisture is available throughout the summer (NNHP 2001).
	Tonopah Milkvetch (<i>Astragalus pseudiodanthus</i>)	Found with greasewood and other salt desert shrub taxa in drainages, valley floors, old beaches, and stabilized and active dune margins (NNHP 2001).

Greater Sage-grouse

During March of 2010, the USFWS determined that the GRSG warranted protection under the Endangered Species Act, but that listing the species was precluded by the need to address other higher priority species first (Federal Register Vol.75, p. 13910-14014). As a result, the GRSG was identified as a candidate for listing under Section 7 of the Endangered Species Act (ESA) until September 22, 2015. On this date, Sally Jewell, the Secretary of the Interior, announced that the GRSG did not warrant protection under the Endangered Species Act (ESA).

Males gather on traditional "strutting grounds" (leks) from approximately March 1 to May 15 and put on courtship performances. Females usually visit these grounds in higher numbers starting in late March and mate with only a few dominant males. Sites chosen as leks are usually openings with an abundance of sagebrush within 90-200 m (300-650 ft) for escape cover. These lek sites usually occur in broad valleys, ridges, benches and plateaus, or mesas (Connelly et al. 2000, Parrish et al. 2002).

Within one to two weeks after mating, GRSG hens search for suitable nesting and brood rearing sites that are usually within 1.1-6.2 km (0.68-3.85 miles) of a lek (Connelly et al. 2000). In rare circumstances, females have been recorded to travel greater than 20 km (12.5 miles) from a lek to a nest site (Connelly et al. 2000). According to Hagen et al. (2007), ideal GRSG nesting and brood-rearing habitat contains taller sagebrush (>20 inches) with 15-25% canopy cover, at least 10% forb cover, and greater than 15% grass cover. Also, Sveum et al. (1998) observed higher nesting success, due to decreased predation, for structures placed in sagebrush steppe habitat with grasses taller than 18 cm (7.1 in) than in sagebrush steppe areas with lower grasses. In areas with high raven populations, Coates and Delehanty (2010) suggests that nesting habitat with sagebrush cover from 20-30%, with total shrub cover \geq 40%, is the most ideal at preventing ravens from preying on GRSG nests. An abundance of insects and forbs comprise ideal nesting/early brood-rearing habitat (insects are critical to the survival and development of chicks within the first three weeks after hatching) (Johnson and Boyce 1990, Crawford et al. 2004). As the summer progresses, hens with broods relocate to wet meadows and riparian areas abundant with forbs and grasses that are near sagebrush (Connelly et al. 2000, Parrish et al. 2002).

Snow depth determines the areas available to GRSG during the winter. In general, ideal winter habitat contains tall, vigorous sagebrush that extends above the snow and exhibits sufficient canopy coverage (Connelly et al. 2000). Eng and Schladweiler (1972) more commonly observed GRSG during the winter in Montana in sagebrush habitats that had greater than 20% canopy coverage. Conversely, it was stated in Connelly et al. (2000) that Robertson (1991) more commonly observed GRSG during the winter in Idaho occupying sagebrush habitats with the canopy cover averaging about 15%. During winter, sagebrush leaves are the primary food source for the GRSG (Connelly et al. 2000, Parrish et al. 2002).

Blomberg et al. (2012) documented a relationship between GRSG population sizes, annual variances in precipitation, and the presence/absence of an exotic annual grass component. As much as 75% of the annual variance in population size during the study could be explained by the annual deviation in precipitation. Populations inhabiting areas with a substantial exotic annual grassland component showed much lower recruitment than areas without, even following years of sufficient rainfall. A comparison was made between male sage-grouse breeding at leks with a substantial exotic annual grassland component, and males breeding at leks bordered by native sagebrush habitats. The males breeding in areas with a substantial exotic annual grassland component exhibited lower survival than males breeding in areas surrounded by native sagebrush habitats.

Desired habitat conditions for GRSG are further identified in Table 2-2 of the *Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (2015)*.

GRSG priority habitat management areas (PHMA), general habitat management areas (GHMA), and/or other habitat management areas (OHMA) occur within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments (Table 55, Table 56 and Table 57). PHMA are the highest valued sage-grouse habitats and include locations used for breeding and late brood-rearing, winter concentration areas, and migration corridors. GHMA are occupied seasonal or year-

round habitats that are outside of PHMA. GHMAs are deemed more important to GRSG than OHMA. OHMA refer to sage-grouse seasonal or connectivity habitats. See the *Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (2015)* for more information on PHMA, GHMA, and OHMA.

Table 55: Approximate Acres of Greater Sage-Grouse Habitat within the Cow Canyon Allotment

Habitat Classification	Total Acres Within the Cow Canyon Allotment	Percentage of BLM Land Within the Cow Canyon Allotment
GHMA	993	0.7%
OHMA	18,146	12.4%

Table 56: Approximate Acres of Greater Sage-Grouse Habitat within the Dixie Valley Allotment

Habitat Classification	Total Acres Within the Dixie Valley Allotment	Percentage of BLM Land Within the Dixie Valley Allotment
PHMA	13,146	5.3%
GHMA	8,028	3.2%
OHMA	22,652	9.1%

Table 57: Approximate Acres of Greater Sage-Grouse Habitat within the Clan Alpine Allotment

Habitat Classification	Total Acres Within the Clan Alpine Allotment	Percentage of BLM Land Within the Clan Alpine Allotment
PHMA	11,333	3.2%
GHMA	15,036	4.2%
OHMA	64,917	18.1%

A variety of GRSG Population Management Units (PMU) occur within the area encompassing the Dixie Valley, Cow Canyon, and Clan Alpine Allotments. Specifically, the Stillwater PMU encompasses the northwest portion of the Dixie Valley Allotment, the Desatoya PMU comprises the eastern boundary of the Clan Alpine Allotment, and the Clan Alpine PMU occurs within all three allotments.

The primary PMU within the area encompassing the allotments is the Clan Alpine PMU (> 70% of the PMU occurs within the three allotments). The only known lek within the Clan Alpine PMU is the Camp Creek Lek located in the southeastern portion of the Dixie Valley Allotment. The number of males observed on this lek during surveys increased from 2004-2006 then has declined since 2006 (Figure 5). According to the standards and guidelines determination documents for the Clan Alpine, Dixie Valley, and Cow Canyon Allotments, the major concerns were the lack of grasses and forbs in areas used for nesting and degraded conditions in late brood-rearing habitat.

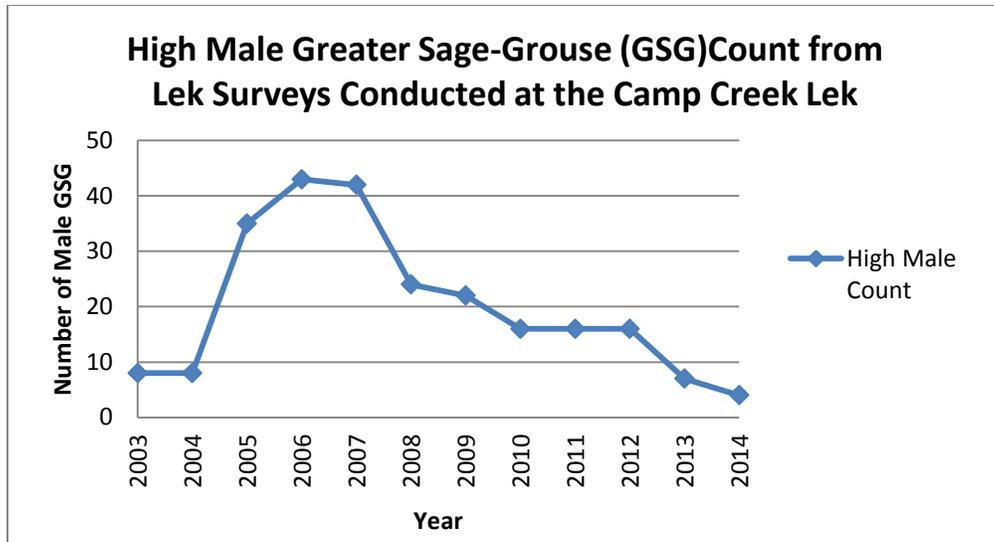


Figure 5: The highest number of males observed during leks surveys at the Camp Creek Lek within the Clan Alpine PMU from 2003-2014.

The Rock Creek Lek is located in the Clan Alpine Allotment within the Desatoya PMU. The high male count recorded during lek surveys each year has fluctuated since 2002, with a general upward trend from 2002-2005 followed by a general downward trend from 2005-2011. In 2012, the high male count increased to 38, only to decrease to 17 in 2013 and 15 in 2014 (Figure 6). Currently there is insufficient data regarding the movement and behavior of the sage-grouse that attend this lek and it is not known whether the majority of the birds that attend this lek remain within the Desatoya PMU for wintering, nesting, or brood-rearing or utilize portions of the Clan Alpine PMU during these periods.

