

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

**Programmatic Environmental Assessment-
Wildlife Water Developments in the SFO**



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Photo courtesy of Clint Garrett, Nevada Department of Wildlife

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Chapter 1. Introduction

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1.1. Introduction:

This environmental assessment (EA) is designed to serve as a programmatic analysis of future wildlife water developments within the Surprise Field Office (SFO). The analysis area includes a portion of the SFO (see Appendix A, Map 1). The Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area, Wilderness Study Areas (WSA), Areas of Critical Environmental Concern (ACEC) and designated Wildernesses are outside the scope of this EA. This EA analyzes impacts of wildlife water developments based on typical construction scenarios.

The purpose of this EA is to analyze the construction of 9 large capacity wildlife water developments at specific sites that have already been identified by the Nevada Department of Wildlife in coordination with the BLM.

The EA is a site-specific analysis of potential impacts that could result with the implementation of a Proposed Action or alternatives to the proposed action. The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any “significant” impacts could result from the analyzed actions. “Significance” is defined by NEPA and is found in regulation 40 CFR 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of “Finding of No Significant Impact” (FONSI). A Decision Record (DR), which includes a FONSI statement, is a document that briefly presents the reasons why implementation of the Proposed Action will not result in significant environmental impacts (effects) beyond those already addressed in the 2008 SFO RMP. If the decision maker determines that this project has significant impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record may be signed for the EA approving the alternative selected.

Site specific proposals received for isolated wildlife water developments or a complex or series of wildlife water developments, would be considered per policy guidance, Documentation of Land Use Plan Conformance and National Environmental Policy Act (NEPA) Adequacy Administrative Record (WO I.M. 2001-062). Any future additional wildlife water developments would have to be within the scope of this EA and meet all criteria and SOP’s outlined in this document.

1.2. Background:

Since the mid-1950’s, wildlife water developments have been installed to improve or expand wildlife populations by improving water distribution. Upland game hunting has been, and continues to be, a popular recreational activity. Many mountain ranges previously un hunted or hunted intermittently are experiencing increased hunter use, success and improved hunter distribution through strategic placement of wildlife water developments (Benolkin 1990). The expanding human population in Nevada in the last 10 years has increased the demand for recreational opportunities.

A quantitative analysis of wildlife water development utilization by nongame wildlife was undertaken in 2006 by researchers from the University of Nevada, Reno and everything from rabbits to coyotes and kit foxes to passerine birds and reptiles have been observed using the water sources. Mourning dove and other game bird species appear to adapt quickly to new wildlife water developments (Benolkin 1990). No negative impacts to non-target species were detected in the study (Merideth, J.S.and Brussard, P.F. 2006).

The recent drought has impacted many wildlife populations by eliminating previously available water sources. Many springs and seeps that normally provided sufficient water and associated green vegetation stopped flowing during the drought. Although a return to normal precipitation will probably result in the return of flows to these springs and seeps, the unpredictable nature of these marginal water sources has been demonstrated.

One other important aspect of wildlife water developments is that they provide a source of water for wildlife that is free from competition from livestock and wild horses. This is particularly beneficial to big-game species, since wildlife water developments can be constructed in suitable habitat that is relatively free of competition for forage and space from other large ungulates.

In 2009, the Nevada Department of Wildlife (NDOW) proposed to build guzzlers on lands managed by the SFO to improve watering sources and water distribution for wildlife. The SFO BLM is providing NEPA analysis. The SFO of the Bureau of Land Management proposes to allow Nevada Department of Wildlife (NDOW) to install 9 big game guzzlers to benefit wildlife resources within the Nevada portion of lands managed by the SFO. The guzzlers will be funded by NDOW in partnership with Nevada Bighorns Unlimited (NBU) and other conservation organizations.

1.3. Need for the Proposed Action

The need is to increase and maintain upland game/ nongame and big-game populations by using more of the potential habitat, within the administrative boundary of the Bureau of Land Management (BLM), Surprise Field Office (SFO) and to reduce the risk of disease transmission and infection to bighorn sheep from contact with domestic sheep or goats (Paulraj et al. 2010, Foreyt et al. 2009).

1.4. Purpose of the Proposed Action

The purpose of the Proposed Action is to provide dependable, evenly distributed, sources of water, increase suitability of habitat for a myriad of wildlife species known to exist in the SFO, reduce interspecific competition between species and reduce the potential of contact between domestic sheep and bighorn sheep. Small capacity water developments are for upland game, primarily chukar and nongame species and large capacity water developments are for big game. The water developments would be constructed in areas with suitable habitat, currently lacking sufficient water to sustain wildlife populations during mid-June to October.

1.5. Conformance with BLM Land Use Plan(s):

The Proposed Action is subject to, and consistent with, the 2008 SFO Resource Management Plan (RMP). Specifically, the Proposed Action conforms to the following sections of the RMP.

2.22.4.2 Goal for State-Listed and BLM Sensitive Species

Restore, enhance, or maintain populations and habitats of state-listed and BLM sensitive wildlife on lands administered by the SFO. Habitats and populations of these species would be healthy and robust; therefore, actions permitted, funded, or conducted by the SFO would not contribute to the need to list any species under the Endangered Species Act. State-listed species will be

managed in accordance with the California Endangered Species Act (CESA). Species protection and habitat conservation would satisfy the minimum requirements of the CESA.

Proposed Management Action 1:

Maintain an active partnership and coordinate wildlife-related activities with the California Department of Fish and Game (CDFG), Nevada Department of Wildlife (NDOW), U.S. Fish and Wildlife Service (USFWS), U.S. Forest Service (USFS) and other conservation partners to maintain or improve the status of state-listed and BLM sensitive wildlife species.

2.22.5.2 Goal for Ungulates

Restore, enhance, and maintain important habitats for wild ungulates on BLM-administered lands.

Proposed Management Action 5:

Cooperate with state wildlife agencies to build and maintain additional guzzlers east of Surprise Valley to discourage bighorn sheep from crossing to the Warner Mountains and Coppersmith Hills.

Relationship to Statutes, Regulations, or other Plans:

BLM manual 6840, part.06A3, 1) states, "The protection provided by the policy for candidate species shall be used as the minimum level of protection for BLM sensitive species"; and 2) "For candidate species where lands administered by the BLM or BLM authorized actions have a significant effect on their status, manage the habitat to conserve species by ensuring that BLM activities affecting the habitat for candidate species are carried out in a manner that is consistent with the objectives for managing those species. This project will support local, state and national concerns for two BLM sensitive wildlife species: California bighorn sheep (*Ovis canadensis californiana*) and Greater sage-grouse (*Centrocercus urophasianus*).

Approvals needed for this project are related to wildlife and cultural resource management, both of which occur either within the project boundaries or adjacent to it. Wildlife surveys were conducted in the summers of 2010 and 2012 and consists of identifying wildlife use areas, suitability of habitat for various wildlife species, need for additional water sources and identification of any threatened or endangered species use, if present. Archaeological surveys were conducted in the summer of 2012 and no guzzler sites were located in archaeological sites.

1.6. Identification of Issues

Water is generally a limiting resource in the sage-steppe environment and competition between ungulates for limited water resources can occur during the summer months and/or during drought (Holechek, et al. Range Management 5th Edition; Miller, 1983). Perennial water is sparsely distributed in some areas within the SFO. Many portions of the SFO including the Hays mountain range have limited roads and vehicle access in many locations and as a result only limited work has been done to improve wildlife access to free formed water. Water distribution likely reduces wildlife distribution across the landscape during dry summer months and can create additional stress on wildlife species as a result of interspecific competition between wildlife, livestock, and wild horses and intraspecific competition between members of the same species. Additionally,

water resources that are heavily used by livestock and wild horses during summer months and droughts often have elevated levels of bacterial contamination and fecal coliform.

The project area encompasses a large portion of habitat that is occupied bighorn sheep habitat. Reintroduced California bighorn sheep in 1989 in the Hays range developed self-sustaining viable populations. The Hays range had a large die-off of bighorn sheep in the winter of 2006-2007. Indications were that the die-off was likely a result of contact between domestic sheep and bighorn sheep. There is still bighorn sheep adjacent to the Hay's Range and a small group of bighorn sheep survived the die-off and still exist in the Hay's Range (Chris Hampson, personal communication). Additional water sources would limit the dispersion of bighorn sheep during summer months into domestic sheep range and reduce the probability of disease transmission to bighorn sheep.

Scoping:

Internal scoping for this project took place between the SFO BLM and NDOW. Several meetings between the BLM and NDOW took place outlining wildlife habitat suitability as it related to guzzlers, guzzler location and guzzler design. The first scoping letter was sent out on February 15, 2011 during the public comment period phase of the EA. Scoping letters were sent to all identified interested parties and livestock grazing permittees within allotments identified as potential areas for guzzler locations. Two scoping letters were received and both supported development of guzzlers for wildlife. A second scoping letter was sent out on December 5, 2012 to all interested parties within the SFO. Two scoping letters were received during this scoping period and both supported development of guzzlers for wildlife.

1.7. Summary

This chapter has presented the Purpose and Need for the proposed project, as well as the relevant issues, i.e., those elements that could be affected by the implementation of the proposed project. To meet the purpose and need of the proposed project in a way that resolves the issues, the BLM has developed a range of action alternatives. These alternatives, as well as a no action alternative, are presented in Chapter 2. The potential environmental impacts or consequences resulting from the implementation of each alternative are then analyzed in Chapter 4 for each of the identified issues.

Chapter 2. Proposed Action and Alternatives

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2.1. Introduction

A range of alternatives for this project was based on the possibility of an action having a beneficial effect, current literature as it relates to water developments, and known issues in the area as they relate to bighorn sheep and other wildlife species.

The potential guzzler locations are located in the Bull Creek, Nevada Coleman, Homecamp, Duck Lake and Bare allotments. These allotments contain suitable wildlife habitat for a myriad of wildlife species, specifically big game species and upland game birds.

2.2. Alternative A – Proposed Action:

The Nevada Department of Wildlife (NDOW), Nevada Bighorns Unlimited and the BLM cooperatively propose to construct nine large and small capacity wildlife water developments in the SFO. The location of each guzzler is given in the table below and shown on the attached site location maps. These guzzlers would benefit California bighorn sheep, mule deer, antelope, chukar partridge, sage-grouse, and non-game species. Additionally, NDOW and BLM propose to construct additional large and small capacity wildlife water developments which would benefit bighorn sheep, mule deer, pronghorn antelope, chukar partridge, sage-grouse, and non-game species. Construction of all water developments would occur over the next ten years.

The wildlife water developments would provide dependable, evenly distributed, sources of free water for big game and upland game birds in areas with suitable habitat. Wildlife water developments would be authorized by a cooperative agreement between the proponent and the BLM. Typically, the proponent would have maintenance responsibility for them. However, the BLM may construct and maintain its own wildlife water developments.

Typical construction of a large capacity wildlife water developments would consist of the following:

Guzzlers will consist of a tank, an apron, a drinker, and a fence to protect the entire guzzler. Each guzzler would have up to a 6 tank system (7500 gallons), 54'X60' apron (60'X70' barbed wire fence around apron). In arid areas with unpredictable precipitation, a 10,000 gallon tank may be installed to ensure guzzlers do not go dry during consecutive drought years in areas where animal use is high. Each guzzler will require a 2,000 square foot apron to capture snowmelt and rainwater to fill the tank. Tanks will be located underground and will be connected by pipe to a self-leveling drinker. Spoils including rock will be spread within the disturbed area. The drinker will have a roughened escape ramp in place to allow ease of use by larger animals and to prevent accidental drowning of smaller wildlife species e.g. rodents, reptiles, birds. A steel pipe rail fence will be placed around the guzzler to prevent damage from domestic livestock and wild horses however big game and smaller wildlife species will have unimpeded access to the guzzler. The entire site will cover approximately 0.5 acres. (see Appendix C). Total disturbance per site would be less than 1 acre.

Typical construction of the small capacity wildlife water developments would consist of the following:

A 325-gallon fiberglass tank (5' X 5' X 2') would be buried beneath a 12' X 8' steel apron that would be supported on four corners by 2" X 2" angle iron steel posts. Spoils including rock will be spread within the disturbed area. The bases of the corner posts would be buried about 2'

deep. A gutter catches the moisture run-off from the steel apron and directs it to the water tank underneath the apron via a down-spout. A barbed-wire fence would be constructed immediately adjacent to each wildlife water development to prevent cattle and wild horses from damaging the structure (see Appendix D – Small Game Guzzler Design). Total disturbance per site would be less than 0.1 acre.

Table 2.1. Guzzler Locations

Name	Type	Township	Range	Section	Overland Travel/Sling
Surprise Valley Rim Big Game	Big game guzzler	39N	18E	27	Sling site
Boulder Lake Big Game	Big game guzzler	40N	20E	6	Overland Travel Site
Table Lakes #1	Big game guzzler	41N	18E	34	Overland Travel Site
Table Lakes #3	Big game guzzler	40N	18E	9	Overland Travel Site
Coleman Rim	Big game guzzler	47N	20E	28	Overland Travel site
Cherry Mtn. #1	Big game guzzler	38N	20E	21	Existing route to site
Cherry Mtn. #2	Big game guzzler	38N	20E	32	Existing route to site
Cherry Mtn. #3	Big game guzzler	38N	20E	31	Existing route to site
Cherry Mtn. #4	Big game guzzler	38N	20E	35	Existing route to site

Disturbed areas will be hand seeded with native species (shrubs, grasses, and forbs) to prevent establishment of noxious weeds, to reduce visual impacts, and to provide hiding cover from aerial and terrestrial predators near the guzzler. Vehicle use will be discontinued if rutting over 4 inches occurs. Overland travel will be minimized to the extent possible to minimize effects on resources. Where vehicle access is limited or nonexistent and overland travel is not feasible or is not approved, helicopters will be used to transport equipment, construction materials, and personnel as needed. To minimize visual impacts, guzzlers will be painted as needed to blend in with naturally occurring vegetation as determined by the BLM. To the extent possible, guzzlers will be located in areas where natural topography conceals the location.

Sites will need to be excavated to accommodate the tank and drinker. The fence will require excavation of 16 holes that are 16” wide x 30” deep. The apron will not require any excavation and will sit on the surface of the site. When a guzzler project site can be accessed by equipment the following equipment will be used: Projects will be completed by either a volunteers or NDOW employees.

Vehicle Access Sites:

Volunteer project: 20 ATV/UTV’s - 15 trucks – 5 trailers - 1 backhoe.

NDOW guzzler crew project : 2 ATV’s, 2 trucks – 2 trailers - 1 backhoe.

Additional tools used in construction of guzzlers includes: Pipe wrenches, levels, measuring tapes, tin tools, shovels, picks, digging bars, electric sawz-all, electric drills, generators, chop saw, auger, and post pounders.

Guzzlers built by the 2 man NDOW crew require a 2 week build time (8 days straight) per guzzler. A backhoe is brought in/out once, to the project site, 2 trucks and 2 trailers access the site a total of 4 times with truck and trailer for material delivery. Personnel would then access via one truck in/out per day or 2 ATV's in/out per day for 7 days. Volunteer projects will be completed in one weekend, with up to 50 or more people participating in construction of a guzzler with all equipment being brought in and out during the two day construction period.