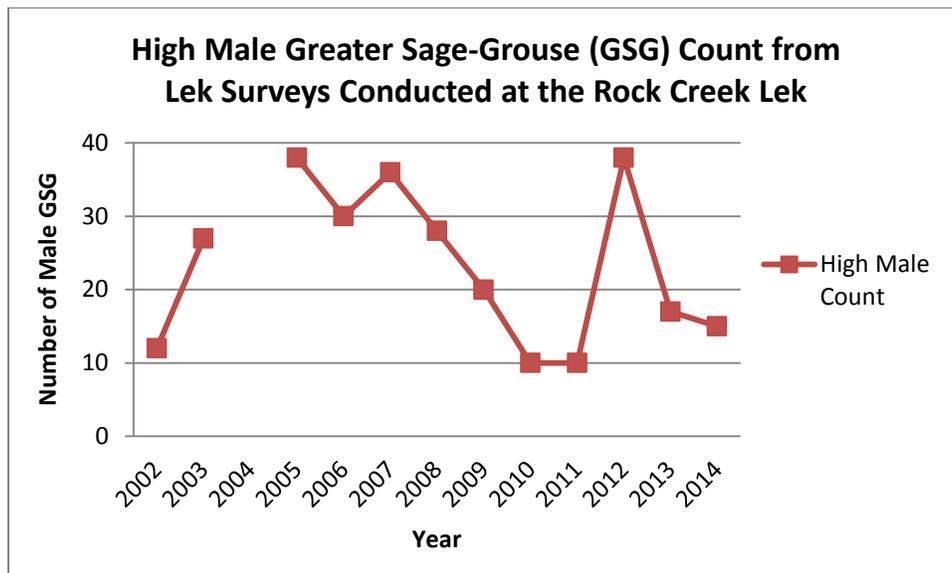


Figure 6: The highest number of males observed during leks surveys at the Rock Creek Lek within the Desatoya PMU from 2002-2014.

3.13.2 Environmental Consequences

3.13.2.1 *Alternative 1: Proposed Action*

Impacts to the key habitats (e.g. Intermountain cold desert scrub, sagebrush, spring/springbrook, and Intermountain rivers/streams) utilized by sensitive species within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments (Table 54) from the livestock, wild horse and burro, drought, range improvement, and noxious, invasive, and nonnative weed treatment components of the Proposed Action are the same as described in the Wildlife Section.

Avian Species (Excluding Greater Sage-Grouse)

Impacts to the sensitive avian species that are known to occur, or could potentially occur, within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments (Table 54) from the mineral material, livestock, wild horse and burro, drought, range improvement, and noxious, invasive, and nonnative weed treatment components of the Proposed Action are the same as stated within the Neo-tropical Migratory/Song Birds Section. Implementing the Proposed Action may impact individuals or habitat but would not likely contribute to a trend towards federal listing or cause a loss of viability to any populations or species.

Greater Sage-Grouse

While livestock and wild horses can directly impact reproductive success of GRSG by trampling of nests and causing nest abandonment, it is more likely that they indirectly influence reproductive success and survival of GRSG by changing the composition, height, and cover of vegetation.

The overall impacts of livestock grazing on GRSG habitat depend on the intensity, timing, and duration of grazing. For example, overgrazing by livestock can result in the elimination of bunchgrasses that sage-grouse use as nesting and escape cover. Overgrazing also results in an increase in bare ground between perennial plants, which consequently favors the invasion of cheatgrass (Crawford et al. 2004, Reisner et al. 2013, Rayburn et al. 2014). As cheatgrass becomes more abundant in the understories of sagebrush communities, the fire return interval decreases significantly (e.g. the fire return interval in Wyoming big sagebrush communities can change from approximately 50-100 years to less than 5 years (Whisenant 1990)), which threatens the long-term persistence of the overall sagebrush component within the shrub-steppe ecosystem. Heavy grazing in riparian areas, particularly during the hot season, can result in the loss of succulent vegetation used as forage or hiding cover for sage-grouse broods (Crawford et al. 2004). In contrast, Klebenow (1982) states that light to moderate grazing in dense, grassy meadows can benefit GRSG broods, as reducing the grass cover can expose forbs selected by the grouse.

GRSG use the spring and springbrook and sagebrush key habitats within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments. Implementing the livestock grazing and wild horse and burro components of the Proposed Action (e.g. utilization triggers for livestock, pasture rotation system for livestock, bait and water trapping wild horses, etc...) should result in the spring and springbrook habitats progressing towards meeting RAC and Table 2-2 Habitat Standards. Individual springs that are already meeting standards within the allotments should continue to meet standards. The livestock grazing and wild horse and burro components of the

Proposed Action should also result in improved conditions within the sagebrush key habitat, especially on the lower elevations.

The use of a TNR permit should have negligible to positive benefits to GRSG using the sagebrush and spring and springbrook key habitats. TNR would only be authorized if field visits determine that the additional use would not impact the ability of the area to achieve or make significant progress towards achieving RAC and Table 2-2 Habitat Standards. During years when cheatgrass or other invasive plant species flourish, allowing the undesirable species to be flash grazed could be beneficial as it would give the native plants a better chance to outcompete the more aggressive invasive plant species. Additionally, this would decrease the likelihood of an intense wildfire that could initially eliminate the shrub component within the sagebrush key habitat. Blomberg et al. (2012) documented lower survival and recruitment for GRSG occupying areas with a substantial exotic annual grassland component.

The unnamed spring in Cherry Valley and Rock Creek Spring are currently degraded and not functioning as high quality habitat for GRSG. Constructing perimeter fences around these springs would protect them from continued overutilization and trampling by wild horses and livestock. This should result in an increase in forage and protective cover for sage-grouse broods that utilize the areas. The perimeter fences would be marked appropriately to reduce the likelihood of GRSG colliding with the structures.

Pinyon and juniper trees are encroaching into the wet meadow at Rock Creek Spring. This is a concern as trees are contributing to the overall decline in water availability and riparian vegetation within the spring. Removing the encroaching pinyon and juniper trees would reduce perching opportunities for predators around the spring and could result in increased soil moisture and riparian vegetation within the spring benefitting sage grouse (Gedney et al. 1999 and Zouhar 2001).

Implementing the invasive and noxious weeds program should improve the habitat for GRSG within the allotments, as the intent of the program is to reduce the occurrence of weed species and increase the occurrence of native vegetation used by GRSG for cover and/or forage. To prevent negative impacts to GRSG from treatments, only herbicides with low acute toxicity to the bird would be used.

The following environmental protection measures would be incorporated into the Proposed Action:

- To avoid impacts to GRSG, livestock utilizing the Cold Springs Pasture during April would not be allowed to congregate in the southern portion of the pasture.
- The perimeter fences proposed to be constructed around the unnamed spring in Cherry Valley and Rock Creek Spring would be marked appropriately to reduce the likelihood of GRSG colliding with the structures.
- Pinyon-juniper removal around Rock Creek Spring would not occur from March 1 to August 30 to ensure no negative impacts to lekking, nesting, and brood-rearing GRSG.

Livestock grazing, maintaining wild horses within AML, range improvements, and the invasive and noxious weed program components of the Proposed Action address the concerns for GRSG within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments.

Constructing the proposed mineral material pit in Edwards Creek Valley would not impact GRSG or their habitat as it is not in any identified GRSG habitat management areas. NDOW classifies the area as unsuitable habitat for the grouse, there are no known leks within four miles of the proposed site, and the proximity to the closest suitable GRSG habitat is greater than five miles.

Mammals

The Proposed Action should have negligible to beneficial impacts to sensitive bat species that are known to occur, or have the potential to occur, within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments (Table 54). Since no foraging or roosting habitat would be impacted from constructing the new pit in Edwards Creek Valley, the mineral material component of the Proposed Action should not have any impacts on sensitive bat species. Implementing the livestock, wild horse and burro, drought, and range improvement components of the Proposed Action should improve the conditions of the riparian areas within the allotments. As the conditions within the riparian areas improve, there should be increases in insects and available water, which in turn would benefit bat populations. Removing the encroaching pinyon/juniper trees around Rock Creek Spring would result in the loss of roosting habitat for tree roosting bat species; however, due to the amount of trees immediately adjacent to Rock Creek Spring and within the Clan Alpine Allotment, this impact is negligible and overshadowed by the benefits of improving the riparian area. Implementing the noxious, invasive, and nonnative weed portion of the Proposed Action should result in an initial decline in vegetation along targeted riparian areas, which could result in a short-term decrease in prey abundance. Over the long-term, there would be an increase of native species and decreased unwanted species, which could benefit sensitive bat species within the allotments. Implementing the Proposed Action may impact individuals or habitat but would not likely contribute to a trend towards federal listing or cause a loss of viability to any populations or species.