Non-Vehicle Access Sites:

If a site cannot be accessed with equipment or materials cannot be brought to the site, the site will be blasted and material will be slung into the site. Blasting consists of digging approximately 25 charge holes in the area of construction- tanks, trench line, and drinker. Detonation cord, boosters and ammonium phosphate will be used to complete the blasting. Sites would be blasted to loosen soils for hand digging. All other digging is done with digging bars, picks and shovels. Blasting is done just prior to construction. Blasting will not be allowed until the SFO BLM clears the site for blasting and the Field Manager in coordination with the Fire Management Officer approved the blasting date to minimize the risks of a wildland fire starting and for public safety. NDOW will provide fire extinguishers or water, shovels, pulaskis, and a form of communication e.g. satellite phone, radio etc. in the case of a wildland fire start. The SFO BLM will be immediately notified if a fire start occurs.

Materials will be "slung" in by helicopter using sling straps, cables and cargo nets. Approximately 15 loads (trips) will occur per site. A staging area close to the guzzler site will be established where materials can be prepped and the helicopter can land for fueling. This is generally a wide spot in an existing road.

Campsites and parking for volunteer projects will be cleared and approved with the SFO BLM prior to volunteer groups arriving and camping and parking at a site. NDOW will provide the SFO BLM at least one month prior advance notice to clear a camping site. These guzzlers will be attractive projects to the sportsmen of Reno, so volunteer numbers could be high, however volunteer numbers will not be known until the day of the project.

Guzzlers will be constructed by the volunteers under the supervision of NDOW or by NDOW employees. Work personnel will either camp on site or in close proximity. No disturbance to vegetation or soil beyond that associated with the project will be allowed. No additional activities except those outlined in this EA are authorized. BLM will provide onsite inspection to ensure all rules are being followed.

BLM will be notified prior to construction beginning and will meet with BLM, if requested, for a pre-work meeting. NDOW in conjunction with the SFO BLM will obtain permission from private landowners before crossing any private lands. All trash and refuse that is generated from the construction of the guzzlers will be removed when construction is completed. Fence construction will comply with BLM fence specifications and standards. NDOW will be responsible for maintenance of guzzlers after construction and will maintain a record of maintenance performed on guzzlers. NDOW will send the BLM an accurate record of performed maintenance so the BLM can update project files. NDOW and BLM will continue monitoring of multiple wildlife species (bighorn sheep, mule deer, pronghorn antelope, and sage grouse) to assess the effectiveness of these types of projects.

If any cultural resources (surface or subsurface) are discovered during construction, construction will cease immediately. The BLM will be notified immediately and the Field Office Archaeologist will determine mitigation measures that are needed and if construction will be allowed to continue.

Prior to construction, a Class III cultural resource inventory would be completed for each wildlife water development site and no guzzler sites will be built in National Register Eligible sites.

Construction would comply with the guidelines found in the Buffalo-Skedaddle, Vya and Massacre Sage Grouse PMU Conservation Strategies. These generally recommend construction of water developments a minimum of 6/10th mile from leks. The SFO lek database would be consulted prior to authorization of any future wildlife water developments, and they would also comply with the guidelines cited above. Water developments would only be authorized on public land administered by BLM and land status (master title plat) would be checked for each new proposal. The current Nevada Natural Heritage Data Base would be consulted prior to authorizing any proposed wildlife water developments.

2.3. Alternative B – No Action

Under the No Action Alternative, no new guzzlers would be constructed within the Action Area.

2.4. Alternatives Considered, but Eliminated from Further Analysis

Developing pit reservoirs, improving naturally occurring seeps, and fencing riparian areas was considered as an alternative but was eliminated from further analysis because distribution of water resources would not be improved compared to the construction of guzzlers and water would be less predictable than guzzlers during drought seasons.

Chapter 3. Affected Environment:

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This chapter presents the potentially affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the impact area as identified in the Interdisciplinary Team Analysis Record Checklist and presented in Chapter 3 of this assessment. This chapter provides the baseline for comparison of impacts/consequences described in Chapter 4.

3.1. Introduction

The project area is located in the SFO. The terrain varies from steep, rocky slopes to moderately sloped sagebrush/grasslands. Vegetation is predominately Mountain big sagebrush, Wyoming sagebrush, Basin big sagebrush and inclusions of low sagebrush along with juniper habitats and scattered small riparian areas, spring/seeps and perennial and intermittent drainages. Elevation ranges from 4500 feet to 8000 feet and precipitation varies from 8 to 15 inches.

3.2. Summary of Issues Received During Scoping

Four scoping letters were received and all letters supported development of guzzlers for wildlife. Scoping comments included questions on:

- What data the BLM or NDOW has to show that natural water sources have been lost or not available to wildlife species.
- How much forage is in these areas and if there is enough forage for wildlife.
- What is the specific design of these guzzlers.
- Can these guzzlers be maintained with minimum repair needs and can their functionality be checked from the air.
- Will the project design ensure these guzzlers are as visually unobtrusive as possible to maintain visual resources in the region.
- Whether any are planned in Wilderness Study Areas (WSA's).

3.3. Critical Elements of the Human Environment

The following critical elements of the human environment are not present or would not be affected by the Proposed Action in this environmental assessment:

Table 3.1. Resources Potentially Affected by Implementation of the Proposed Action and Supplemental Authorities to be Considered

Resource Issue Area	Supplemental Authority	Not Present	Present Not Affected	Present and Affected	Comments
Areas of Critical Environmental Concern (s)					There are no ACEC's located within the Project Area.

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Cultural Resources	National Historic Preservation Act, as amended (16 USC 470)				Analyses of the potential for the Proposed Action to result in environmental effects related to Cultural Resources are presented in Section 4.1
Environmental Justice	E.O. 12898, "Environmental Justice" February 11, 1994				Implementation of the Proposed Action would not disproportionately affect low income or minority populations.
	Essential Fish Habitat Magnuson-Stevens Act Provision: Essential Fish Habitat (EFH): Final Rule (50 CFR Part 600; 67 FR 2376, January 17, 2002)				There is no Essential Fish Habitat located within the Project Area.
Farmlands, Prime and Unique					There are no Prime or Unique farmlands located within the Project Area.
Floodplains	E.O. 11988, as amended, Floodplain Management, 5/24/77				There are no FEMA-mapped 100- or 500-year floodplains within the Project Area.
Invasive, Non-native Species					Analyses of the potential for the Proposed Action to result in environmental effects related to Invasive Species are presented in Section 4.3
Global Climate Change					There would be no effect on Global Climate Change from the Proposed Action.

Livestock Management					Analyses of the potential for the Proposed Action to result in environmental effects related to Grazing Lands are presented in Section 4.8.
Native American Religious Concerns	American Indian Religious Freedom Act of 1978 (42 USC 1996)				No Native American Religious Concerns were expressed during consultation with the Fort Bidwell, Cedarville Rancheria, and Summit Lake Paiute Tribes.
Recreation					Analyses of the potential for the Proposed Action to result in environmental effects related to Recreation are presented in Section 4.5
Social and Economic Values					Analyses of the potential for the Proposed Action to result in environmental effects related to Social and/or Economic Values are presented in Section 4.10.
Soils					Analyses of the potential for the Proposed Action to result in environmental effects related to Soils are presented in Section 4.9.
Visual Resource Management					Analyses of the potential for the Proposed Action to result in environmental effects related to Visual Resources are presented in Section 4.6.

Wastes, Hazardous or Solid	Resource Conservation and Recovery Act of 1976 (43 USC 6901 et seq.) Comprehensive Environmental Repose Compensation, and Liability Act of 1980, as amended (43 USC 9615)				Implementation of the Proposed Action would not result in hazards materials/waste exposure to people or the environment, nor would implementation result in effects related to solid waste.
Water Quality	Safe Drinking Water Act, as amended (43 USC 300f et seq.) Clean Water Act of 1977 (33 USC 1251 et seq.)				Implementation of the Proposed Action would not affect ground water. Analyses of the potential for the Proposed Action to result in environmental effects related to Water Quality are presented in Section 4.2.
Wetlands /Riparian Zones	E.O. 11990 Protection of Wetlands 5/24/77				Analyses of the potential for the Proposed Action to result in environmental effects related to Wetlands are presented in Section 4.2
Wild and Scenic Rivers	Wild and Scenic Rivers Act, as amended (16 USC 1271)				There are no designated Wild and Scenic rivers within the Project Area.
Wilderness (lands with wilderness characteristic)	Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.); Wilderness Act of 1964 (16 USC 1131 et seq.)				Analyses of the potential for the Proposed Action to result in environmental effects related Lands with Wilderness Characteristics are presented in Section 4.13

Wild Horse and Burros					Analyses of the potential for the Proposed Action to result in environmental effects to Wild Horse Herd Management Areas are presented in Section 4.11
Wildlife and Threatened/ Endangered Wildlife Species	Endangered Species Act of 1983, as amended (16 USC 1531) E.O. 131186, "Responsibilities of Federal Agencies to Protect Migratory Birds" January 10, 2001				There are no known federally-listed species in the Project Area. Analyses of the potential for the Proposed Action to result in environmental effects related to Wildlife are presented in Section 4.4
Vegetation and Threatened/ Endangered Vegetation Species	Endangered Species Act of 1983, as amended (16 USC 1531)				Analyses of the potential for the Proposed Action to result in environmental effects related to Vegetation are presented in Section 4.7
Fire and Fuels Management					Analyses of the potential for the Proposed Action to result in environmental effects related to Fire and Fuels Management are presented in Section 4.12

Resources Present and Brought Forward for Analysis

3.4. Cultural Resources

Historic and prehistoric cultural resources are found throughout the SFO and their significance varies from site to site. Many of the prehistoric sites are located near springs and perennial streams. Typically, wildlife water developments would not be constructed in proximity to springs or perennial streams. The nine guzzlers proposed to be built have all had a Class III archaeological inventory completed and no sites were found at the proposed guzzler sites. All future proposed guzzler sites will have a Class III inventory completed prior to construction. Each

guzzler was located in areas where no National Register Eligible or unevaluated sites are located and overland travel will not occur across National Register Eligible or unevaluated sites so that no cultural resources would be impacted by the proposed water development. All future guzzlers will avoid areas with a high density of Eligible or unevaluated sites.

3.5. Riparian/Wetlands/Water Quality

There are a total of two existing big game guzzlers and fourteen upland game guzzlers within the SFO (see table below). In most areas within the SFO wildlife species have to compete with domestic livestock, and to a lesser degree wild horses, for access to water during the summer months. Additionally, yearly variation in precipitation and climatic factors often influence the distribution of water resources on these allotments. During drought years, many of the man-made pit reservoirs and troughs and small naturally occurring seeps don't produce water. During these drought years, competition for water resources between wildlife and domestic livestock and wild horses often increases. Riparian sites across the SFO are generally associated with spring/seeps/wet meadows, and perennial and intermittent streams and are commonly used by wildlife, livestock and wild horses. The majority of riparian/wetland sites in the SFO are not meeting Proper Functioning Condition due to overuse by wild horses or livestock or a combination of both. Data from the 2011 High Rock Wild Horse Population Management Plan EA that covered approximately 626,946 acres stated that "A few riparian and wetland sites in the High Rock Complex have made progress towards being rated as "Proper Functioning Condition" (16%) over the past 25 years, however the majority of riparian areas within the Complex are rated as either "Functional at Risk" (68%) or "Nonfunctional" (16%)." The majority of riparian-wetland sites have elevated levels of bacterial contamination and fecal coliforms due to wild horse and livestock use.

Table 3.2. Existing Small Game and Big Game Guzzlers within the SFO

Allotment	Guzzlers
Lower lake	2
Duck lake	1
Tuledad	2
Bare	9
Homecamp	1*
Bicondoa	1*
Total	16

Note

*Big Game Guzzlers

3.6. Noxious Weeds

Weeds are defined as plants that are exotic or non-native plants. Non-native weeds have the ability to out-compete and replace native plants, often creating their own monotypic plant community. Uncontrolled weed infestations result in decreases of native vegetation diversity, reductions in forage and wildlife habitat, and declines in agricultural crop values. Once invasive or non-native weeds become established, it is extremely difficult to eradicate them and bring back the native communities that have been displaced. All proposed guzzler sites has been surveyed for the presences of noxious weeds and no noxious weeds were identified at the proposed sites. The SFO

has to date had few weed invasions due to large expanses of plant communities that remain intact and dominated by native species and a “detect and eradicate” approach to control of noxious weeds has limited the spread of noxious weeds across the landscape.

3.7. Wildlife (Including Threatened and Endangered Species and Migratory Birds)

No federally threatened or endangered species are known to occur within or immediately adjacent to the project area.

Carson wandering skipper: Potential suitable habitat for the Carson wandering skipper (*Pseudocopaeodes eunus obscurus*), a federally endangered butterfly, has been identified within the SFO boundary, however habitat within the SFO does not appear to be suitable for this species due to the lack of nectar sources. The designation of this habitat is based on vegetation and soil mapping units containing suitable vegetation/habitat requirements. Although some saltgrass is found in scattered amounts near playa lakes, the habitat does not appear to be suitable for Carson wandering skipper due to the lack of nectar sources. Nectar sources (salt heliotrope) that exist on Massacre Lakes were surveyed in 2008 and 2009 for the presence of Carson wandering skipper and none were detected. Additional potential Carson wandering skipper habitat sites within the SFO have been visited but no Carson wandering skippers have been identified, therefore this species will not be discussed further in the EA.

Candidate Species

In March 2010, the USFWS announced its listing decision for the Greater sage-grouse (*Centrocercus urophasianus*) as “warranted but precluded.” Candidate species designation means the USFWS has sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list, but issuance is precluded by higher priority listing actions. At this time the species is officially considered a Candidate Species, but does not receive statutory protection under the ESA. Individual states continue to be responsible for managing sage-grouse. “Candidate species and their habitats are managed as Bureau sensitive species”, (BLM Manual 6840, December 2008). The Greater sage-grouse is discussed under Sensitive Species, below.

California and BLM Sensitive Species

California bighorn sheep

Data from NDOW and BLM observations and unpublished records indicate that a portion of public land in the SFO lies within the distribution of California bighorn sheep (*Ovis canadensis californiana*) habitat. Habitat for bighorn includes steep rocky terrain for escape cover and bedding opportunities adjacent to open vegetation for foraging and water. Due to predation issues, higher quality bighorn sheep habitat (steep areas), generally contain water within ¼ mile. This species can be found in diverse habitats including big and low sagebrush, juniper woodland edges, perennial grasslands and bitterbrush. This species prefers low growing vegetation to better spot predators and reduce predation risk. Much of the SFO supports the suitable characteristics of California bighorn sheep habitat, most importantly, steep rocky terrain for escape cover. Occupied habitat constitutes approximately 40% of the entire SFO and potential habitat constitutes 358,684 acres as shown in Table 3.3.7.1 below. Portions of the SFO lie within NDOW hunt units 011, 012, 013, and 014.