As illustrated in Table 54, sensitive small mammal species that are known to occur, or have the potential to occur, within the Cow Canyon, Dixie Valley, or Clan Alpine Allotments that could be impacted by the Proposed Action include the dark kangaroo mouse, pale kangaroo mouse, and pygmy rabbit. Livestock grazing can impact dark kangaroo mouse, pale kangaroo mouse, and pygmy rabbit populations by removing grasses and forbs that either provide forage directly or indirectly (pale and dark kangaroo mice forage on insects as well as vegetation). Since the livestock component of the Proposed Action features a pasture rotation system, the enforcement of utilization triggers on key forage species, and the implementation of drought actions when appropriate, as well as the fact that wild horses would be managed within AML under the Proposed Action, grazing from either livestock or wild horses should not have major negative impacts on the habitat for sensitive small mammal species.

Constructing the proposed mineral material pit in Edwards Creek Valley would not impact dark kangaroo mice, pale kangaroo mice, and pygmy rabbits, since the area does not function as suitable habitat for these species.

Implementing the Proposed Action may impact individuals or habitat for sensitive small mammal species but would not likely contribute to a trend towards federal listing or cause a loss of viability to any populations or species.

Bighorn Sheep occur within the Dixie Valley, Cow Canyon, and Clan Alpine Allotments. Implementing the utilization triggers for livestock grazing, maintaining wild horse populations within AML, implementing drought actions when appropriate, installing new range improvements and fixing existing range improvements should result in the key habitats within the allotments to progress towards meeting RAC and Table 2-2 Habitat Standards. The Proposed Action should provide some benefits to bighorn sheep; however domestic sheep grazing would still be authorized within the Edwards Pasture of the Clan Alpine Allotment. Since the New Pass Range within the Edwards Pasture functions as potential bighorn sheep habitat (suitable habitat exists but it is not known to be occupied), and the mountain ranges immediately adjacent to the New Pass Mountains are currently occupied by bighorn sheep, there is the potential of domestic and bighorn sheep interactions, which could put entire bighorn sheep herds at risk of contracting lethal pneumonia (Foreyt 1989 and Besser et al. 2013).

The distance between the domestic sheep grazing in the New Pass Range (the potential bighorn sheep habitat) and the known occupied bighorn sheep habitat within the Clan Alpine Mountains is approximately 8.5 miles. The distance between domestic sheep grazing within the Edwards Pasture and the known occupied bighorn sheep habitat within the Desatoya Mountains is approximately 9 miles. There is potential bighorn sheep habitat within the Clan Alpine Mountains and Desatoya Mountains immediately adjacent to the domestic sheep grazing within the Edwards Pasture in the New Pass Range, thus the current separation between bighorn sheep and domestic sheep could be less than the approximate 8.5 and 9 miles for the Clan Alpine Mountains and Desatoya Mountains respectively.

Constructing the proposed mineral material pit in Edwards Creek Valley would not impact bighorn sheep as the area does not function as suitable habitat for these species.

Plants

As stated in Table 54, sensitive plant species that are known to occur, or have the potential to occur, within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments are the Lahontan beardtongue and Tonopah milkvetch. These species do not occur within the proposed mineral material pit in Edwards Creek Valley thus there would be no impacts to the species from the construction of the new pit. Implementing the livestock (e.g. utilization triggers on key species, establishing pasture systems, etc...) and wild horse and burro components of the Proposed Action should ensure that grazing impacts on sensitive plants species are minimized.

3.13.2.2 Alternative 2: Dixie Valley Reduction in Livestock and Change in Season of Use

Impacts to the key habitats (e.g. Intermountain cold desert scrub, sagebrush, spring/springbrook) utilized by sensitive species within the Dixie Valley Allotment (Table 54) from the wild horse and burro, drought, range improvement, and noxious, invasive, and nonnative weed treatment components of Alternative 2 are the same as described under the environmental consequences for the Proposed Action in the Wildlife Section.

Avian Species (Excluding Greater Sage-Grouse)

Impacts to the sensitive avian species that are known to occur, or could potentially occur, within the Dixie Valley Allotment (Table 54) from Alternative 2 are the same as stated within Alternative 2 in the Neo-tropical Migratory/Song Birds Section.

Greater Sage-Grouse

While livestock can directly impact reproductive success of GRSG by trampling of nests and causing nest abandonment, it is more likely that they indirectly influence reproductive success and survival of GRSG by changing the composition, height, and cover of vegetation. Not allowing livestock to graze in the Dixie Valley North Pasture until conditions are deemed appropriate by the authorized officer should result in an improvement in the composition, height, and cover of vegetation for GRSG within the sagebrush key habitat type. Eliminating grazing within the Dixie Valley South Pasture from March 1 to May 31 and only grazing the area from November 1 to February 28 should benefit GRSG that utilize the area for nesting/brood-rearing, since there would be no direct impacts from cattle on nesting sage-grouse (i.e. crushing of nests) and an increase in the amount and height of grasses and forbs that would be used for either cover and/or forage would be expected.

Mammals

Providing additional resource protection to the Dixie Valley North Pasture, by placing 1600 AUMs in suspended non-use, should facilitate improving conditions in the riparian areas within the pasture. As the conditions in the riparian areas within the pasture improve the quantity of insects and available water should increase which in turn would benefit bat populations.

Sensitive small mammal species that are known to occur, or have the potential to occur, within the Dixie Valley North Pasture are the dark kangaroo mouse and pale kangaroo mouse. Under Alternative 2, dark kangaroo mice and pale kangaroo mice within the pasture should have increased grasses, forbs, and consequently insects available for forage over current management. This alternative should benefit dark kangaroo mouse and pale kangaroo mouse populations within the pasture.

Providing additional resource protection to the Dixie Valley North Pasture (suspended non-use of 1600 AUMs) should result in an improvement in the quality of bighorn sheep habitat and bighorn sheep should benefit.

Plants

Providing additional resource protection to the Dixie Valley North Pasture, by placing 1600 AUMs in suspended non-use, would benefit sensitive plants within the pasture.

3.13.2.3 Alternative 3: Cherry Valley Closure to Hot Season Grazing

Avian Species (Excluding Greater Sage-Grouse)

Impacts to the sensitive avian species that are known to occur, or could potentially occur, within the Clan Alpine Allotment (Table 54) from Alternative 3 are the same as stated within Alternative 3 in the Neo-tropical Migratory/Song Birds Section.

Greater Sage-Grouse

Under this alternative, the livestock season of use within the Cherry Valley Pasture of the Clan Alpine Allotment would be changed from July 1 through August 31 to September 1 through October 31 due to management concerns. Since livestock tend to congregate around riparian areas during the hot season, grazing during this time period can result in extensive degradation to these areas (BLM Technical Reference 1737-20) and have negative impacts on GRSG, particularly hens with broods. As a result, closing the Cherry Valley Pasture to livestock grazing during the hot season should result in the key habitats, particularly the spring and springbrook key habitat, progressing towards or achieving RAC and Table 2-2 Habitat Standards and benefit GRSG that utilize the riparian areas within the pasture.

Mammals

Closing the Cherry Valley Pasture to hot season grazing should improve the riparian conditions within the pasture. As the riparian areas within the pasture improve, the quantity of insects and available water should increase, which would benefit bat populations.

Closing the Cherry Valley Pasture to hot season grazing should result in the key habitats, particularly the spring/springbrook key habitat, to progress towards or achieve RAC and Table 2-2 Habitat Standards. As a result, bighorn sheep that utilize the Cherry Valley Pasture should benefit from Alternative 3.

Plants

There are no sensitive plant species within the Cherry Valley Pasture of the Clan Alpine Allotment.

3.13.2.4 Alternative 4: Cow Canyon Change in Season of Use and Clan Alpine Reduction of AUMs

Cow Canyon Allotment

The impacts to sensitive species and their associated key habitats (from cattle grazing, wild horse and burro, minerals, and invasive, nonnative, and noxious weed components of Alternative 4) would be similar to those described in the Proposed Action. Removing cattle grazing from the Cow Canyon Allotment during the critical growing season should result in less stress to the vegetation thereby increasing the quality and quantity of plants available for sensitive species that could be used as forage and/or cover. This action should benefit sensitive species that utilize the Cow Canyon Allotment.

Clan Alpine Allotment

The impacts to sensitive species and their associated key habitats (from cattle grazing, wild horse and burro, minerals, and invasive, nonnative, and noxious weed components of Alternative 4) would be similar to those described in the Proposed Action. Reducing cattle grazing from the Clan Alpine Allotment should result in additional vegetation being available for sensitive species that could be used as forage and/or cover. This action should benefit sensitive species that utilize the Clan Alpine Allotment.

Dixie Valley Allotment

Impacts to the Dixie Valley Allotment would be similar to those discussed in Alternative 1.

Greater Sage-Grouse

Cow Canyon and Clan Alpine Allotments

The impacts to GRSG (from the cattle grazing, wild horse and burro, minerals, and invasive, nonnative, and noxious weed components of Alternative 4) would be similar to those described above. These actions should result in improved vegetation communities for GRSG in all associated habitat types.

Dixie Valley Allotment

Impacts to the Dixie Valley Allotment would be similar to those discussed in Alternative 1.

3.13.2.5 *Alternative 5: No Domestic Sheep Grazing*

The impacts to sensitive species and their associated key habitats from cattle grazing, wild horse and burro, minerals, and invasive, nonnative, and noxious weed components of Alternative 5 are the same as described in the Proposed Action.

Eliminating domestic sheep grazing from the New Pass area of the Clan Alpine Allotment should result in additional vegetation being available for sensitive species from 12/1 – 3/15 that could be used as forage and/or cover. Removing domestic sheep grazing from 12/1 – 3/15 should benefit sensitive species that utilize the New Pass area of the Clan Alpine Allotment. No domestic sheep grazing within the New Pass area of the Clan Alpine Allotment reduces the likelihood (compared to the Proposed Action) that there would be comingling between domestic and bighorn sheep that occupy the Clan Alpine or Desatoya Mountains.

Greater Sage-Grouse

The impacts to GRSG from the cattle grazing, wild horse and burro, minerals, and invasive, nonnative, and noxious weed components of Alternative 5 are the same as described in the Proposed Action.

Eliminating domestic sheep grazing from 12/1 – 3/15 should result in additional vegetation available for forage and/or cover for GRSG during the winter and the nesting/early brood-rearing season.

3.13.2.6 *Alternative 6: No Grazing*

Impacts to the key habitats (e.g. Intermountain cold desert scrub, sagebrush, spring/springbrook, and Intermountain rivers/streams) utilized by sensitive species within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments (Table 54) from the No Grazing Alternative are the same as described under the No Grazing Alternative in the Wildlife Section.

Avian Species (Excluding Greater Sage-Grouse)

Impacts to the sensitive avian species that are known to occur, or could potentially occur, within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments (Table 54) from the No Grazing Alternative are the same as described under the No Grazing Alternative within the Neo-tropical Migratory/Song Birds Section.

Greater Sage-Grouse

Under the No Grazing Alternative, there would be no impacts from livestock grazing to the sagebrush and spring/springbrook key habitats, as no vegetation would be trampled or consumed by cattle. There would also be no direct impacts to nesting GRSG and their eggs from cattle. Wild horses would continue to trample and utilize the plants; however they should be managed within AML which would reduce these impacts.

Implementing Alternative 6 would most likely result in improved conditions within the sagebrush and spring/springbrook key habitats and address some of the major concerns (lack of grasses in nesting habitat and degraded late brood-rearing habitat) impacting GRSG within the Clan Alpine PMU where the number of males attending the Camp Creek Lek has declined since 2006 (Figure 5).

Mammals

Implementing the No Grazing Alternative should result in improvements to the riparian areas within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments. As the conditions within the riparian areas improve, there should be increases in insects and available water, which would benefit bat populations.

As illustrated in Table 54, sensitive small mammal species that are known to occur, or have the potential to occur, within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments include the dark kangaroo mouse, pale kangaroo mouse, and pygmy rabbit. Implementing the No Grazing Alternative should result in increased grasses, forbs, and consequently insects available for forage over current management for sensitive small mammal species.

Implementing the No Grazing Alternative should result in increased forage available to bighorn sheep and improve conditions within the riparian areas which would benefit bighorn sheep that reside within the allotments.

Plants

Implementing the No Grazing Alternative would eliminate livestock grazing pressure on sensitive plant species within the Clan Alpine, Cow Canyon, and Dixie Valley Allotments; therefore, implementing this alternative would benefit sensitive plant species.

3.13.2.7 Alternative 7: No Action

Impacts to the key habitats (e.g. Intermountain cold desert scrub, sagebrush, spring/springbrook, and Intermountain rivers/streams) utilized by sensitive species within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments (Table 54) from the No Action Alternative are the same as described under the No Action Alternative under the Wildlife Section. Implementing the No Action Alternative should result in negative impacts to sensitive avian, mammal, and plant species (Table 54) populations within the allotments.

Greater Sage-Grouse

The current grazing operations have led to a lack of native grasses within the sagebrush key habitat (on the lower elevations) and generally not meeting standards within the spring and springbrook key habitat within the Cow Canyon, Dixie Valley, and Clan Alpine Allotments.

Under the No Action Alternative, there would be no additional range improvements, so riparian areas not meeting RAC And/or Table 2-2 Habitat Standards would likely realize further degradation. Horse populations would continue to increase, eventually going beyond AML, causing increased degradation to native plant communities. Implementing the No Action alternative would have negative impacts on GRSG populations.

The allotments would continually be surveyed along roadways and other disturbed areas for new weed infestations. Treatment methods could include biological, mechanical, and chemical control. When applicable, several of these methods would be combined into an integrated pest management program in order to reduce the costs and risks to humans and the environment. Areas previously treated with herbicides would continue to be monitored. GRSG would benefit from the weed treatments.

3.14 Visual Resources

3.14.1 Affected Environment

The assignment of Visual Resource Management (VRM) objectives for the District in previous land use plans was not complete and did not extend to the more remote eastern and southern areas of the District. Because of this, the VRM objectives for the planning area have not been assigned and are considered to be unclassified. When no VRM objectives exist, the CCD CRMP standard operating procedure states that an interim VRM objective is to be assigned at the time a project is proposed.

The Visual Resource Inventory (VRI), which provides the baseline data used in establishing VRM objectives, was completed for the District in 2011 and used to establish the interim VRM objectives for this project (refer to maps in Appendix A). Within the project area, the VRI inventory Class acreage is identified in Table 58.

Table 58: VRI Class Acreage (BLM Lands Only)

VRI Class	Acreage
Class II	62,738
Class III	341,200
Class IV	350,858

The SFO ID team conducted a review of the VRI inventory and assessed the current management activities in the area and provided a recommendation to the Field Manager to assign the project area an interim rating of VRM Class III to allow for management decisions consistent with the resource allocation for the area. The exception to this are the areas located within the Desatoya, Clan Alpine, Job Peak and Stillwater WSA's, which are assigned a VRM Class I based upon BLM Handbook H-8410-1, Visual Resource Inventory; and BLM policy Memorandum IM No. 2000-096, Use of VRM Class I Designation in Wilderness Study Areas. The VRM Class I management objective is assigned to all WSAs to protect the visual values of the landscape and manage the degree of change that can be authorized. This means ground disturbing or landscape altering activities that require construction or installation such as new range improvements including troughs, wells, solar panels or vegetation manipulation for grazing purposes would most likely not be authorized since it would be difficult to meet the VRM Class I objectives. Maintenance of grandfathered range improvements that reduce the

adverse impacts to scenic values would be evaluated and considered, but the activity would need to meet the non-impairment standards as defined in BLM Manual 6330, Management of Wilderness Study Areas.

The objectives for VRM Class I and III are as follows:

- VRM Class I objective is to preserve the existing character of the landscape while allowing for natural ecological changes. Very limited management activity is allowed, and the level of change to the characteristic of the landscape should be very low and must not attract attention to the casual observer. The construction of new range improvements such as stock tanks, troughs, wells, solar panels or vegetation treatment projects is rarely permitted.
- VRM Class III objective is to partially retain the existing character of the landscape while allowing a moderate level of change to the landscape from permitted or authorized activities. These activities or developments may attract attention but should not dominate the view of the casual observer. Attempts should be made to minimize the impact of these activities through careful location, color, minimal disturbance, and repeating the basic elements and forms found in the natural landscape.

3.14.2 Environmental Consequences

3.14.2.1 *Alternative 1: Proposed Action*

This alternative would be in conformance with Visual Resource Management guidelines and policy and would provide the best alternative to reducing the potential adverse impacts to visual resources from grazing activities, mineral development, wild horse and burro management as well as invasive species management. The intent of the Proposed Action is to achieve the standard and guideline objectives within the allotments through improved herd management, installation of new range improvements and increased maintenance of existing range improvements including wells, pipelines at developed springs and fences protecting riparian areas. Actions such as extending the grazing period while maintaining the same levels of AUMs should help reduce grazing impacts which in turn would improve the visual character of the areas. Removing livestock from the allotments more efficiently and timely would also provide opportunities for native vegetation to recover. Maintaining range improvements within and outside of the WSAs should help disperse livestock use more effectively throughout the allotments thereby reducing localized impacts which can negatively affect the natural setting of the area. Range improvements implemented at springs would reduce the impacts from localized and heavily concentrated grazing leading to an improvement in the scenic quality of the natural vegetation surrounding the spring. As conditions of the areas improve as a result of the implementation of the listed actions, visual qualities would also begin to improve, thus creating a more positive visitor experience. The grazing schedule under this allotment would move towards meeting the established Standards and Guidelines for Rangeland Health and Table 2-2 Habitat Standards which would improve the scenic quality of the allotment.