Table 3.3. Occupied and Potential Bighorn Sheep Habitat in the SFO

Mountain Name	Herd Name	Limit 1	Limit2	Limit 3	Occupancy	Habitat	Acres
Idaho Canyon Range	McGee Mountain				Occupied	Year-round	1829
Granite Range	Granites	DLU	WLD	FHB	Occupied	Year-round	17109
no reference	Guano Rim	FHB	WLD		Occupied	Year-round	22993
no reference	Big Springs Table	FHB	WLD		Occupied	Year-round	23331
Badger Mtn	Badger Mtn	WLD	FHB		Occupied	Year-round	57148
Hays Canyon Range	Hays Canyon	LOS	WLD	DLU	Occupied	Year-round	72859
Calico Mountains	Calicos/High Rock	FHB	WLD	DLU	Occupied	Year-round	78397
Painted Point Range	Massacre Rim/ Coleman	WLD	PJC	DLU	Occupied	Year-round	122530
no reference	Virgin Valley Gorge	WLD	FHB		Occupied	Year-round	131591
Total Occupied							527,790
	12 Mile Cn.				Potential	Potential	950.906
	Grassy Cn.	FHB	DLU	WAT	Potential	Potential	14440
	Catnip	WLD	FHB		Potential	Potential	18599
Hart Mtn.	Hart Mtn.	WLD	DLU	WAT	Potential	Potential	18648
		FHB	DLU		Potential	Potential	55242
Chimney Rock					Potential	Potential	58024
Hays Canyon Range (South)	Mountain View Creek	FHB	DLU		Potential	Potential	70681
Cherry Mountain		WAT	LOS	WLD	Potential	Potential	122095
Total Potential							358,684

WLD = Wildfire and Invasion Plants LOS = Lack of Separation (domestics etc) WAT = Water availability or limited SHB = Shrubland Maturation DLV = Domestic Livestock Utilization PJC = Pinyon/Juniper Encroachment

Population dynamics and recruitment rates of the 012 unit bighorn sheep populations from the Nevada Department of Wildlife 2009-2010 Big Game Status Report are available at <http://www.ndow.org/hunt/resources/population/index.shtml>, and applicable portions of the report for bighorn sheep actively monitored within the SFO are included below:

“This year’s average recruitment rate of 35 lambs per 100 ewes is the same as the 2007 ratio which was the lowest recruitment rate ever observed for this herd. The long-term average lamb ratio for the 012 population was 56 lambs per 100 ewes (1994-2007). The persistent drought conditions over the past several years have negatively impacted habitat conditions for bighorn in this hunt unit. The prolonged drought conditions and the intense competition between horses, cattle and bighorn have negatively impacted this herd in recent years. Lamb recruitment has averaged just

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37 lambs per 100 ewes between 2007 and 2009. Competition has increased dramatically during the recent drought years and is especially intense near or close to the limited water sources. The Bureau of Land Management recently removed over 1900 horses from the Calico Complex. The removal of the horses will help to reduce the amount of competition between feral horses, bighorn and other wildlife.”

“Most riparian areas within Unit 012 are in poor condition due to the drought and long-term overutilization by livestock and feral horses. With little to no ground cover, evaporation rates are very high and cause many of the water sources to dry up by late summer. In 2008, the Bureau of Land Management determined that several of the riparian areas within the National Conservation Area of Unit 012 were in non-functioning condition with a downward trend. It was also determined that current grazing practices and high horse numbers were in fact impacting these water sources and hampering recovery. With horse numbers now near manageable levels (in the Calico Complex), riparian areas will have a better chance to slowly recover. The removal of the excess horses will allow for increased forage and water for all wildlife species.”

Pygmy rabbit

The 2006 Larrucea survey detected pygmy rabbit (*Brachylagus idahoensis*) in many locations throughout the SFO (Larrucea, 2006). Pygmy rabbit are dependent on sagebrush, primarily big sagebrush (*Artemisia tridentata*) located in deeper soils or in drainage bottoms where soils are loamy and basin big sagebrush can grow. Soil types where burrows are found can be loamy to ashy and burrows are generally found greater than 72 cm (20 in) deep. In Oregon, overall shrub cover at pygmy rabbit sites averaged 28.8% and ranged from 21.0-36.2%. According to the species field report for the Ruby Pipeline, 60.0 percent of sites in Nevada exhibited 26–50 percent canopy cover. Larrucea and Brussard (2008) surveyed the historic range of pygmy rabbits in Nevada and California, and found a greater probability of occupancy by pygmy rabbits at sites with low (or no) understory. Pygmy rabbit burrows are almost always under big sagebrush and only rarely in the open. No pygmy rabbit burrows, pygmy rabbit sign, or pygmy rabbits were observed within or adjacent to the proposed guzzler sites.

Greater sage-grouse

On BLM lands of the SFO, there are over 50 historic and active sage-grouse (*Centrocercus urophasianus*) strutting grounds (known as “leks”) that are located primarily in open, low sagebrush habitats. Leks are areas where males display for breeding females. Early work estimated that most females nested within 2 miles of leks; however recent studies indicate that females may nest up to 4 miles away or further depending on surrounding habitat conditions (Knick and Connelly 2011). At least one radio collared female sage-grouse on the SFO successfully nested 9 miles from the lek she was captured on. Although many nests have been found in lower quality habitats (i.e. rabbitbrush dominated habitats or habitats with lack of perennial grasses and nesting cover) these are almost always unsuccessful due to nest abandonment and predation. Sage-grouse nest on the ground, most often under taller sagebrush cover (15-38% shrub canopy; 36 -79 cm shrub height) such as the “big” sagebrush types and Wyoming sagebrush (Connelly, 2000). Successful nesting habitat generally contains taller grass cover in association with this sagebrush (Connelly, 2000) although there is some variability across the range of sage-grouse. Sage-grouse utilize sagebrush stands as both winter and nesting habitat. Sage-grouse feed on sagebrush buds and forbs throughout much of the year, especially in winter, early spring through fall. Sage-grouse diets consist of 100% sagebrush during the winter months. Peak egg-laying and incubation varies from late March through mid-June, with

re-nesting stretching into early July. Brood-rearing habitats are wet meadows and riparian areas where the young can find abundant insects which are critical to their diets during the first few weeks of life. Forbs are important food sources for brood rearing and pre-nesting hens.

During the dry summer months, sage-grouse require free-formed water; generally grouse use free-formed water in association with riparian areas although in the Massacre PMU, pit reservoirs are also important water sources for sage-grouse in some areas. Estimated summer home range is 2.5 – 7 km² (618-1,730 ac) (Connelly, 2000).

During field visits to the proposed guzzler sites, sage-grouse sign was found around some riparian areas and on upland sites indicating use of these areas, although little to no sage-grouse sign was found in selected locations, indicating only limited seasonal use, possibly as a result of no surface water in the vicinity of the guzzler locations. All wildlife water developments are within a 4 mile buffer of known active lek locations.

Golden eagle

Golden eagles, a BLM sensitive species, regularly forage within the SFO and locally utilize cliffs for nesting. An early study from central California showed that mammals made up 77 percent of golden eagle diets (specifically ground squirrels, jackrabbits, and black-tailed deer fawns), although there was also an assortment of birds (including turkey vulture), snakes, and a few fish (Carnie 1954). Golden Eagles exist in all allotments where guzzlers are proposed and raptors are commonly observed throughout the SFO.

Upland Game Birds

Upland game birds including chukar and California valley quail occur throughout the SFO. Chukar frequent the 5,000 to 7,000 foot elevation zone where annual moisture averages 8 to 12 inches. Typically this elevation and precipitation zone is characterized by sagebrush plant communities. Steep canyons and rocky areas immediately adjacent to water sources are the most common areas where chukar are found. Chukar water site selection has also been correlated to shrub cover with areas of 11% or more canopy cover being preferred watering sites. (Larsen et al., 2007). Chukar generally disperse later in the fall when precipitation occurs that allows birds to acquire water from vegetation or standing water in rocks and on the soil surface. Cheatgrass is an important forage plant for chukar. California valley quail generally occur near riparian areas and in dry floodplain habitats where brush cover is higher and adequate hiding cover is available. Quail prefer to forage on seed heads and are generally found near riparian zones where cover is higher and water is present. Quail will disperse from these areas later in the fall when precipitation occurs that allows birds to acquire water from vegetation or standing water in rocks and on the soil surface.

Predators

Common predators within the SFO include both aerial and terrestrial predators. Common aerial predators include ravens, hawks, and eagles. Common terrestrial predators include coyotes, foxes, bobcats, and mountain lions. These species exist throughout sage-steppe environments and seasonal movements reflect movements of common prey species. Coyotes and ravens are the most common predators observed within the SFO.

Ungulates

Pronghorn antelope

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Pronghorn antelope (*Antilocapra americana*), or pronghorn, can be found throughout the SFO yearlong, and are known to kid in open expanses near playa lakes and low sagebrush habitats (BLM SFO). Low sagebrush habitats are the most frequented habitats throughout the year by pronghorn antelope. Pronghorn prefer open rangelands that support a variety of vegetative types. Predation issues are generally considered to be the factor why pronghorn are not typically found in heavier cover types. Areas with low shrubs typify summer habitat with a diversity of native grasses and forbs (Gregg et. al. 2001). Vegetative heights where pronghorn are found can vary; however 10-18 inches has been reported for pronghorn in grassland and shrub steppe communities (Yoakum 2004). Pronghorn do not appear to be dependent on open water, if there is sufficient moisture in the vegetation (Reynolds 1984, O’Gara 1978). During the dry summer months, pronghorn antelope are dependent upon free- formed water and frequent riparian areas and wet meadows. In the drier portions of the SFO, pronghorn often use pit reservoirs. Although forbs are an important component of the diet, browse is the dominant food ingested (Pyshora 1977). Like all big game species, forbs are a preferred forage and contribute a high amount of protein and minerals to the diet of pronghorn antelope.

Mule deer

Mule deer (*Odocoileus hemionus*) use occurs throughout the year in the SFO. Areas of the SFO where the vegetation consists primarily of low sagebrush and associated grasses and forbs are often avoided because of the lack of hiding cover and thermal cover. Within the SFO, there are interconnected expanses of heavier shrub cover and tree cover that are seasonally used by mule deer. Areas within the SFO where a mixture of Wyoming, mountain, and big sagebrush exist are typically the areas where mule deer use is concentrated (although mule deer are observed in all sagebrush habitats), with most mule deer seeking higher elevation areas in the summer months. To aid in thermoregulation, deer utilize various topographic aspects, south in the winter and north in the summer. Heavy shrub and tree cover also aids in thermoregulation. Deer are generally classified as browsers, with shrubs and forbs making up the bulk of their annual diet. Grasses are generally only consumed early in the spring when they are still green and higher in total digestible nutrients. The diet of mule deer is quite varied and the importance of various classes of forage plants varies by season; however sagebrush and bitterbrush are important components throughout the year.

Rocky Mountain Elk

Established Rocky Mountain Elk populations (*Cervus elaphus*) are known to exist within the SFO, although most groups are small isolated groups of elk that have been observed within the Nevada portion of the SFO by NDOW and BLM biologists (Chris Hampson, personal communication). Current elk populations west of Nevada lands managed by the SFO and in the nearby Warner Mountains have likely not reached population levels where dispersal of elk herds is regularly occurring except in the northern portion of the SFO.

Big game discussion

The Nevada portion of the SFO is located in the NDOW hunt unit 011, 012, 013, and 014 units. NDOW collects data based on hunt units and not on an allotment basis and often report pooled information for big game from several units together. Mule deer data (see link below) for units 011-015 indicate that mule deer numbers vary from trending down to slightly increasing for the various mule deer populations in northwestern Nevada. The adjacent unit 033, the Sheldon Refuge, is also experiencing continued low recruitment levels. Mule deer are known to seasonally migrate between BLM managed lands (within hunt units 011, 012, 013, and 014) and the Sheldon

Refuge and important migratory corridors and transition habitats for mule deer exist within the SFO. Pronghorn populations in hunt units 011 and 015 are expected to continue increasing trends while those populations within hunt units 012, 013, and 014 are expected to remain static. According to NDOW, big game animals are experiencing declines due to drought condition (7 of the last 10 years) effects on vegetation, and competition with wild horses for limited forage and water resources. Despite the effects of drought, hunt unit 012 shows a slight upward trend in bighorn sheep numbers. NDOW does not track bighorn in unit 011 although they exist within the 011 unit. Source:

http://www.ndow.org/about/pubs/index.shtm#general_

Other Native Wildlife Species

Other species known to occupy within the SFO include black-tailed jackrabbit, ground squirrel, badger, lizards, coyote, raven, northern harrier, bats, and various songbirds. Data points from survey blocks conducted by the Great Basin Bird Observatory within the SFO indicate that several sage-steppe obligate birds besides Greater sage-grouse are likely to be found within the SFO. These include Brewer's sparrow, sage thrasher, and sage sparrow. These birds require a mix of open, patchy sagebrush, tall sagebrush, and grass cover for nesting and foraging. Active rodent burrows and ant hills were found during field tours, indicating a diversity of non-game species.

Mosquitoes and West Nile Virus:

West Nile virus is known to exist in both Washoe and Modoc Counties however there have been few confirmed cases and no known or measurable impacts to native wildlife within the SFO have been recorded. Although mosquitoes exist throughout the field office, lack of large bodies of standing water and distance between water sources aids in reducing mosquito populations. The largest concentrations of mosquitoes generally only occur in larger riparian areas. More information on West Nile Virus in Modoc and Washoe county is available at: <http://www.westnile.ca.gov/> and at <http://www.co.washoe.nv.us/health/ehs/vector/wnvFact.html>

Migratory Birds

Migratory birds are protected and managed under the Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703 *et. seq.*) and Executive Order 13186. Under the MBTA nests (nests with eggs or young) of migratory birds may not be harmed, nor may migratory birds be killed. Executive Order 13186 directs federal agencies to promote the conservation of migratory bird populations.

Most of the vegetation communities on the SFO are characterized by sagebrush species, primarily Wyoming sagebrush, mountain big sagebrush, basin big sagebrush, and low sagebrush, although other sagebrush species exist within the SFO. Migratory birds associated with these vegetative communities may include:

- black-throated sparrow (*Amphispiza bilineata*),
- Brewer's blackbird (*Euphagus cyanocephalus*),
- Brewer's sparrow (*Spizella breweri*),
- Canyon wren (*Catherpes mexicanus*),
- gray flycatcher (*Empidonax wrightii*),

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- green-tailed towhee (*Pipilo chlorurus*),
- loggerhead shrike (*Lanius ludovicianus*),
- rock wren (*Salpinctes obsoletus*),
- sage sparrow (*Amphispiza belli*),
- sage thrasher (*Oreoscoptes montanus*),
- western meadowlark (*Sturnella neglecta*), and
- vesper sparrow (*Poocetes gramineus*).

Most of these species require a diversity of plant structure and herbaceous understory. High levels of plant species diversity provides habitat for nesting, foraging and cover for a variety of species. Woodland species such as juniper offer nesting and foraging opportunities for many of these species. Riparian areas and riparian areas with a woody riparian plant species component are important habitats for some migratory bird species as they provide important foraging and nesting habitats. Riparian areas also serve as important transition habitats for a variety of species between seasons and are often heavily used during summer months.

3.8. Recreation

The primary recreation use in the project area is wildlife viewing, hunting and camping. Rock hounding, photography, mountain biking, hiking, and OHV/pleasure driving also occurs to lesser degrees. Camping is generally associated with hunting activity and usually occurs during the fall. Hunting demand for big game in Nevada is high, as documented by the number of big game applications in Nevada far exceeds the quota for big game tags that NDOW allows. See Table 3.4.6 for information on number of applicants for big game tags on lands managed by the SFO. Another indicator of demand for wildlife resources and associated recreational hunting opportunities is the willingness and support of organizations such as NBU, Rocky Mountain Elk Foundation, the Mule Deer Foundation and others to fund projects such as the proposed action. As population growth continues in California and Nevada, it is expected that demand for big game hunting opportunities and other wildlife pursuits is going to continue to increase.

3.9. Visual Resources

BLM's Visual Resource Management (VRM) system provides a way to identify and evaluate scenic values to determine the appropriate levels of management. It also provides a way to analyze potential visual impacts and apply visual design techniques to ensure that surface-disturbing activities are in harmony with their surroundings. The VRM system is categorized as follows:

Class I Objective: To preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention.

Class II Objective: To retain the existing character of the landscape. The level of change to the characteristic landscape should be low.

Class III Objective: To partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate.

Class IV Objective: To provide for management activities which require major modification of the existing landscape character. The level of change to the characteristic landscape can be high.

Table 3.4. Visual resource objective area class by project site

Water Development Site	Objective Area
Boulder Lake Guzzler	Class IV
Cherry Mt #1 Guzzler	Class IV
Cherry Mt #2 Guzzler	Class IV
Cherry Mt #3 Guzzler	Class IV
Cherry Mt #4 Guzzler	Class IV
Coleman Rim Guzzler	Class II
Surprise Valley Rim Guzzler	Class II
Table Lakes #1 Guzzler	Class II
Table Lakes #3 Guzzler	Class II

Small capacity wildlife water developments would generally be placed on sites that are similar in land form, located in small canyons near natural drainages. Slopes are relatively steep and the drainages are curvilinear. Rock outcrops add a rugged element to the landscape and are generally dark brown in color. Soils vary in color from grayish-brown to brown. Vegetation is a mixture of grey-green, green, and light brown in color, and occurs in mosaics of grasses and grasses with shrubs. The converging lines of the canyon focus the observer's attention on the path of the drainage. Large capacity wildlife water developments and in particular pronghorn wildlife water developments may be placed in rolling or relatively flat terrain while bighorn sheep guzzlers are generally placed in rugged terrain at or near rock rim or rock outcroppings. The proposed guzzler construction sites would fall within the Class II and IV Visual Resource Management areas.

Four of the wildlife guzzlers fall within VRM Class II areas. Changes in VRM Class II areas may be seen, but should not attract attention of the casual observer. The level of change to the landscape should be low. Changes should repeat the basic elements found in the natural features of the landscape in form, line, color and texture. The proposed action would modify the existing characteristics on the landscape however due to the location, placement techniques used during installation these modifications would remain low. The size and color of the guzzler would blend over time and would not attract attention or focus from the casual viewer.

Five guzzlers fall within VRM Class IV areas. Modifications in VRM Class IV areas can be major with the level of change to the landscape being high. The proposed action will modify the landscape moderately but is consistent with the VRM allowable class level.

3.10. Vegetation

The SFO supports vegetation typical of the Great Basin region. The extremes of climate, elevation, exposure, and soil type all combine to produce a diverse growth environment for a wide variety of plants. Vegetation varies from salt-tolerant shrubs and grasses which inhabit the lower valley bottoms, to the sagebrush steppe in the intermediate elevations, to the mountain brush in the higher elevations where precipitation levels increase. The boundary of these vegetation zones can be gradual or change abruptly, depending on the extremities of the factors listed above.

All project sites are in sagebrush(*Artemisia* spp.) dominated ecological sites. Sandberg Bluegrass and bottlebrush squirreltail are the most common grasses at most of the proposed sites. Bluebunch wheatgrass, thurber's needlegrass, and Great Basin wild rye also occur within and/or adjacent

to the proposed sites. Other shrubs that exist at the higher elevation sites include snowberry, serviceberry, and antelope bitterbrush. A diversity of forbs are present within the analysis area with the most common ones being *Lomatium*, *Eriogonum*, *Phlox*, and *Crepis* spp. Juniper exists at some of these sites and provides thermal and escape cover for wildlife. Cheatgrass (*Bromus tectorum*) generally only exists in low densities within the SFO although disturbance from wildfire and human activities generally increases densities relatively rapidly.

Big game guzzlers would be typically located in mountainous terrain in the northern desert shrub type adjacent to steep slopes dissected by numerous canyons and drainages. Sandberg bluegrass, and bottlebrush squirreltail are common grasses that would occur at or near most sites. Sagebrush would be the dominate species at most locations; other common shrubs include spiny hopsage, snowberry, shadscale, rabbitbrush, and antelope bitterbrush. Upland game bird habitat is most closely associated with the northern desert shrub type. Small game guzzlers would generally be located on the upland fans and benches, foothills, and intermediate mountains where water sources are lacking. Wildlife water developments are intended to provide water during the hot and dry summer months, and most of them would be constructed in plant communities dominated by sagebrush. There may be a few exceptions with pronghorn, which may make some use of the salt desert shrub community in the summer especially, if a permanent source of water is available.

3.11. Livestock

The proposed guzzlers are located within the following allotments:

Table 3.5. Livestock Allotments Where Guzzlers Are Proposed

Allotment	Number of Guzzlers
Nevada Coleman	1
Duck Lake	3
Bare	1
Bull Creek	3
Homecamp	2

Wildlife within the analysis area is not expected to have direct impacts on livestock production, agricultural fields, and/or agricultural products. Competition between livestock for water and to a lesser degree forage is a concern, especially during drought years when forage production is decreased and smaller water sources produce little to no water. All allotments within the analysis area have active livestock permits (cattle) and based on a GIS mapping using slope, pastures, stocking rates and distance from water; varying degrees of competition between livestock and wildlife is expected to occur over the majority of the field office.

Water developments designed for livestock use occur across the SFO. Although developments exist in sufficient numbers to support both livestock and wildlife, many of the developments across the SFO are non-functional and don't produce water or are located in areas where habitat quality has been degraded or lacks the habitat components needed for wildlife. Some of the non-functional water improvements were abandoned due to little water production from these sites and maintenance responsibility for these developments is generally the permittees. Additionally, water is sometimes shut off when livestock are not using a pasture or during certain seasons. This is concern due to wildlife becoming accustomed and/or dependent on these water sources. Livestock watering locations are often located near roads where maintenance is easier to perform and are not always necessarily in ideal wildlife habitats.

Cattle and wildlife have only a small amount of dietary overlap, however interspecific competition and use between wildlife and cattle can occur during certain periods of the year, especially at water sources. This generally occurs in areas that are not limited by slope, pasture, or water and are fully accessible to both wildlife and livestock.

3.12. Soils

Soils within the SFO are classified under the “Soil Survey of Surprise Valley-Home Camp Area, California and Nevada”. While soils within the SFO can be variable, soils are generally moderately to well drained and medium to moderately fine textured soils in the uplands/terraces and alluvial fans where guzzlers are typically located. Guzzlers are typically not located in playa bottoms or near valley floors where soils become deeper, with larger clay and silt components. Soils are generally moderately deep with an underlying mixed parent material in most guzzlers locations. Generally wildlife water developments are placed on drainage terraces or adjacent to rock outcrops. The drainage soils are deep, well drained, and moderately fine to medium textured. The soils adjacent to rock outcrops are shallow to moderately deep, well drained, and very gravelly or cobbly medium to fine textured. Water and wind erosion hazards are slight to moderate. More information on soil surveys is available at: <http://websoilsurvey.nrcs.usda.gov/app/>

3.13. Socio-Economics

Wildlife resources and the associated hunting opportunities contribute a large amount of income to the United States gross domestic product (GDP). In 2006 there was an estimated 12.5 million hunters in the U.S. and sportsmen that spent more than \$76 billion a year on hunting and fishing.

It is estimated that if sportsmen were a country, the \$76 billion dollars as a GDP would rank sportsmen 57th out of 181 countries(Nevada Wildlife- Presidents Post, Winter 2009, statistics from Congressional Sportsmen Foundation). Additionally, Nevada and other states have a large group of sportsmen based organizations that contribute substantially to the economy. Some of these groups include the Rocky Mountain Elk Foundation, Mule Deer Foundation, Nevada Bighorns Unlimited, Wild Sheep Foundation, Fraternity of the Desert Bighorn, Carson Valley Chukar Club, One Shot Antelope Club and others. The following tables indicate the demand for big game hunting opportunities and the costs for tags and application fees for the 011, 012, 013, 014, and 015 units. The amount of money spent on the associated costs related to hunting (e.g. gas, lodging, food, equipment, ect.) is difficult to estimate at a local and regional scale however research shows the effect is exponential (Loft 1989) and provides an important source of income for local, regional, and national economies. Locally, the communities within Modoc and Washoe counties experience increases in business associated with hunting from the months of August-January with expenditures ranging from food, lodging, facilities to game processing and guide services. More information on tag fees in Nevada is available at: <http://www.ndow.org/about/license/fees.shtm>. Draw odds and statistics are available at: <http://www.ndow.org/hunt/resources/odds/index.shtm>

Table 3.6. Applications, Tags Sold, and Draw Odds For Hunts in Lands within SFO Boundaries

RESIDENT ANTLERED MULE DEER ANY LEGAL WEAPON HUNT 1331			
	Applications	Tags Sold	Draw Odds
011- 013	850	146	6 to 1

14	626	66	10 to 1
15	130	28	5 to 1
Total Applications and Tags	1606	240	
RESIDENT ANTLERED MULE DEER MUZZLELOADER HUNT 1371			
	Applications	Tags Sold	Draw Odds
011 - 013	29	6	5 to 1
14	40	55	8 to 1
15	3	2	2 to 1
Total Applications and Tags	72	63	
RESIDENT ANTLERED MULE DEER ARCHERY HUNT 1341			
	Applications	Tags Sold	Draw Odds
011 - 013	73	20	4 to 1
14	47	14	4 to 1
15	4	2	2 to 1
Total Applications and Tags	124	36	
	Applications	Tags Sold	Draw Odds
011- 013	7	5	2 to 1
14	15	2	8 to 1
15	9	1	9 to 1
Total Applications and Tags	31	8	
	Applications	Tags Sold	Draw Odds
011- 013	315	11	29 to 1
14	148	5	30 to 1
15	120	2	60 to 1
Total Applications and Tags	583	18	
	Applications	Tags Sold	Draw Odds
011 - 013	17	2	9 to 1
14	1313	22	7 to 1 7 to 1
15	16	2	8 to 1
Total Applications and Tags	1346	26	
NONRESIDENT ANTLERED MULE DEER ARCHERY HUNT 1341			
	Applications	Tags Sold	Draw Odds
011 - 013	19	2	10 to 1
14	17	2	9 to 1
15	8	2	4 to 1
Total Applications and Tags	44	6	
RESIDENT CALIFORNIA BIGHORN SHEEP HUNT 8151			
	Applications	Tags Sold	Draw Odds
12	1,286	9	143 to 1
14	220	2	110 to 1
Total Applications and Tags	1,506	11	
NONRESIDENT CALIFORNIA BIGHORN SHEEP HUNT 8251			
	Applications	Tags Sold	Draw Odds
12	3,115	1	3115 to 1
Total Applications and Tags	3,115	1	
RESIDENT BUCK ANTELOPE ANY LEGAL WEAPON HUNT 2151			
	Applications	Tags Sold	Draw Odds
011	411	86	5 to 1
012 - 014	1,054	125	9 to 1
15	430	84	6 to 1
Total Applications and Tags	1895	295	
RESIDENT BUCK ANTELOPE ARCHERY HUNT 2161			
	Applications	Tags Sold	Draw Odds
011	41	23	2 to 1

012 - 014	92	34	3 to 1
15	56	32	2 to 1
Total Applications and Tags	189	89	
NONRESIDENT BUCK ANTELOPE ANY LEGAL WEAPON HUNT 2251			
	Applications	Tags Sold	Draw Odds
011	120	10	12 to 1
012 – 014	189	14	14 to 1
15	92	9	11 to 1
Total Applications and Tags	401	33	
NONRESIDENT BUCK ANTELOPE ARCHERY HUNT 2261			
	Applications	Tags Sold	Draw Odds
011	8	3	3 to 1
012 – 014	24	6	4 to 1
15	22	4	6 to 1
Total Applications and Tags	54	13	
Totals for all Species and Hunts	10,966	839	

Table 3.7. Tag Fees for Nevada

Resident Tags	
Regular Hunting License	\$33.00
For persons 18 years of age and older.	
Deer Tag	\$30.00
Antelope Tags	\$60.00
Bighorn Sheep Tags	\$120.00
Application fees (resident)-online application fee per species	15.00
Non-Resident Tags	
Regular Hunting License	\$142.00
For persons 18 years of age and older.	
Deer Tag	\$240.00
Restricted Deer Tag	\$300.00
Bighorn Sheep Tag	\$1,200.00
Antelope Tag	\$300.00
Application fees (non-resident)-online application fee per species	16.50

3.14. Wild Horses and Burros

Wild horses are managed on nine designated herd management areas (HMAs) distributed throughout the SFO within the analysis area. The HMAs encompasses approximately 540,000 acres and range in size from about 23,500 to 97,000 acres. Wild horse populations are currently estimated at approximately 875 horses. These population numbers exceed the existing appropriate management levels for the SFO of 670 horses at high AML by approximately 205 horses. Populations consist of bands that range from a few to many animals. Wild horses on the SFO are direct descendants of domestic horses escaped or released by explorers, the cavalry, emigrants, miners, ranchers, or Native Americans (Berger, 1986). There is evidence of Spanish breeding stock within the Carter Reservoir HMA. Current wild horse herds exhibit a wide variety of characteristics of domestic breeds and display numerous colors and color patterns. Wild horses would not be able to utilize available water from the wildlife water developments since the developments would be fenced to exclude them.

3.15. Fire

There's a slight possibility that construction equipment could cause a fire especially during the hot, dry summer months. Fire could result from vehicle exhausts or blasting operations or some other equipment that could cause conditions for fuel to ignite.

3.16. Lands with Wilderness Characteristics

None of the guzzler locations are within or adjacent to designated wilderness areas or WSA's. All BLM lands, including those within the Action Area, were inventoried for wilderness characteristics in 1979 as directed under the Federal Land Policy and Management Act of 1976 (FLPMA). Under section 603 of FLPMA, lands found to have wilderness characteristics in the original 1979 inventory were designated as either Wilderness Areas (WAs) or Wilderness Study Areas (WSAs). Under a 2003 settlement agreement between the Department of Interior and State of Utah, the BLM agreed that it has no authority to establish new WSAs. However, under section 201 of FLPMA, the BLM is required to maintain current inventories of all public land resources, including wilderness characteristics. The wilderness characteristics inventory for lands within the SFO is in the process of being updated as required under section 201 of FLPMA.