By following the guidelines for non-impairment criteria and maintaining scenic values established under WSA policy, replacing or maintaining range improvements within the WSAs should improve the naturalness of the allotment and comply with the “substantially unnoticeable” impacts of human activity requirements. This is important since the level of

change in the characteristics of the landscape within VRM Class I designations should be low to non-existent. Impacts to visual resources associated with the proposed grazing system should improve current conditions and are considered acceptable with the VRM objectives for the WSA areas.

The designation of one new mineral material site along Antelope Valley Road in the Edwards Creek Valley area and the continued use of this site as a community pit for sand and gravel material extraction would not have a noticeable effect on visual quality. The new pit would encompass the footprint of two existing older pits, effectively using areas that have been previously disturbed. Other pits in the planning area are located adjacent to existing roads, are relatively small, and are used infrequently for maintenance of local roads. Visual quality concerns can be adequately addressed by following established mitigation measures in the permit stipulations and conditions.

Under this alternative, the wild horse numbers should be managed within the AMLs established for the Clan Alpine HMA. This action would serve to maintain the population at a level that has been determined to be sustainable for the area, thereby reducing any negative impacts to the vegetation from overpopulation. This in turn would improve the visual resources within the allotments by reducing a source of overgrazing in heavily concentrated areas around existing water sources. This would serve to protect and improve the visual quality of the allotments by helping to improve the overall rangeland health.

The Proposed Action for VRM is to establish interim visual management objectives for the project area until such time that permanent objectives are designated in the revised CCD CRMP. Once the RMP decision is made, the management decision regarding VRM would supersede the decision made in this document. Since the current management direction provided by the CRMP does not specify VRM objectives for the planning area, the authorized officer is required to establish interim objectives based upon the VRI and current allocation of resource use in the project area. Since the primary resource use within the project area is grazing and energy development, establishing an interim classification of VRM Objective III for areas outside of the four WSAs would be in compliance with current guidelines and policy for VRM.

3.14.2.2 Alternative 2: Dixie Valley Reduction in Livestock and Change in Season of Use

Effects under Alternative 2 would be similar to those described in the Proposed Action in the Cow Canyon and Clan Alpine Allotments. In the Dixie Valley Allotment, the closure of the north pasture and the change in seasonal use could potentially reduce the impacts to vegetation due to a reduction in 1,600 permitted AUMs. Removal of cattle from this pasture would allow for the eventual natural restoration and rejuvenation of vegetation in degraded areas over a period of time which would serve to improve the visual quality of the area.

The effects and impacts to the visual quality of the allotments in relation to mineral, invasive, non-native and noxious weeds and wild horse actions would be the same as the Proposed Action.

3.14.2.3 Alternative 3: Cherry Valley Closure to Hot Season Grazing

Under this alternative, the effects to the visual quality would be similar to those of the Proposed Action for the Cow Canyon and Dixie Valley Allotments. In the Clan Alpine Allotment, closing the Cherry Valley pasture during the months of July and August would greatly improve the visual quality of the area since the vegetation would be allowed a longer growing period resulting in a higher quality visual rating. The ridge between War Canyon and Cherry Valley has the highest visitation rates within the Clan Alpine WSA. This area offers spectacular views and an abundance of camping areas for hunters, hikers and photographers. Historically, cattle have been found within the pasture outside of the permitted season of use and within the exclosures designed to protect spring and riparian water sources. This has resulted in visible degradation of native vegetation and water sources which affects the visual quality of the allotment.

The effects and impacts to the visual quality of the allotments in relation to mineral, invasive, non-native and noxious weeds and wild horse actions would be the same as the Proposed Action.

3.14.2.4 Alternative 4: Cow Canyon Change in Season of Use and Clan Alpine Reduction of AUMs

Under this alternative the removal of hot season grazing on the Cow Canyon Allotment and the reduction of livestock grazing on the Clan Alpine allotment would result in reduced impacts to the waters and the native vegetation which would benefit the naturalness and improve the visual quality of the allotment.

The effects and impacts to the visual quality of the allotments in relation to the Dixie Valley Allotment, minerals, invasive, non-native and noxious weeds and wild horse actions would be similar to that described in the Proposed Action.

3.14.2.5 Alternative 5: No Domestic Sheep Grazing

Under this alternative, Cow Canyon and Dixie Valley Allotments would not be affected. For the Clan Alpine Allotment, the elimination of domestic sheep grazing in the New Pass area would result in reduced impacts to the native vegetation which would benefit the naturalness and improve the visual quality of this portion of the allotment.

The effects and impacts to the visual quality of the allotments in relation to mineral, invasive, non-native and noxious weeds and wild horse actions would be the same as the Proposed Action.

3.14.2.6 Alternative 6: No Grazing

Under this Alternative, the landscape contrast and sequence would be the most representative of natural conditions and could provide the greatest benefit to the visual quality within the allotments. There would be no effects on vegetation or impacts to springs due to livestock grazing, allowing a trend of natural vegetation regeneration; thereby improving the scenic quality of the allotments.

Exclusion fencing around springs and riparian areas would not be constructed and existing range improvements would not be maintained. The impacts to most water sources would be reduced as there would be no livestock grazing; however there would still be impacts from use by wild horses. This would result in the continued degradation of the quality and quantity of native vegetation and water sources thereby negatively affecting the natural and visual quality of the area.

Wild horse numbers would be managed within the established AML for the Clan Alpine HMA. This action would serve to maintain the population at a level that has been determined to be sustainable for the area, thereby potentially reducing negative impacts to the vegetation. As herd populations increase, the scenic quality, especially adjacent to water sources would have to be monitored for changes or adverse impacts.

The proposed gravel pit would not be constructed under this decision. However this action was determined to have minimal impact on the visual resources in the planning area so overall there is no change.

The effects and impacts to the visual quality of the allotments in relation to invasive, non-native and noxious weeds would be the same as the Proposed Action.

3.14.2.7 Alternative 7: No Action

Under the No Action Alternative, the grazing schedule would not be changed from the current permit and existing visual conditions and scenic quality of the area would remain essentially the same. The lack of repair and maintenance of existing range improvements and failure to provide for new enclosure fencing at springs and riparian areas would further degrade the scenic quality of the natural vegetation surrounding the water sources within these allotments. The VRM Class I management objectives would not be met within the four WSAs.

With the current grazing schedule, cattle would likely stay at the available water sources in larger groups for a longer period of time resulting in an increased impact on native vegetation and soil, which would reduce the scenic quality around the water sources. The concentration of highly visible cattle trails leading to and away from the water sources would continue to increase, resulting in the addition of unnatural linear features in the viewshed. This Alternative would not move towards meeting the established Standards and Guidelines for Rangeland Health and/or Table 2-2 Habitat Standards, which would adversely impact the overall scenic quality of the allotments.

Wild horse numbers would not be within established AMLs for the Clan Alpine HMA. This action would serve to increase the population to a level that has been determined to be above that considered sustainable for the area, thereby increasing negative impacts to the vegetation and water sources. As herd populations increase, the scenic quality, especially adjacent to water sources would have to be monitored for changes or adverse impacts.

The proposed community gravel pit would not be constructed under this decision. However this action was determined to have minimal impact on the visual resources in the planning area so overall there is no change.

The proposed weed treatments as described in the Proposed Action Alternative could still be completed, but would likely occur over a longer period of time and may not receive the commitment and funding necessary to be as beneficial to the vegetative community. If these weed infestations go untreated, they would increase their dominance on the sites where they currently exist. They may start out as isolated or light infestations, but in time they could become monocultures and spread to adjacent lands. Not treating these weeds could result in further habitat degradation on BLM and other lands thus further degrading the scenic quality of the allotments.

3.15 Wilderness/WSAs

3.15.1 Affected Environment

The BLM’s policy is to protect the wilderness characteristics of all designated WSAs in the same or better condition than they were on October 21, 1976, until Congress determines whether or not they should be designated as wilderness. During this period and until Congress has determined otherwise, the BLM is required to manage these lands in a manner so as not to impair their suitability for preservation as wilderness. Section 603(c) of FLPMA, provides for the continuation of grazing in WSAs provided that actions required to prevent unnecessary or undue degradation of the lands and their resources or to afford environmental protection may be implemented. Any activity or development within a WSA must follow the guidelines and policy established in BLM Manual M-6330 Management of Wilderness Study Areas and the Visual Resource Management Objective Class I visual management standards established in BLM Manual M-8400 Visual Resource Management.