Wilderness characteristics are assessed using several screening criteria. Listed in order, they include; size, natural condition, outstanding opportunities for solitude or for primitive and unconfined recreation, and special or supplemental values (not required).

The SFO 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).

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Chapter 4. Environmental Effects:

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This section describes the environmental consequences of implementing the Proposed Action and the No Action Alternative listed in Section 2.0. This section describes the Direct and Indirect Effects, and Cumulative Effects for all resources that may be impacted from the alternatives. The direct, indirect and cumulative effects contained in the following chapter include considerations brought forward in both internal and external scoping. Past and present actions considered in the cumulative effects analysis include vegetation treatments, range improvements and livestock grazing. Reasonably foreseeable future actions identified by the interdisciplinary team include vegetation treatments on neighboring public and private lands, post treatment grazing management, and water redevelopment for livestock.

4.1. Cultural Resources

Direct and Indirect Impacts of the No Action Alternative:

A cultural resource inventory was completed for the wildlife water developments that are proposed for immediate construction. Since the results of surveys indicated that building guzzlers would not affect cultural resources, no impacts to cultural resources are anticipated. Water developments would only be authorized on those sites where cultural resources would not be adversely impacted and in areas that do not contain a high density of archaeological sites.

Direct and Indirect Impacts of the No Action Alternative:

Under the No Action Alternative, guzzler installations would not occur and no impacts to cultural resources would occur.

4.2. Riparian/Wetlands/Water Quality

Direct and Indirect Impacts of Proposed Action:

Under the Proposed Action, wildlife use at riparian/wetland sites may be slightly reduced due to new water sources in habitats where competition is expected to be slight. Current riparian conditions are not expected to change due guzzlers not being available to wild horses and cattle and wild horse and cattle distribution remaining unchanged. Riparian conditions are expected to remain in nearly the same condition as the No Action Alternative. Slightly more water may become available in riparian areas due to more wildlife species watering at guzzler locations and not in riparian/wetland areas. Overall, the impacts of the Proposed Action are expected to be negligible on riparian/wetland sites.

Direct and Indirect Impacts of the No Action Alternative:

The No Action Alternative would not allow guzzlers to be installed and there would be slightly more wildlife use at riparian sites compared to the proposed action. The impacts of the No Action Alternative are expected to be negligible on riparian/wetland sites.

4.3. Noxious Weeds

Direct and Indirect Impacts of Proposed Action:

No noxious weeds are known to occur at proposed sites and noxious weeds are not expected to establish in the proposed guzzler sites or the area immediately adjacent to the proposed guzzler

sites. Implementation of the Proposed Action is expected to have a negligible on noxious weeds. Cheatgrass is expected to establish in small stands where soil is disturbed but will be minimized by revegetation of disturbed areas with native plants and the overall small area that each guzzler encompasses (approximately 1 acre). The impact of the Proposed Action on noxious weeds is expected to be negligible.

Direct and Indirect Impacts of the No Action Alternative:

The No Action Alternative would not allow guzzlers to be installed and there would be no impacts on Noxious Weeds.

4.4. Wildlife Including T&E Species and Migratory Birds

Direct and Indirect Impacts of Proposed Action:

The Proposed Action is expected to provide a benefit to big game animals (bighorn sheep, pronghorn antelope and mule deer) and upland game birds (sage grouse, California valley quail, and chukar) and a variety of non-game wildlife that require free formed water.

Each guzzler is expected to improve habitat suitability for wildlife within a 1-2 mile radius of the guzzler location for big game species and birds. Big game guzzlers are designed to benefit small and large wildlife species alike. Each guzzler would provide a benefit to wildlife species that require free-formed water during some portion of the year. Wildlife species expected to benefit from the Proposed Action include California bighorn sheep, mule deer, pronghorn antelope, sage grouse, chukar, valley quail, and associated predators such as bobcats, raptors, and mountain lions. Guzzler sites are expected to reduce long distance dispersal of many wildlife species during summer months and may preclude death of long ranging wildlife that are dependent on free formed water that is often unreliable during drought periods.

California and BLM Sensitive Species

California bighorn sheep

Bighorn Sheep

Construction of large capacity wildlife water developments in bighorn sheep habitat would have a beneficial localized impact on bighorn sheep since it would provide an additional source of water for them that is free of competition from livestock and wild horses and of higher quality due to lesser amounts of bacterial contamination and fecal coliform than water sources where livestock and/or wild horses water. Recent research conclusively showed that domestic sheep and goats can transmit diseases to bighorn sheep that can result in mortality and die-offs in bighorn sheep populations (Paulraj et al. 2010, Foreyt et al. 2009). Under the Proposed Action, bighorn sheep are not expected to disperse as long of distances during the summer months due to water being more readily available than it is currently. The probability of contact with domestic sheep would be also be reduced, especially in Surprise Valley where domestic sheep are present immediately adjacent to occupied bighorn sheep habitat, due to improved water sources away from domestic sheep bands. If an epizootic disease was contracted by bighorn sheep in the future, it is expected that the disease would have less of an effect on bighorn sheep under the Proposed Action due to bighorn sheep being more evenly distributed across the Hays range and adjacent ranges and less contact among individuals across the entire meta-population. This would allow NDOW the possibility of controlling a disease event before it spreads through the meta-population and would

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improve the possibility of adjacent sheep populations recolonizing areas after a disease event. The small water wildlife water developments would not have an impact on bighorn sheep and overall, no adverse impacts are expected to bighorn sheep.

Pygmy rabbit

Guzzler sites are not expected to have impacts on pygmy rabbits due to this species generally requiring very little to no free-formed water beyond what they acquire from vegetation they consume. Guzzler sites will not be located in active pygmy rabbit burrows so no direct impacts will occur to this species as a result of the proposed action.

Greater Sage-grouse

Sage-grouse habitat management in Nevada is guided by a number of different documents. This includes the *2008 SFO RMP, Management Guidelines for the Sage Grouse and Sagebrush Ecosystems in Nevada, Vya, Massacre, and Buffalo-Skedaddle PMU Conservation Strategies*, and *Management Considerations for Greater Sage Grouse in Nevada*. There are no specific guidelines in these documents for wildlife water developments relative to Sage-grouse habitats. However, general applications for wildlife water developments can be derived from them. They recommend that small structures be placed a minimum of 1 km (0.6 miles) from known leks. Following this guidance, wildlife water developments should be placed a minimum of .6 miles from known leks. These guidelines would be followed for all wildlife water developments unless the wildlife water development sites were located in areas where sage-grouse use is not expected to occur e.g. mahogany stands, rock rims, slopes greater than 30%, etc. All of the large game wildlife water developments proposed for immediate construction meet these guidelines. Sage-grouse have been observed using the large capacity wildlife water developments with the open drinkers. Placement of large capacity wildlife water developments in sage-grouse habitat may actually have a slight benefit to them, especially in the drier portions of the Massacre PMU.

Overall, wildlife water developments should not adversely impact sage-grouse since they would be constructed within the guidelines cited above.

Golden eagle

Guzzler may provide a slight benefit to golden eagles as a result of localized increases in prey populations in the vicinity of guzzlers. It's possible that construction of wildlife water developments could occur during the nesting season. This could result in minimal disturbance and possibly abandonment of nests; however the incidence of this would be expected to be extremely limited and isolated and impacts to populations would be insignificant. If a raptor nest is discovered in the vicinity of a guzzler site, Limited Operating Periods (LOP's) will be implemented per the 2008 SFO RMP to reduce impacts on nesting raptors.

Upland Game Birds

Construction of large and small capacity wildlife water developments in potential chukar and quail habitat would have a beneficial impact on them. Chukar in particular, adapts well to new wildlife water developments. There are large expanses of potential chukar habitat that are only lacking water sources. Construction of wildlife water developments would benefit chukar populations and no adverse impacts are anticipated.

Predators

Wildlife water developments have the potential to affect aerial and terrestrial predator populations and dynamics. Potential effects could include changes in the abundance and distribution of ravens and other predators which are often found in close association with water. Ravens are known to prey upon sage-grouse nests and a potential for increase in local raven populations from guzzler installation exists because ravens may be drawn to the water and the associated increase in prey population numbers. The effect on sage-grouse is expected to be minimal due to the water generally not being a limiting factor to raven home ranges during sage-grouse nesting season when water is abundant and ephemeral drainages and water sources still have water.

Coyotes and other predators may increase in number near guzzlers and prey on wildlife species. Questions about predator densities and distribution relative to water sources have been addressed and answered by researchers, e.g. Rosenstock *et al.* (1999 and 2004). Coyotes are the most likely predators to be found within the SFO. Rosenstock *et al.* (2004) found that radio collared coyotes were no more likely to be found at water sources than other random points in coyote habitat. This is also true for other predatory species known to access guzzlers including birds of prey, bobcats and foxes. The impact of new water sources relative to predation is expected to be minimal.

Ungulates

Pronghorn antelope

Construction of large capacity wildlife water developments in pronghorn antelope habitat would have a beneficial localized impact on pronghorn antelope since it would provide an additional source of water for them that is free of competition from livestock and wild horses and of higher quality due to lesser amounts of bacterial contamination and fecal coliform than water sources where livestock and/or wild horses water. The small water wildlife water developments would not have an impact on pronghorn antelope and overall, no adverse impacts are expected to pronghorn antelope.

Mule deer

Construction of large capacity wildlife water developments in mule deer habitat would have a beneficial localized impact on mule deer since it would provide an additional source of water for them that is free of competition from livestock and wild horses and of higher quality due to lesser amounts of bacterial contamination and fecal coliform than water sources where livestock and/or wild horses water. The small water wildlife water developments would not have an impact on mule deer and overall, no adverse impacts are expected to mule deer.

Rocky Mountain Elk

No guzzlers are being constructed for use by elk however it is possible that in the future, elk populations will reach levels where resident elk populations become established in some areas and use of guzzlers occurs. If elk use occurs at guzzlers, the impact to elk is expected to be positive since guzzlers would provide an additional source of water for them that is free of competition from livestock and wild horses and of higher quality due to lesser amounts of bacterial contamination and fecal coliform than water sources where livestock and/or wild horses water. The small water wildlife water developments would not have an impact on elk and overall, no adverse impacts are expected to elk.

Other Native Wildlife Species

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The minimal habitat disturbance effects of the Proposed Action could displace small, less mobile species such as fence lizards and great basin pocket mice. Comparing an artificial water site to a dry site, Cutler and Morrison (1998) found that rodent and reptile populations were affected little, but bird and amphibian abundance and species richness were higher at watered sites.

Wildlife adjacent to the guzzler sites could be temporally displaced during the construction period due to human presence and noise but the effects would be negligible after construction is completed. There would be a negligible disturbance effect on larger species as a result of construction of the guzzlers and any range shifts and movement patterns would be small and only during the construction phase of the project. Habitat effects from the guzzler are expected to be short (less than two years) and wildlife use should increase adjacent to guzzler locations within approximately two years of construction.

Non game species such as insects, particularly bees, are abundant near these water sources as well. Some increase in the population of these species is possible if water was previously limiting their numbers. Bats have been observed and photographed using guzzlers as a water source. Some small animals and insects could become trapped and drown in the drinker, however construction of the appropriate ramp would minimize this risk. The drinkers would be especially beneficial to bats and migratory birds. The guzzlers would serve as a permanent water sources for these animals as well as breeding grounds and water resources for forage species (insects). Bats would also benefit from the increased prey abundance and permanent water. The Proposed Action is expected to have a negligible effect to species that do not require free formed water e.g. kangaroo rats, deer mice, etc.

Mosquitoes and West Nile Virus:

The recent Federal Register publication pertaining to sage-grouse states "...a complex set of environmental and biotic conditions that support the West Nile virus cycle must coincide for an outbreak to occur. Currently the annual patchy distribution of the disease is keeping the impacts at a minimum" (Federal Register 2010, at page 13970). Under the Proposed Action, new water developments would occur and would provide additional habitat for mosquitoes. Guzzlers serve as ideal breeding habitat for mosquitoes and would be in direct vicinity of where wildlife regularly water during drought and summer months. The effect on wildlife directly is expected to be slight due to the fact that wildlife will have to access some water source during drought and summer months. Guzzlers could however serve as a refuge for mosquitoes during dry periods and then disperse into previously unsuitable areas during wet periods. The risk of this occurring is slight due to the current patchiness of West Nile Virus in Washoe and Modoc County and the uneven distribution of water that will exist even after guzzler installation due to the arid environment that the SFO exists in.

Migratory Birds

Guzzlers can provide excellent resources for stopover habitat for migrating birds. They may use the wildlife water developments as a source of water; however, their use of them is not well documented. It's possible that construction of wildlife water developments could occur during the nesting season. This could result in minimal disturbance and possibly abandonment of nests; however the incidence of this would be expected to be extremely limited and isolated and impacts to populations would be insignificant. Overall, construction of wildlife water developments would likely have little impact on migratory birds.

Direct and Indirect Impacts of the No Action Alternative

The no action alternative would result in a continued lack of permanent waters in areas where guzzlers are proposed, which would provide fewer resources for wildlife and would prevent some wildlife from utilizing greater portions of the available habitat. It would also result in fewer stopovers and lower quality foraging habitat for migratory birds and bats. The risk of contact between domestic sheep and bighorn sheep and a subsequent die-off would be increased compared to the Proposed Action. Competition between livestock, wildlife, and wild horses would continue unabated and would have negative effects on body condition and recruitment of large native ungulates, especially during drought years and the summer months. Wildlife would have less quality drinking water compared to the Proposed Action due to more fecal coliform and bacterial contamination from livestock and wild horses. Higher quality habitats that exist within the SFO that are not used due to lack of water would remain unavailable for wildlife use.

4.5. Recreation

Direct and Indirect Impacts of Proposed Action:

The primary recreation use in the project area is wildlife viewing, hunting and camping. Camping is generally associated with hunting activity and usually occurs during the fall. The Proposed Action is expected to increase recreational opportunities for small game and big game hunters and enhance wildlife viewing opportunities due to localized increases in wildlife populations. The Proposed Action is expected to disperse small game and big game species and increase overall hunting quality in the SFO due to increases in wildlife population numbers and a more even distribution of wildlife species across hunt units. As wildlife populations increased around guzzler locations, increased wildlife viewing opportunities and increased hunting opportunities in the vicinity of guzzlers is expected to occur. The Proposed Action is not expected to negatively affect other recreational opportunities and activities.

Direct and Indirect Impacts of the No Action Alternative:

Guzzler installation would not occur under the No Action Alternative and would result in a continued lack of permanent waters in areas where guzzlers are proposed which would provide fewer resources for wildlife and would prevent wildlife from moving into other areas; which could limit the areas in which hunters or wildlife viewers could observe wildlife. Hunting opportunities would not increase and hunting pressure would be more concentrated compared to the Proposed Action due to a more uneven distribution of wildlife species.

4.6. Visual Resources

Direct and Indirect Impacts of Proposed Action:

Construction of the guzzlers is within the objectives of the Class II and Class IV Visual Resource Management outlined in the 2008 SFO RMP. None of the project sites are located within a special designation area e.g. Wilderness, WSA, NCA. Guzzler construction is not expected to have a large effect on the existing on the existing landscape. Guzzler locations will not be evident to the casual observer. To reduce vandalism and blend guzzler locations into the natural environment, guzzlers will be located in areas where natural topography and landscape hides the location to the extent possible. Guzzlers will be painted and blended with naturally occurring colors (brown, tan, and gray) as needed to minimize visual impacts and hide location. Vegetation and rock

outcropping adjacent to the guzzler will be irregularly distributed and contrasting to reduce visual impacts of the guzzlers.

Once construction of the drinker is complete, the area would be restored using vegetation and rock and soil from the site to match the natural contours of the area. The fencing would be disguised to meet the line, color and texture of the surrounding natural landscape and vegetation to reduce the visibility to the casual observer. Some of the proposed sites will be visible from existing routes or jeep trails, although these routes are generally rough and rarely traveled. Very limited visual impacts would occur to the natural landscape and visual resources due to the proposed action.

Direct and Indirect Impacts of the No Action Alternative:

The No Action Alternative would not allow guzzlers to be installed and there would be no impacts on Visual Resources

4.7. Vegetation

Direct and Indirect Impacts of Proposed Action:

Marshal *et al.* (2005) specifically looked at vegetation near water sources in the Sonoran Desert in California and failed to measure any impact to vegetation by native ungulates attracted to water sources. There could be an increase in consumption of forage by wildlife as population size increases and/or distribution changes with the addition of new guzzlers which could have a slight negative effect on plant growth as a result of plant hedging. This is expected to only occur in isolated areas across the SFO. Consumption of forage would be greatest nearest the guzzler site and would lessen as distance from the guzzler site increased. Vegetation at the guzzler site would be disturbed during construction and would result in loss of some plants at the guzzler location. The effects of the Proposed Action on vegetation are expected to be minimal due to the small area of disturbance and reseeded of disturbed areas where guzzlers are installed. Overall the Proposed Action is expected to have a negligible effect on the native plant community and the vegetation community structure and composition would remain sustainable.

Direct and Indirect Impacts of the No Action Alternative:

The No Action Alternative would not allow guzzlers to be installed, animal movement and foraging habits would not be altered, and there would be no impact on vegetation resources.

4.8. Livestock

Direct and Indirect Impacts of Proposed Action:

Impacts to livestock from the Proposed Action would be slight to negligible due to the same amount of water resources being available to livestock as before guzzler installations. Competition for water between livestock and wildlife would be reduced compared to current conditions due to wildlife having more watering sites. This is not expected to have a measurable effect on livestock due to livestock generally being the dominant species at watering sites. Slightly more water would be available for livestock due to less water use by wildlife compared to current conditions and wildlife dispersing into previously unused areas. Guzzler locations are in areas where little to no cattle use currently occurs (due to lack of water) and installing guzzlers would not affect livestock distribution patterns. Small calves could occasionally access guzzlers

underneath the fence and water from the guzzler. This is generally a relatively rare event and calves have little crossing out of the guzzler.

The Proposed Action could negatively affect livestock operators that wished to focus their livestock operation on domestic sheep and convert cattle AUM's to sheep AUM's. If bighorn sheep populations did become established in new areas and continued to expand their range, the BLM and NDOW would have to consider the impact that conversion of cattle AUM's to sheep AUM's could have on bighorn sheep populations. This impact is expected to be minimal due to the California side of the SFO already being designated as an area where domestic sheep are allowed and the majority of the Nevada portion of the SFO having existing bighorn sheep populations and no currently authorized domestic sheep grazing. There is currently only one permittee that has shown interest in converting cattle AUM's to sheep AUM's within bighorn sheep habitat. If bighorn sheep moved into new areas there could be increased pressure on private landowners to maintain fences to ensure separation between domestic sheep and bighorn. The overall impacts of the Proposed Action on livestock are expected to be slight.

Direct and Indirect Impacts of the No Action Alternative:

Impacts to livestock from the No Action Alternative would be slight to negligible due to the same amount of water resources being available to livestock. Competition between livestock and wildlife would not be reduced due to no new wildlife watering sites. Competition with wildlife is not expected to have a measurable effect on livestock due to livestock generally being the dominant species at watering sites. Slightly less water and forage would be available for livestock due to no new water sites for wildlife and wildlife not dispersing into unused areas. The overall impacts of the No Action Alternative to livestock are expected to be negligible.

4.9. Soils

Direct and Indirect Impacts of Proposed Action:

Impacts to soils are expected to be minimal since there is very little disturbance associated with the wildlife water development construction. A very small site is excavated for the 325-gallon tank on the small wildlife water development and it would be located under the apron, protecting it from erosion resulting from rain run-off. The larger area excavated for up to 6 1,250 gallon tanks for the large wildlife water development is still relatively small and isolated. The tanks would fill the excavation and would capture any rain that strikes them, since they are designed to capture the run-off in their storage area. Soil erosion would be slightly increased due to alternation of the soil structure and mixing of the topsoil and subsoil. Erosion impacts would be slight due to the small amount of soil disturbance, the compaction of soils that would occur when the guzzlers were finished, and seeding of disturbed soils to reduce soil erosion. Overall, disturbance to soils would be minimal, since approximately 0.1 acres of disturbance would be associated with small capacity wildlife water developments and 0.5 acres of disturbance with large capacity wildlife water developments.

Direct and Indirect Impacts of the No Action Alternative:

The No Action Alternative would not allow guzzlers to be installed and there would be no impact on soil resources.

4.10. Socio-Economics

Direct and Indirect Impacts of Proposed Action:

Implementation of the Proposed Action would likely provide a benefit to the local economies within Modoc and Washoe counties due to increases in wildlife numbers providing more recreational opportunities and more spending locally as a result of increased recreation and hunting opportunities. The state of Nevada and NDOW could benefit slightly from the Proposed Action due to potential increases in wildlife populations resulting in increased tag sales for big game and/or increased applications for the 011,012,013,014 hunt units. The Proposed Action would slightly increase the ability of NDOW to meet the demands for big game hunting opportunities. Bighorn sheep populations would be expected to increase as a result of the Proposed Action and increased revenues would occur as a result of increased hunting opportunities for this species. Recreation from wildlife viewing would be expected to slightly increase, especially for bighorn sheep, resulting in increased expenditures in local economies as a result of the proposed action. The Proposed Action is not expected to have any negative benefits associated with Socioeconomic Resources.

Direct and Indirect Impacts of the No Action Alternative:

The No Action Alternative would not allow guzzlers to be installed and increases in recreational opportunities and the associated income to local economies and the state of Nevada would not occur. NDOW would not increase progress towards meeting the demand for hunting tags due to no new developments occurring and wildlife populations not increasing. NDOW would have to pursue alternative measures to increase wildlife populations and hunting opportunities for the public. NDOW would likely not have as much of an increased demand for hunting opportunities compared to the Proposed Action due to no increases in habitat suitability for wildlife. Under the No Action Alternative, increased hunting opportunities would not occur and expenditures by sportsmen into local communities and businesses would not increase. Bighorn sheep would have a higher chance of dispersing into Surprise Valley and interacting with domestic sheep under the No Action Alternative. This increases the chances of another epizootic disease event and would negatively affect NDOW revenues from license and tag sales associated with this species. Augmentations of bighorn sheep populations could be problematic due to the increased chances of contact between domestic sheep and bighorn sheep in the future, which would negatively affect future license and revenue sales associated with increased bighorn sheep hunts. Wildlife viewing opportunities would not be improved under this alternative and increased in expenditures related to wildlife viewing would not be locally increased. Overall, the No Action Alternative is expected to have a slightly negative effect related to Socio-Economics.

4.11. Wild Horses and Burros

Direct and Indirect Impacts of Proposed Action:

Both small and large capacity wildlife water developments would have potential direct impacts on wild horse individuals. The smell of water could draw animals to guzzler sites, especially during drought years. Monitoring of existing livestock water developments has shown wild horses are often persistent and can cause major damage to fencing and water development structures and injury to themselves. High wild horse populations, competition with livestock and wildlife, and lack of available water (e.g., drought, non-functional livestock water developments) may increase the pressure on inaccessible wildlife waters (guzzlers). Wild horses may breach fencing and

become injured or entrapped in fencing material, especially barbed wire. Foals may pass under, and older animals may pass through, or over pipe fencing and become temporarily separated from other herd members causing social distress and possible entrapment. Impacts may include an increase of injury or entrapment. These occurrences are expected to be relatively rare due to guzzler locations being located in relatively rugged terrain and located in areas where wild horse use is not evident due to current lack of water sources. This impact has never been documented or observed on a guzzler in northern Nevada (Clint Garrett, personal communication). No indirect impacts are anticipated.

Direct and Indirect Impacts of the No Action Alternative:

Under the No Action Alternative, guzzler installation would not occur and wild horse movements would remain unchanged with no possibility of entanglement or entrapment in guzzler fences.

4.12. Fire

Direct and Indirect Impacts of Proposed Action:

Impacts from fire would depend on the size, intensity and duration of a potential fire. If construction equipment should start a fire, it's anticipated that the construction crews would contain it before it spread out of control.

Direct and Indirect Impacts of the No Action Alternative:

Under the No Action Alternative, guzzler installation would not occur and no impacts relating to fire would occur.

4.13. Lands with Wilderness Characteristics

Direct and Indirect Impacts of Proposed Action:

Wildlife water developments under this EA will not be located within WSA's or designated wilderness areas however developments will likely be located in areas that have wilderness character. Guzzlers will be isolated across the landscape and are small in area (approximately 1 acre of total disturbance) and encountering a guzzler will be a relatively rare event for a casual observer. Wildlife developments may slightly impact natural conditions due to a new development however the impacts would be negligible due to the isolated nature of guzzlers in comparison to the large acreage of surrounding areas. Outstanding opportunities for solitude or for primitive and unconfined recreation in the area would be slightly improved due to increased wildlife habitats and improved wildlife distribution improving hunting and wildlife viewing opportunities. Special or supplemental values in most areas across the field office are related to wildlife and installing guzzlers would improve wildlife populations and the supplemental values in most areas. Overall, the Proposed Action is expected to have negligible impacts to Lands with Wilderness Character

Direct and Indirect Impacts of the No Action Alternative:

Under the No Action Alternative, guzzler installation would not occur and no impacts relating to wilderness character would occur.

4.14. Standard Operating Procedures

All crews working on this project would be alerted to the potential existence of cultural resources within the project area. The inadvertent discovery of cultural resources during project preparation or implementation would be immediately reported to the Field Office archaeologist, and work on the project would be immediately halted until the site is evaluated for NRHP eligibility.

The following operating procedures would be followed to minimize impacts.

1. Proposed sites would be identified with flagging for specific location of guzzler placement.
2. Juniper trees with wood rat nests, cavities or other signs of wildlife use would not be cut or disturbed and juniper having old growth characteristics would not be cut; all other juniper within one acre of the guzzler site can be cut to facilitate installation of the guzzler.
3. Disturbed soil areas will be revegetated with native seed/vegetation.
4. Guzzlers would be located in areas where visual impacts are minimized.
5. Helicopters will be used for transporting construction materials and personnel where no roads are present or vehicle use is not feasible.
6. No work or vehicle access to the project area will be allowed until the soils are dry enough to support the weight of the vehicles used (less than 4 inch rutting).
7. Blasting of guzzler sites will occur when soils are too rocky for machinery alone or sites are inaccessible to machinery.
8. Blasting will only occur after approval by the SFO Fire Management Officer and Field Manager.
9. All guzzlers sites will be surveyed for the presence of cultural resources prior to implementation. If a National Register Eligible site is discovered, the guzzler site will be moved so there is no impact to the site. The area within one acre of the guzzler site will also be surveyed for the presence of cultural resources prior to the cutting of trees. All top and scatter materials will be removed from National Register Eligible and unevaluated archaeological sites. Trees within a 45 foot (15 meter) radius of any rock features will be directionally felled away from the rock feature.
10. Overland travel with vehicles and equipment to and from guzzler sites will be minimized to the extent possible to reduce impacts to resources. If overland travel results in an apparent route to a guzzler site that could be driven to with a vehicle with relative ease; NDOW would be responsible for moving rocks and vegetation in a manner that would discourage off road use in the future.
11. No guzzlers will be located within active pygmy rabbit burrows.
12. No guzzlers will be located within .6 miles of an active sage-grouse lek and unless the wildlife water development sites were located in areas where sage-grouse use is not expected to occur e.g. mahogany stands, rock rims, slopes greater than 30%, sage-grouse leks were deemed inactive, etc. as determined by BLM and NDOW biologists.

13. The Operator must paint all structures within BLM’s Visual Resource Management (VRM) system Class II. All structures will be painted with a BLM approved color that enables the facility to blend with the natural background color of the landscape as seen from a viewing distance and location typically used by the public. The selected color should be one or two shades darker than the dominant background color, typically a vegetation color. BLM approved colors charts can be requested at: BLM_NOC_PMDS@blm.gov.

Table 4.1. Water Development Sites and Objective Areas

Water Development Site	Objective Area
Boulder Lake Guzzler	Class IV
Cherry Mt #1 Guzzler	Class IV
Cherry Mt #2 Guzzler	Class IV
Cherry Mt #3 Guzzler	Class IV
Cherry Mt #4 Guzzler	Class IV
Coleman Rim Guzzler	Class II
Surprise Valley Rim Guzzler	Class II
Table Lakes #1 Guzzler	Class II
Table Lakes #3 Guzzler	Class II

4.15. Monitoring and/or Maintenance

Periodic maintenance of the guzzlers will be conducted by NDOW and a report of the monitoring and maintenance will be sent to the BLM to update project files.

4.16. Cumulative Impacts Analysis:

“Cumulative impacts” are those impacts resulting from the incremental impact of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency or person undertakes such other actions.

4.17. Reasonably Foreseeable Action Scenario (RFAS)

The following reasonably foreseeable action scenario (RFAS) identifies the cumulative actions that would cumulatively affect the same resources in the cumulative impact area as the Proposed Action and alternatives.

1. Over the next 10-20 year period, reasonably foreseeable future actions include gathers of wild horses about every three to four years to remove excess animals to manage the population size within the established AML ranges. The excess animals removed would be transported to short-term corral facilities where they would be prepared for adoption, sale (with limitations), long-term pasture, or other statutorily authorized disposition.
2. Livestock grazing is expected to continue at similar stocking rates as those currently authorized. The BLM would continue to authorize permits that require livestock to be grazed under specific terms and conditions that are designed to achieve, or make progress towards achieving Land Health Standards.
3. Sage-grouse lek (breeding ground) counts will continue within the field office, to assist in contributing to population data, and to monitor habitat conditions.