Four WSAs, the Clan Alpine Mountains, Job Peak, Stillwater Range and Desatoya Mountains occupy 251,605 acres or approximately thirty-three percent of the project area. The Clan Alpine Mountains WSA falls entirely within the project area divided equally between the Cow Canyon, Clan Alpine and Dixie Valley Allotments, and the remaining WSAs fall partially within the eastern and western edge of the project area (refer to maps in Appendix A). Refer to Table 59 for a breakdown of the WSA acreages within each allotment.

OhTable 59: Wilderness Study Acreages with the Planning Area

Allotment Name	WSA Name	WSA Acreage	WSA Acreage in Allotment	Percent of Allotment
Clan Alpine	Clan Alpine	196,128	75,507	21.0
	Desatoya	51,402	15,985	4.5
Dixie Valley	Clan Alpine	196,128	51,162	20.44
	Job Peak	90,209	7,527	3.0
	Stillwater	94,607	32,381	12.94
Cow Canyon	Clan Alpine	196,128	69,043	47.22

Due to the remoteness of the project area, recreational activity within the four WSAs is minimal and mostly revolves around dispersed recreational uses such as camping, hiking, backpacking, geo-caching, horseback riding, wildlife and bird watching, photography, and hunting. While opportunities for solitude or outstanding primitive and unconfined recreation are reduced around the perimeter of the WSAs due to roads, powerlines and other resource uses,

solitude and primitive recreation opportunities can be found within the larger canyons and for those willing to venture into the interior of the WSAs.

Under the WSA management policy, maintenance of range improvements that were authorized during, or prior to the 1976 grazing fee year, would continue to be an allowable use within the allotments. New range improvements can only be authorized if they meet the non-impairment standards or an exemption to the non-impairment standards as defined in Manual 6330. Permanent structures or installations are normally not permitted in a WSA under the non-impairment criteria but may be allowed if they meet one of the exemptions. Examples of allowable structures relevant to this situation are permanent riparian, wetland, and aquatic structures and facilities designed to maintain or enhance wilderness values, protect or maintain natural conditions, or restore deteriorated habitat resulting from human influence. Additional discussion is provided further in this section.

The following standards would need to be met for each permanent installation or surface disturbing activity within a WSA:

- Is substantially unnoticeable;
- Would not have a permanent negative impact on habitat in the WSA;
- Would not create a cumulative impact through its proximity to other facilities in the WSA;
- Except for the use of identified primitive routes, is not dependent on mechanical or motorized transport for access and/or maintenance;
- A determination has been made that alternative sites outside the WSA or nonstructural alternatives would not accomplish the objectives of the proposed project; and
- All developments or structures must be painted with an acceptable or similar color from the BLM Standard Environmental Color Chart; CC-001: June 2008 in order to blend in with the surroundings as much as possible. An alternative acceptable method would be to use untreated iron pipe that would form a patina or rust surface over time.

Motorized and mechanized travel within WSAs is limited to primitive routes (previously known as “ways”) that were identified and documented at the time of the 1979-80 intensive wilderness characteristics inventory. Primitive routes may be maintained with hand tools, but the use of mechanical or motorized equipment is prohibited unless a decision is made by the authorized officer that use of such equipment would be the minimum tool required to maintain or improve the wilderness characteristics of the area. When primitive routes are utilized for access to range improvements, impacts to the routes must not exceed the approximate conditions of impact to the wilderness characteristics that existed on October 21, 1976.

In the event any of the four WSAs are designated as a Wilderness Area by Congressional designation, it would not preclude the continuation of livestock grazing but could impose increased restrictions on the use of mechanical or motorized transport and on installation of range developments that could impair wilderness values. Such restrictions would be identified in the wilderness management plan prepared by the BLM following designation by Congress.

Livestock Management Activities Within WSAs

Salting: For both grandfathered and non-grandfathered grazing operations, salting practices may occur. New salting locations may be established to improve the distribution of grazing use within the WSAs as long as the non-impairment criteria are met.

Supplemental Feeding: Supplemental feeding including minerals, vitamins, protein blocks or cubes, and high quality alfalfa, may be continued if it was allowed under the authorization that was in effect on October 21, 1976. No other supplemental feeding is allowed.

Emergency Feeding: Temporary emergency feeding may be authorized by the BLM when forage becomes unavailable as a result of unforeseen natural events such as fire, flood, or heavy snowfall. Emergency feeding may only be allowed for short periods of time while the emergency exists and until the livestock can be removed.

Vegetation Treatment: If vegetative manipulation was allowed under the authorization that was in effect on October 21, 1976, the vegetative treatment may be maintained by reapplying the same or similar treatment as long as it does not create greater impacts and achieves the same objective.

Motor Vehicle Use: The use of mechanical or motorized transport is restricted to those primitive routes that were identified and documented as ways at the time of the 1979-80 intensive lands with wilderness characteristics inventory. Refer to maps in Appendix A for authorized primitive routes (ways) with each of the WSAs

Changes in Grazing Practices

If rangelands within any of the WSAs fail to achieve Rangeland Health and/or Table 2-2 Habitat Standards, the significant factors contributing to the failure must be determined through monitoring and a review of existing uses. If existing grazing management practices are found to be a significant factor in the failure to achieve standards, new grazing management practices may be established as needed if they meet the non-impairment standard or one of the exceptions.

New Grazing Management: New grazing management is not a grandfathered use and in all cases may only be established if it meets the non-impairment standard or one of the exceptions. As a grandfathered use, grazing management authorized during or prior to the 1976 grazing fee year including levels of use, may not be changed solely because the use may impair a WSAs suitability for preservation as wilderness.

New Range Improvements: New range improvements may only be approved in one of the WSAs if the improvement meets the non-impairment standard or one of the exceptions, such as protecting or enhancing wilderness characteristics. In determining whether a development meets the protecting or enhancing wilderness characteristics exception, the BLM would determine if the structure's benefits to the natural functioning of the ecosystem outweigh the increased presence of human developments and any loss of naturalness or outstanding recreational opportunities caused by the new development. The proposed development must be substantially unnoticeable. New grazing developments that are allowed under the

grandfathered use exception cannot result in the increase in the AUMs that existed prior to the development. The development project must not require new motorized access since this would constitute surface disturbance and would not meet the non-impairment standard.

Grazing Increases: Grazing increases may be allowed if the impacts of such increases would meet the non-impairment standard or one of the exceptions. If the proposal meets the non-impairment standard or one of the exceptions, a temporary non-renewable increase may be authorized. If the studies indicate the increase is causing impairment of the WSAs suitability for preservation as wilderness, the increase would be reduced or discontinued.

Grazing Reductions: Reductions in grazing may be allowed if the rangeland is failing to achieve Rangeland Health And/or Table 2-2 Habitat Standards. The significant factors that contribute to the failed conditions should be ascertained and temporary or permanent reductions may be implemented as needed. While there would be no reduction in grazing use levels due to impacts to wilderness characteristics, grandfathered grazing use is not frozen at the October 21, 1976 level, but may be subject to general BLM grazing management policy.

Pre-FLPMA Range Improvements

Range improvements existing or under construction on October 21, 1976 may continue to be used and maintained in the same manner and to the same degree as such use was being conducted on that date. The improvements could have the same, but not more, physical or visual impact as they did at that time. To ensure all current applicable guidelines and policy pertaining to development within a WSA are followed, all maintenance or replacement of range improvements within each of the WSAs would require review and approval by the authorized officer prior to project implementation.

Table 60 lists the known range improvements within the four WSAs with a description of the improvement and the year of construction if known. If records or documents do not indicate the year the development was installed, the year it was first document was recorded.

Table 60: Wilderness Study Area Range Improvement Projects

Project Name	Project Number	Structure Type	Year Built/Documented
<i>Cooperative Agreement/Range Improvement Permit</i>			
Cold Springs Summit	540249	Fence	1966
Topia Fence	546676	Drift Fence	1993
Kaiser Peak Fence	544041	Fence	1969
Cow Canyon DF	540018	Drift Fence	1941
Kissing Rock Pipeline	544241	Pipeline	1972
Grover Point Well	544246	Well	1956
Deep Creek-Freeman DF	540120	Drift Fence	1959
East Lee Canyon Fence	543503	Fence	1969
East Dixie Valley Fence	544088	Fence	1966
East Lee Cattleguard	544229	Cattleguard	1968
Camp Creek Cattleguard	546375	Cattleguard	1967

Project Name	Project Number	Structure Type	Year Built/Documented
<i>BLM, no agreement</i>			
2 Lazy 2 Spring Development & Fence	002500	Spring Development & Fence	2006
Cherry Valley Gully Plugs	544418	Plugs	1974
Cherry Valley Meadow Exclosure	546352	Exclosure Fence	1984
Cherry Valley Aspen Exclosure	546544	Exclosure Fence	1991
Dirt Spring Exclosure	546606	Exclosure Fence	1993
Clan Alpine Wildlife	546693	Guzzler	1995
War Creek Exclosure	546717	Exclosure Fence	1992
Twin Peaks Fire Fence	546876	Fence	2001
Deep Canyon Spring	546599	Fence	1991
Bench Creek Exclosure	545108	Exclosure Fence	1976
Augusta Meadow Exclosure	546351	Exclosure Fence	1988
Cherry Valley Ex #2	546419	Exclosure Fence	1987
Upper Bench Creek Exclosure	546431	Exclosure Fence	1987
Dummy Big Game Guzzler	546447	Guzzler	1988
Paiute Big Game Guzzler	546448	Guzzler	1987
Horse Creek Exclosure	546456	Exclosure Fence	1988
Horse Creek Exclosure #2	546457	Exclosure Fence	1988
Cherry Valley West SP Exclosure	546493	Exclosure Fence	1989

There are only two range improvements proposed that occur within WSAs. This includes the Dirt Springs spring improvement/exclosure fence at the north end of the Clan Alpine WSA and the Unnamed Spring spring improvement/exclosure fence in Cherry Valley. Both are located within and near the Clan Alpine WSA border. Dirt Springs is located at the northern end of the WSA and is accessible by a designated primitive route W33. This primitive route is an authorized route for access to this spring and can be maintained by use of hand tools, but mechanized or motorized maintenance would be prohibited unless permitted by the authorized officer (refer to maps in Appendix A). The Unnamed Spring is located on the eastern edge of the WSA and is accessible through War Canyon by vehicle or Cherry Valley by ATV on routes located outside of the WSA boundary (refer to maps in Appendix A). At both locations, BLM is proposing to improve the wilderness characteristics of the area by replacing the existing dilapidated spring exclosure fencing, installing a spring box and improving the trough and piping systems to prevent additional degradation of the springs, allowing for native vegetation restoration, and improving the water source for wildlife and wild horses. Replacement of the structures, in accordance with the current Visual Resources Management (VRM) standards

and WSA policy on non-impairment, would be allowable to help preserve the wilderness character around and adjacent to the springs and provide a water source for wild horses.

The two proposed spring improvement and enclosure fencing projects also fall within the Clan Alpine HMA. As such, *Management of BLM Wilderness Study Areas Manual 6330*, Section 1.6.D.10.a requires that wild horse herd management actions prevent impairment of wilderness characteristics, watershed function and ecological processes. Section 1.6.D.10.c.i, Water Developments, allows for the water developments that are incorporated into the protection of springs or riparian areas if they meet an exception to the non-impairment criteria. These two springs are existing water sources for both cattle and wild horses and are not considered new, but would be developed to protect the springs and riparian areas from further degradation of wilderness characteristics. The Proposed Action meets the exception to non-impairment criteria Section 1.6.C.2.F, Protect or Enhance Wilderness Characteristics or Values by providing protection and enhancement of wilderness characteristics or values that are being impacted. The current level of use by cattle and wild horses has degraded the native vegetation surrounding both springs and compacted the soils to the level that the springs are nearly non-functional. Section 1.6.D.10.c.ii also allows for the construction of enclosure fencing where necessary to protect springs or other water sources from impairment by wild horses within WSAs.

Since both springs are located within a WSA, and the intent is to protect wilderness character of the area around the springs, it is not feasible to move the project outside of the WSA boundary. Alternative methods considered to protect and enhance the wilderness characteristics included the construction of a four rail steel jack fence that sits on the ground and does not require imbedded posts, installation of an above ground pipeline, construction of a wood fence, and hand trenching and excavation for the pipeline and spring box. These methods were eliminated since the steel jack fence and above ground pipeline would be more visually intrusive to the wilderness character, a wood fence would not withstand the elements or abuse from wild horses, and the soils are too dense to hand trench effectively, which would result in the same amount of surface disturbance as that produced by use of the small tracked backhoe.

Wilderness Character Preservation

In order to keep wilderness character intact and reduce the visual impacts to the naturalness of an area, abandoned or waste materials from old range improvements should be removed from within the WSAs whenever feasible. When conducting maintenance on existing structures, any unnecessary material should be removed via a haul-back system, and the impacts from old uses should be rendered unnoticeable.

Wild Horse and Burro Management

BLM policy allows for the management of wild horse and burro herds in WSAs within areas identified as having been used by a herd in 1971 (Wild Free-Roaming Horse and Burro Act). Herds should be managed to limit population growth or remove excess animals at a level so as not to impair wilderness characteristics. Trapping during the gather of horses is an allowable activity, but should occur outside of the WSA boundaries when feasible. If trapping occurs within any of the WSAs, traps must be temporary in nature and removed immediately at the

completion of the gather. Any new route used for trapping must be closed to vehicles and rehabilitated. Other allowable herd management activities within the WSA's include:

Water Developments

Water developments that are incorporated into the protection of springs or riparian areas or new water sources may be permitted to enhance or protect wilderness character but must meet an exception to the non-impairment criteria. Protecting or enhancing wilderness characteristics or values around water sources is an example of an acceptable justification under the non-impairment criteria Section C.2.F and is further discussed in Section 10.c.i

Fences

New fences such as enclosure fencing may be allowed to protect springs or water sources from impairment by wild horse and burros if such actions lead to protecting or enhancing wilderness character. Protecting or enhancing wilderness characteristics or values around water sources is an example of an acceptable justification under the non-impairment criteria Section C.2.F and is further discussed in Section 10.c.i

Motor Vehicles and Aircraft

With the exception of using motor vehicles to establish or remove traps, all other motor vehicles may not be driven off of identified primitive routes unless one of the exceptions to the non-impairment standards is met. Helicopters and fixed wing aircraft may be used for aerial surveys.

3.15.2 Environmental Consequences

3.15.2.1 *Alternative 1: Proposed Action*

The Proposed Action would provide the best alternative to reducing the potential adverse impacts to wilderness character from grazing activities by bringing the allotments into compliance with the Standards and Guidelines for Rangeland Health Assessment and Table 2-2 Habitat Standards. The intent of the Proposed Action is to achieve the standard and guideline objectives within the allotments through improved livestock and wild horse herd management, installation of new range improvements and increased maintenance of existing range improvements including wells, pipelines at developed springs and fences protecting riparian areas. Actions such as extending the grazing period while maintaining the same levels of AUMs should help reduce grazing impacts which in turn would improve the wilderness character of the WSAs. Removing livestock from the allotments more efficiently and timely would also provide opportunities for native vegetation to recover.

Maintaining range improvements within the WSAs should help disperse livestock use more effectively throughout the allotments thereby reducing localized impacts which can negatively affect the natural setting of the area. Range improvements implemented at springs would reduce the impacts from localized and heavily concentrated grazing leading to an improvement in the scenic quality of the natural vegetation surrounding the spring. The two range improvements would have minimal short term impacts, and in exchange, would help restore damage to wilderness character and result in long term benefits by providing for restoration of the two springs, the native vegetation, and enhancement of water sources for wild horses. Since the Proposed Action is being implemented to prevent additional degradation and provide

for enhancement of wilderness characteristics around the springs, it meets the exception to non-impairment criteria Section 1.6.C.2.f, protection or enhancement of wilderness characteristics or values and Section 1.6.D.10.c.i and ii, improving water development and construction of fences for wild horse and burro management. The proposed construction method allows for the removal of the range improvements with minimal temporary surface disturbance without irreparable damage to wilderness character in the event the WSA is designated a wilderness area in the future and a decision is made to remove the improvements. By following the guidelines for non-impairment criteria and maintaining scenic values established under WSA policy, replacing or maintaining range improvements should improve the naturalness of the allotment and comply with the “substantially unnoticeable” impacts of human activity requirements. Replacing the non-functioning spring enclosure fencing and installing the spring box, trough and piping system at Dirt Springs and the Unnamed Spring in Cherry Valley should improve the wilderness character around the springs and benefit wildlife as well. This alternative would be in conformance with WSA guidelines and policy.

As conditions of the areas improve as a result in the implementation of the listed actions, visual qualities would also begin to improve, thus creating a more positive visitor experience. The grazing schedule under this allotment would move towards meeting the established Standards and Guidelines for Rangeland Health and/or Table 2-2 Habitat Standards which would benefit the improving the scenic quality of the allotment.