4. Fencing of riparian/wetland areas will be considered to protect vegetation and cultural resources from grazing and trampling damage by livestock and wild horses.
5. Range maintenance including fencelines and livestock watering facilities across the SFO will continue.
6. The BLM will continue to monitor and treat infestations of noxious weeds and invasive species in the SFO using Integrated Weed Management.
7. Wilderness areas within the SFO will continue to be managed to retain wilderness values.
8. The Ruby Pipeline Project is a forty-two inch buried natural gas transmission pipeline that was constructed at the northern end of the SFO, within the Wall Canyon East, Nut Mountain, Long Valley, Massacre Lake, and Nevada Cowhead Allotments. The east to west pipeline was installed to transport natural gas from Wyoming to a transfer station located in Malin, Oregon. From this transfer station natural gas would be distributed throughout the western United States, primarily California, Oregon, and Nevada. There will be post construction activities, such as reclamation and seeding on-going. This project impacted the vegetative resource along 115 foot construction pipeline right-of-way in the short and long-term. In the short term, vegetation was removed during construction, but herbaceous vegetation is expected to recover within about 5 years following reclamation. In the long term, recovery of slower growing plants such as shrubs may take approximately 20 years. The BLM is conducting mitigation and monitoring as part of granting the right-of-way.

4.18. Cumulative Impacts

The Council of Environmental Quality (CEQ) regulations implementing NEPA defines cumulative impacts as. "...[T]he impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or Non-Federal) or person undertakes such actions." Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7). All resource values have been evaluated for cumulative impacts.

4.19. Cumulative Assessment Area

The cumulative assessment area (CAA) for wildlife water developments consists of public land in the SFO excluding the Black Rock Desert High Rock Canyon National Conservation Area, ACEC's, designated wildernesses, and WSA's.

4.20. Cultural Resources

Past and Present Actions

The dominant land uses within the CAA are livestock grazing and dispersed recreation. Livestock grazing has had slight impacts on cultural resources since cattle movement on the land typically affects cultural resources on the surface. These types of impacts are most evident in riparian areas.

Recreation may have had a small but immeasurable impact on cultural resources as people may collect artifacts when they encounter them.

Reasonable Foreseeable Future Actions (RFFAs)

The anticipated increases in wildlife populations may lead to an increase in hunting. This increase could lead to slightly more artifact collection than currently occurs as more people are in the field to encounter them.

4.21. Visual Resources

Past and Present Actions

The dominant land uses within the CAA are livestock grazing and dispersed recreation. Livestock grazing has minimal impacts on visual resources. Livestock facilities have impacted visual resources on a small and localized scale. Since recreation is dispersed and temporary, there has been no impact on visual resources.

RFFAs

Construction of wildlife water developments would have a negligible impact on visual resources, since the structures are relatively small and are often concealed by topography. If structures are readily evident to a casual observer, structures will be painted to match the surrounding landscape. Wildlife water developments will be randomly dispersed across the landscape. Increased hunting associated with them would not impact visual resources.

4.22. Recreation

Past and Present Actions

The dominant land uses within the CAA are livestock grazing and dispersed recreation. Livestock grazing has impacted wildlife habitat, especially riparian areas and aspen stands. Most riparian areas are important for a myriad of species and if they are damaged by livestock grazing, they don't provide the quality of habitat or water that an undamaged riparian area does.

RFFAs

Construction of wildlife water developments, especially the small capacity ones would have a positive impact on recreation. It's anticipated that the anticipated increased wildlife populations associated with them would provide more opportunities for hunting and wildlife viewing.

4.23. Livestock Grazing

Past and Present Actions

The dominant land uses within the CAA are livestock grazing and dispersed recreation. Recreation has limited impacts on livestock grazing. There may be random and dispersed vandalism of livestock facilities and in rare instances an occasional shooting of livestock.

RFFAs

The increased big game populations associated with large capacity wildlife water developments may cause a slight increase in competition between livestock and big game. However, the water developments would typically be constructed in areas that livestock wouldn't use because of a

lack of permanent water. The anticipated increase in small game and upland game populations associated with the small capacity water developments would have negligible to no impacts on livestock grazing.

4.24. Wild Horses and Burros

Past and Present Actions

The dominant land uses within the CAA are livestock grazing and dispersed recreation.

Livestock compete with wild horses for food and water. There are many variables that determine the degree of competition and they include the type and amount of vegetation available, number of livestock, season of use, water distribution and many other factors. Recreation has had limited impacts on wild horses. Some people enjoy viewing wild horses as part of their outdoor recreational experience.

RFFAs

The increased big game populations associated with large capacity wildlife water developments may cause a slight increase in competition between wild horses and big game. However, the water developments would typically be constructed in areas that wild horses wouldn't use because of a lack of permanent water. The anticipated increase in small game and upland game populations associated with the small capacity water developments would have negligible to no impact on wild horses.

4.25. Noxious Weeds

Past and Present Actions

The dominant land uses within the CAA are livestock grazing and dispersed recreation. Noxious weeds have become established in scattered locations. Livestock may have transported noxious weed seeds to those locations. Many of the noxious weeds have been identified along existing roads. Recreationists may also have transported noxious weed seed with their vehicles as they have traveled to various locations.

RFFAs

Some noxious weeds may become established at water development locations. Seeds may be transported to the construction sites by construction equipment. Many noxious weed species become established more readily in areas of disturbed soil similar to the water development site immediately after construction.

4.26. Soils

Past and Present Actions

The dominant land uses within the CAA are livestock grazing and dispersed recreation. Livestock grazing increases soil erosion in areas where it results in excessive removal of protective vegetative cover. The erosion reduces the productivity of the site.

Recreationists may impact soils along existing road and trails when they travel for recreational purposes. Unauthorized off-road travel has the potential to impact soils, especially during periods of time when soils are saturated.

RFFAs

There could be some increased localized soil erosion where large ungulates congregate near water developments. Increased hunter use of existing road and trails may slightly increase soil erosion along them.

4.27. Vegetation, Including threatened, Endangered, Candidate, and Sensitive Plant Species

Past and Present Actions

The dominant land uses within the CAA are livestock grazing and dispersed recreation. Livestock grazing has had an impact on vegetation, since that is what they graze. In some areas vegetative communities have been altered by continuous long-term livestock grazing.

In general, recreational activities have had little impact on vegetation on a landscape scale. There may be localized areas where people congregate for various recreational activities, and vegetation may have been adversely impacted there by continuous trampling and crushing.

RFFAs

The increase in wildlife populations associated with the water developments may impact vegetation. This would probably only be true of large ungulates that would browse/graze the vegetation in the vicinity of the water developments. There is little potential for competition with livestock, since the water would not be available to them and no other permanent water would be found in proximity to it.

4.28. Water Quality

Past and Present Actions

The dominant land uses within the CAA are livestock grazing and dispersed recreation. Livestock grazing has impacted springs, seeps and streamside riparian areas when grazing has occurred for a long duration during the hot season. Impacts are related to removal of riparian vegetation and mechanical damage to stream banks and meadows and wet hydric soils. Implementation of Standards for Rangeland Health would reduce adverse impacts to water sources.

Vehicles associated with recreational use have caused increased sedimentation in streams and spring outlet streams where channel crossings occur.

RFFAs

No impacts to water sources from the Proposed Action are anticipated. The entire purpose of the water developments is to provide water in areas where no free water is present.

4.29. Wildlife Including T&E and Migratory Birds

Past and Present Actions

The dominant land uses within the CAA are livestock grazing and dispersed recreation.

Livestock compete with wild large ungulates for food and water depending on the species. There are many variables that determine the degree of competition and they include the type and amount of vegetation available, number of livestock, season of use, water distribution and many other factors.

Recreation impacts wildlife primarily in the form of hunting. However, the impact is controlled, since hunting is regulated by the State.

RFFAs

Wildlife water developments should have a positive impact on wildlife populations, by allowing them to expand into new areas. A wider dispersal as well as greater numbers would enhance population survival during periods of extreme stress.

4.30. Fire

Past and Present Actions

The dominant land uses within the CAA are livestock grazing and dispersed recreation. Fires usually start randomly from lightening strikes, but occasionally they are started by humans. Livestock grazing may affect the spread of fire due to grazing resulting in changes in vegetation composition and production.

Fires have been started by campers; however, they are typically a small percentage of the fires that are started each year.

RFFAs

Wildlife water developments would have little impact on the occurrence of fires. There's limited potential that a fire could be started by construction crews or their equipment due to implementation of SOP's.

4.31. Lands with Wilderness Characteristics

Past and Present Actions

The dominant land uses within the CAA are livestock grazing and dispersed recreation. Livestock grazing has generally not affected wilderness characteristics and evidence of livestock grazing is generally confined to riparian sites, water developments, and other range improvements such as fences.

RFFAs

Construction of wildlife water developments, especially the small capacity ones would have a positive impact on wildlife populations. It's anticipated that the increased wildlife populations associated with guzzlers would increase supplemental values associated with wildlife.

4.32. Summary

Proposed Action

Cumulative impacts from the Proposed Action are expected to be beneficial. Increased wildlife populations provide more opportunities for the public to enjoy them whether hunting or observing. However, this may lead to more people using public land and possibly collecting cultural artifacts they find lying on the surface. There may be an incremental benefit of stabilizing wildlife populations by providing a broader and more widely dispersed population base. There would be slight localized reductions in visual quality associated with the developments and the associated access roads. Noxious weeds may become established at a few water developments. There is a slight chance fires could be caused by construction crews or their equipment.

Alternative Two

Cumulative impacts from this alternative would be nonexistent. There would be no change in the status quo.

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

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The issue identification section of Chapter 1 identifies those issues analyzed in detail in Chapter 4. These issues were identified through the public and agency involvement process described in the sections below.

Table 5.1. List of all Persons, Agencies and Organizations Consulted for Purposes of this EA

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
NDOW	State agency responsible for wildlife resources	Supported installation of guzzlers
Fort Bidwell Tribe	Native American Tribe	No concerns expressed
Friends of Nevada Wilderness	Interested Party	Supported installation of guzzlers
Nevada Division of State Lands	Interested Party	Supported installation of guzzlers
Estill Ranches LLC.	Permittee	No comments received
Will and Debra Cockrell	Permittee	No comments received
Nevada Bighorns Unlimited	Interested Party	Supported installation of guzzlers
Larry Johnson	Interested Party	No comments received
Coalition for Nevada's Wildlife		
US Fish & Wildlife Service	Interested Party	No comments received
Sheldon National Wildlife Refuge		
Todd Jaksick	Permittee	No comments received
Jesse Harris	Permittee	No comments received
Nevada State Clearinghouse	Interested Party	No comments received
Division of Administration		
John Bunyard	Permittee	No comments received
Western Watersheds Project	Interested Party	No comments received
Missy Merrill-Davies, Chairperson	Interested Party	No comments received
Modoc/Washoe ESP		
Center for Biological Diversity	Interested Party	No comments received
Lonny Schadler	Permittee	No comments received
Fee Ranch, Inc	Permittee	No comments received
Bill Vasconi	Interested Party	No comments received
Fraternity of the Desert Bighorn		
Canvasback Gun Club	Interested Party	No comments received
Joel Blakeslee	Interested Party	No comments received
Washoe Co. Wildlife Advisory		
Bryan Lamont	Interested Party	No comments received
Rocky Mountain Elk Foundation		
Hapgood Ranch	Permittee	No comments received
Northeast California Resource Advisory Committee	Interested Party	No comments received
Jim Cockrell	Permittee	No comments received
Betty Cockrell	Permittee	No comments received
Grove Brothers	Permittee	No comments received
Owen Schafer	Permittee	No comments received
Robert Cockrell	Permittee	No comments received
Alice Iveson	Permittee	No comments received
Ed Hill	Permittee	No comments received
Kudrna Nevada LLC	Permittee	No comments received

**Programmatic Environmental
Assessment- Wildlife Water
Developments in the SFO**

Robert Stayer	Permittee	No comments received
Alex and Gene Erquiaga	Permittee	No comments received
Nevada Bow Hunters Association	Interested Party	No comments received
Dale Steward	Permittee	No comments received
Betty Parman	Permittee	No comments received
Katherine Zandstra	Permittee	No comments received
Lavor Smith	Permittee	No comments received
Johnny & Ruth Still	Permittee	No comments received
Kurt Stodtmeister	Permittee	No comments received
John Scammon	Permittee	No comments received
Ray Page	Permittee	No comments received
Angela Iveson & Ryan Schiesser	Permittee	No comments received
Karl Quigley		
Christian & Cassie Oyarzum	Permittee	No comments received
Archie & Vicki Osborne	Permittee	No comments received
Sam Parriott	Permittee	No comments received
Mike O'Sullivan	Permittee	No comments received
Steve Smith	Permittee	No comments received
Sagebrush Habitat Conservation Fund	Permittee	No comments received
Jesse Nuttall	Permittee	No comments received
Toy Pryor	Permittee	No comments received
Evelyn Moore	Permittee	No comments received
Timothy Lawson	Permittee	No comments received
Ryan Fitzpatrick	Permittee	No comments received
Eugene Gabrych	Permittee	No comments received
Ed Hill	Permittee	No comments received
Scott Gooch	Permittee	No comments received
Eleanor Hill	Permittee	No comments received
Dale and Anita Goodwin	Permittee	No comments received
Hicks Brothers	Permittee	No comments received
Jeanie Goldman	Permittee	No comments received
Bucky Harris	Permittee	No comments received
Patrick Fitzgerald	Permittee	No comments received
Brian Darst	Permittee	No comments received
Michael Bunyard	Permittee	No comments received
John Bunyard	Permittee	No comments received
Richard and Sherry Cloud	Permittee	No comments received
Kenneth Bordwell	Permittee	No comments received
Dan Probert	Permittee	No comments received
Oral Choate	Permittee	No comments received
Joe Kircher	Permittee	No comments received
John Jr & Dana Carey	Permittee	No comments received
Alan and Ed Berryessa	Permittee	No comments received
John Sr & Sharon Carey	Permittee	No comments received
Frank Cahill	Permittee	No comments received
Robert Stayer	Permittee	No comments received
Donald & Nicki Alves	Permittee	No comments received
Alice Iveson	Permittee	No comments received
Owen Schafer	Permittee	No comments received
Cedarville Rancheria	Native American Tribe	No Concerns Expressed
Summit Lake Paiute Tribe	Native American Tribe	No Concerns Expressed

5.1. Summary of Public Participation

A scoping letter was sent out to interested parties on February 15, 2011 to request data, information, and comments pertinent to the Proposed Action. The Nevada Division of State Lands commented that they supported installation of guzzlers. The Friends of Nevada Wilderness commented that they supported guzzler installation when data supported that human activities have decreased natural water sources for local wildlife populations. The Friends of Nevada Wilderness also had a series of questions related to the Proposed Action and requested more information. The SFO contacted The Friends of Nevada Wilderness on May, 16, 2011 and spoke with the Associate Director to clarify the questions that arose in scoping and to provide more data and information. The SFO then sent a second scoping letter out on December 5, 2012 to request data, information, and comments pertinent to the Proposed Action. Two scoping letters were received during the second round of scoping from Nevada Bighorns Unlimited and the Nevada Division of State Lands, which both supported the installation of guzzlers. The SFO then mailed the EA, FONSI, and DR out to interested parties that responded to the scoping letter.

5.2. Response to Public Comment

- What data the BLM or NDOW has to show that natural water sources have been lost or not available to wildlife species?