Under this alternative, the wild horse numbers should be managed within the AMLs established for the Clan Alpine HMA. This action would serve to maintain the population at a level that has been determined to be sustainable for the area, thereby reducing any negative impacts to the vegetation from overpopulation. This in turn would improve the visual resources within the allotments by reducing a source of overgrazing in heavily concentrated areas around existing water sources. This would serve to protect and improve the visual quality of the allotments by helping to improve the overall rangeland health.

There would not be a notable change in outstanding opportunities for solitude from current conditions under this Alternative. Existing roads would continue to be used by recreationists and permittees at existing levels. Opportunities for unconfined and primitive recreation are not expected to change.

3.15.2.2 *Alternative 2: Dixie Valley Reduction in Livestock and Change in Season of Use*

Effects under Alternative 2 would be similar to those described in the Proposed Alternative in the Cow Canyon and Clan Alpine Allotments. In the Dixie Valley Allotment, the closure of the north pasture and the change in seasonal use could potentially reduce the impacts to vegetation within the Clan Alpine WSA due to a reduction in 1,600 permitted AUMs. Removal of cattle from this pasture would allow for the eventual natural restoration and rejuvenation of vegetation in degraded areas over a period of time which would serve to enhance the wilderness quality of the area.

The effects and impacts to the wilderness character of the allotments in relation to mineral, invasive, non-native and noxious weeds and wild horse actions would be the same as the Proposed Action.

3.15.2.3 Alternative 3: Cherry Valley Closure to Hot Season Grazing

Under this alternative, the effects to the wilderness quality would be similar to those of the Proposed Action for the WSAs in the Cow Canyon and Dixie Valley Allotments. In the Clan Alpine Allotment, closing the Cherry Valley pasture during the months of July and August would help improve the wilderness quality of the Clan Alpine WSA surrounding Cherry Valley and War Canyon since the vegetation would be allowed a longer growing period prior to grazing which would result in higher quality visual rating and degree of naturalness for an extended period of time. While technically outside of the WSA boundary, Cherry Valley and War Canyon are close to being an inholding within the WSA and visual degradation of the vegetation and springs negatively reflects the visual quality and naturalness of the area as a whole. The ridge between War Canyon and Cherry Valley has the highest visitation rates within the Clan Alpine WSA. This area offers spectacular views and an abundance of dispersed camping areas for hunters, hikers and photographers. Historically, cattle have been found within this area of the pasture outside of the permitted season of use and within the exclosures designed to protect spring and riparian water sources. Cattle that graze in the Cherry Valley area also forage into the WSA, so elimination of this grazing area during the summer months would also have a beneficial effect on the WSA.

The effects and impacts to the wilderness character of the allotments in relation to mineral, invasive, non-native and noxious weeds and wild horse actions would be the same as the Proposed Action.

3.15.2.4 Alternative 4: Cow Canyon Change in Season of Use and Clan Alpine Reduction of AUMs

Under this alternative the removal of hot season grazing on the Cow Canyon Allotment and the reduction of livestock grazing on the Clan Alpine allotment could potentially reduce the impacts to vegetation and waterways within the Clan Alpine WSA. Changing the Cow Canyon Allotment to winter grazing and reducing the permitted number of cattle allowed to graze on the Clan Alpine Allotment should allow for some natural restoration and rejuvenation of streambank and upland vegetation in degraded areas over a period of time which would serve to enhance the wilderness quality of the area.

The effects and impacts to the wilderness character of the allotments in relation to the Dixie Valley Allotment, minerals, invasive, non-native and noxious weeds and wild horse actions would be the same as that described under the Proposed Action.

3.15.2.5 Alternative 5: No Domestic Sheep Grazing

This alternative would have no effect on WSA's since domestic sheep are not permitted to graze within the WSAs.

3.15.2.6 *Alternative 6: No Grazing*

Under this Alternative, the landscape contrast and sequence would be the most representative of natural conditions and could provide the greatest benefit to the wilderness character within the allotments by eliminating cattle from all of the WSAs. There would be no effects to vegetation and riparian areas associated with livestock grazing, allowing a trend of natural vegetation regeneration; thereby improving the overall health, naturalness, and scenic quality throughout the area. Natural conditions would be expected to improve around water sources with the re-establishment of native vegetation. The use of motorized equipment, and the sights and sounds associated with range maintenance that may affect wilderness character and fail to fulfill the visitor expectation of solitude would be eliminated. While the No Grazing Alternative would be an allowable use under the WSA guidelines, this Alternative would not be in conformance with the CCD CRMP objectives or the BLM multiple use mandate.

Under this Alternative, the wild horse population would continue to increase, which could cause the greatest adverse impacts to the natural conditions of the WSAs, especially if allowed to increase to a level above AML that would damage the natural conditions of the WSAs. As herd populations increase, wilderness characteristics, especially adjacent to riparian areas or water sources, would have to be monitored for changes or adverse impacts. Maintenance of existing range improvements would not be a priority though they could still occur if the funding was made available. Of particular concern would be the maintenance of spring enclosure fencing, which would be necessary for wildlife due to the adverse impact the wild horses have on the springs, associated riparian vegetation, and water quality.

There would be an improvement, but not a notable change in outstanding opportunities for solitude under this Alternative. There would be a reduction in traffic from the elimination of grazing activities but the amount of traffic currently generated is too small to create an adverse effect. The impacts around water sources would be reduced and the solitude would be increased due to the lack of cattle or grazing activities within the four WSAs. Opportunities for unconfined and primitive recreation would improve slightly.

3.15.2.7 *Alternative 7: No Action*

The grazing system under the No Action Alternative has the potential of increasing the adverse impacts to the wilderness character within the WSAs by concentrating cattle in the same areas for longer periods of time as compared to the Proposed Action. These impacts would potentially increase the impacts to soils and vegetation, and therefore, the wilderness characteristics of the WSAs. The deteriorating condition of older range improvements and subsequent negative impacts to springs and riparian areas from concentration of cattle and horses would continue to be an eyesore and an adverse impact to the scenic value and naturalness of the area.

There would not be a notable change in outstanding opportunities for solitude under this Alternative. Existing roads would continue to be used by recreationists and the permittee at existing levels. Opportunities for unconfined and primitive recreation are not expected to change.

Since wild horse gathers would be deferred to a later date under this Alternative, it is expected that wild horse populations would continue to impact the natural conditions since many of the primary undeveloped water sources in the area are in the higher elevations of the WSAs. As herd populations increase, wilderness characteristics, especially adjacent to water sources would have to be monitored for changes or adverse impacts.

The No Action Alternative is expected to have greater impacts and a higher adverse effect to all of the WSAs than the Proposed Action.

3.16 Monitoring and Mitigation

Livestock Grazing

Range monitoring would continue for the Cow Canyon, Clan Alpine, and Dixie Valley Allotments as it has in the past. The SFO would continue to do the following: (1) Photo Point, (2) 100' Quadratic Frequency, (3) 100' Line Point Intercept, (4) Utilization, (5) Use Pattern Maps, (6) Rangeland Health Assessments, (7) Riparian Health Assessments, (8) Actual Use Reports, (9) Weather Data, (10) Compliance Checks, and (11) Range Improvement Inspections. Actual methods used would depend on monitoring needs (which could include AIM data in GRSG habitat areas), conditions, and resources available.

Wild Horse Removal

The BLM COR and PIs assigned to the gather or bait/water trapping would be responsible for ensuring contract personnel and/or other personnel abide by the contract specifications and the SOPs (Appendix D). Ongoing monitoring of forage condition and utilization, water availability, aerial population surveys, and animal health would continue. Fertility control monitoring would be conducted in accordance with the SOPs (Appendix C).

Minerals

Monitoring would consist of inspections by BLM specialists to ensure compliance with applicable stipulations and contract requirements for mineral material sales.

Invasive, Non-native and Noxious Species

Monitoring would consist of 1) conducting a weed survey along all passable roads, either by truck or ATV, to identify weed locations, species, and size of infestations; and 2) checking those areas treated with herbicides after one to seven years, depending on the weed species, to determine treatment success.

Neo-tropical Migratory/Song Birds

The following environmental protection measure would be used to ensure that there are no violations of the Migratory Bird Treaty Act of 1918 during vegetation removal associated with the mineral material community pit, pinyon pine and juniper removal around Rock Creek Spring, and implementing the invasive and noxious weed treatments:

- Project related activities that could disturb nesting migratory birds would not occur unless a pre-disturbance nest survey is conducted by qualified personnel. The nesting season is approximately March 15 to May 30 for pinyon jays, March 1 to July 31 for raptors, and April 1 to July 31 for all other avian species. The survey must be done no

more than 14 days before project related activities are to occur. If nesting migratory birds are found within the project area, an appropriate buffer from each active nest would be established and maintained until the young birds have fledged or the nest has failed.