Response: The BLM used GIS mapping to determine the number of water sources that were present within the SFO. This included the number of man-made water sources that are designed for livestock use and the number of naturally occurring springs. The BLM and NDOW then used local knowledge and expertise to evaluate the number of water sources that are present in drought years. The BLM then used GIS mapping to determine the area over which competition between wildlife, livestock, and wild horses is expected to occur using slope, distance from water, and pasture boundaries as model variables. The BLM also used riparian functional assessments (RFA's) that were completed throughout the field office as a semi-quantitative way to assess riparian function, decreased in water availability due to dewatering from excessive use, and water quality as it related to fecal coliform and bacterial contamination. This data and model sets were then used, along with local experience and expertise to determine areas that would benefit from guzzler installation.

- How much forage is in these areas and if there is enough forage for wildlife?

Response: Quantitatively measuring the amount of forage available in a certain area is difficult because of variability across the landscape due to natural heterogeneity and anthropogenic effects such as past and present livestock stocking rates that affect vegetation production. The BLM used utilization levels to estimate forage availability in many areas due to the less time invested to manually clip and weight vegetation to estimate production. The BLM also used ecological site descriptions to estimate the amount of forage that should be within certain ecological sites and then compares to actual conditions. Additionally, forage requirements necessary for completion of a species life cycle are variable by species and maintaining an adequate volume of vegetation for all species is difficult to estimate. Dietary overlap between many species of wildlife and livestock and wild horses is generally small and locally constitutes around 17% for mule deer, a common native ungulate within the analysis area. Forage for big game is primarily browse, including bitterbrush and sagebrush. Temporal scale of analyses is important when determining forage as a limiting factor for wildlife. Forage is often limited in areas that were recently burned

and regrowth of native vegetation has not occurred and in areas where ecological thresholds have been crossed or vegetation has lost a portion of the protein and Total Digestible Nutrients (TDN). At a landscape scale (e.g. watershed boundaries) forage is generally not limiting for most species.

- What is the specific design of these guzzlers.
- **Response:** See Appendix C and D. Each guzzler would have a 7,500 gallon capacity with a 2,000 square foot apron piped to a self-leveling drinker. Additional tanks can be added if needed to bring storage capacity up to 10,000 gallons in very arid areas. More information on guzzler design is available at: <http://www.ndow.org/wild/habitat/guzzler/> .
- Can these guzzlers be maintained with minimum repair needs and can their functionality be checked from the air?

Response: Flights by NDOW are used to check the functionality of guzzlers. Guzzlers are also occasionally checked by foot by NDOW and BLM personnel. Additionally, NDOW maintained a Guzzler hotline to report maintenance issues. The phone number is (775) 688-1537. Repairs can often be completed within minimal work and tools however major overhauls occasionally occur due to collapse of the tank.

- Will the project design ensure these guzzlers are as visually unobtrusive as possible to maintain visual resources in the region.

Response: To the extent possible, NDOW and BLM have located all proposed sites in areas that are concealed by natural topography. Additionally, the guzzlers will be painted when needed to mimic natural colors to maintain visual resource objectives and goals outlined in the RMP.

- Are any planned in Wilderness Study Areas (WSA's)

Response: None of the proposed guzzlers are within a WSA.

Chapter 6. List of Preparers

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Table 6.1. List of Preparers

Name	Title	Responsible for the Following Section(s) of this Document
Scott Soletti	Wildlife Biologist/Noxious Weeds Coordinator	Wildlife, Migratory Birds, T&E Flora and Fauna, Vegetation, Riparian/Water quality, Noxious Weeds
Steve Surian	Sup. Rangeland Management Specialist	Livestock Management, Soils, Wild Horses.
Julie Rodman	Archaeologist	Cultural Resources, Paleontology
Jennifer Rovanner	Archaeologist	Cultural Resources, Paleontology
Elias Flores Jr.	Wildlife/Fisheries Biologist	Wildlife/T&E Fauna
Alexandra Urza	Natural Resource Specialist	Wilderness/Lands with Wilderness Characteristics
Dan Ryan	Lands/Realty Specialist	Socio-economics, Recreation, VRM
Casey Boespflug	Prescribed Fire/Fuels Specialist	Fire and Fuels Management

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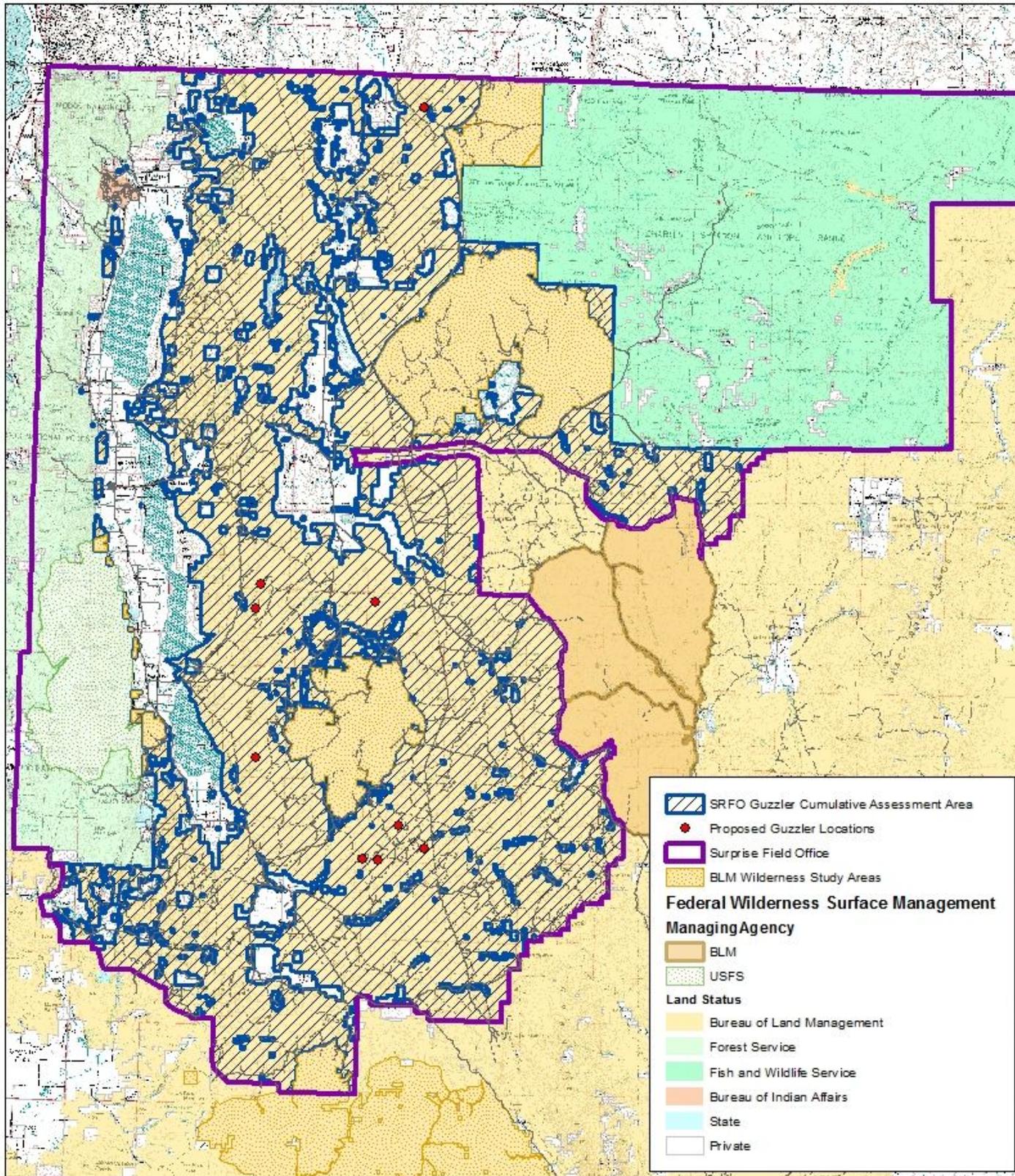
2008-2009 SFO Carson Wandering Skipper Surveys

Nevada Wildlife- Presidents Post, Winter 2009

BLM 2011 High Rock Wild Horse Population Management Plan Environmental Assessment

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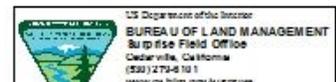
Appendix A. Map of Cumulative Assessment Area



Surprise Field Office
Big Game Guzzler
Cumulative Assessment Area

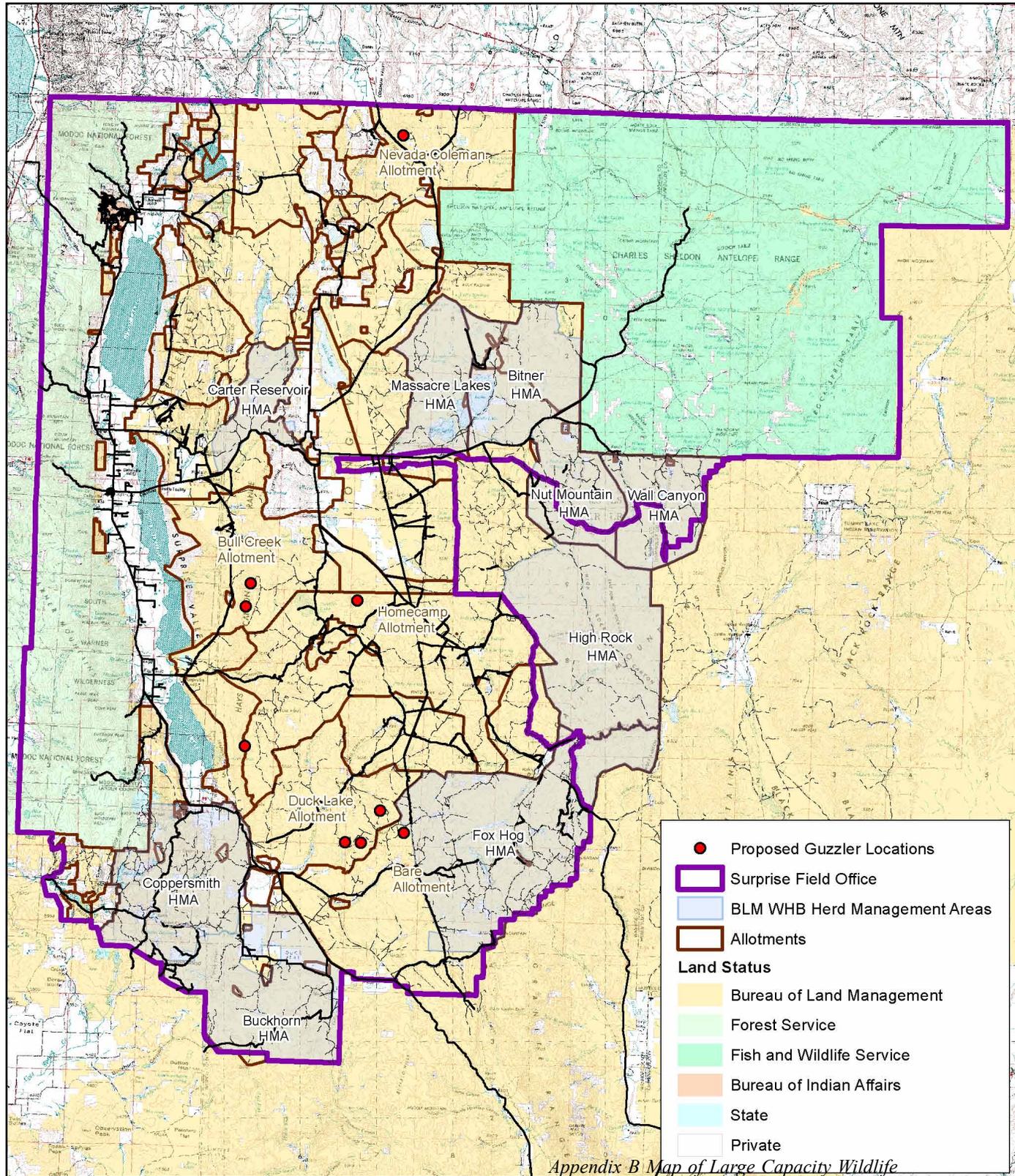
Appendix A Map of Cumulative Assessment Area

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Appendix B. Map of Large Capacity Wildlife Water Development Locations



- Proposed Guzzler Locations
- Surprise Field Office
- BLM WHB Herd Management Areas
- Allotments

Land Status

- Bureau of Land Management
- Forest Service
- Fish and Wildlife Service
- Bureau of Indian Affairs
- State
- Private

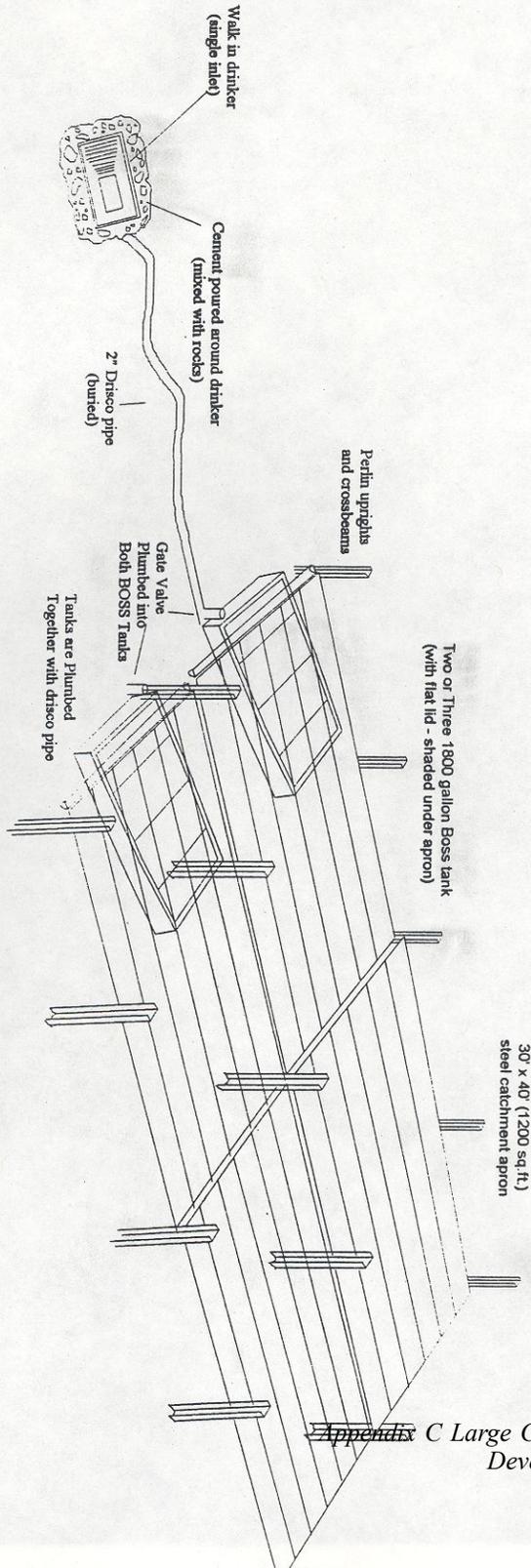
Appendix B Map of Large Capacity Wildlife Water Development Locations

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**Surprise Field Office
 Big Game Guzzler
 Proposed Locations**

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Appendix C. Large Capacity Wildlife Water Development Basic Design

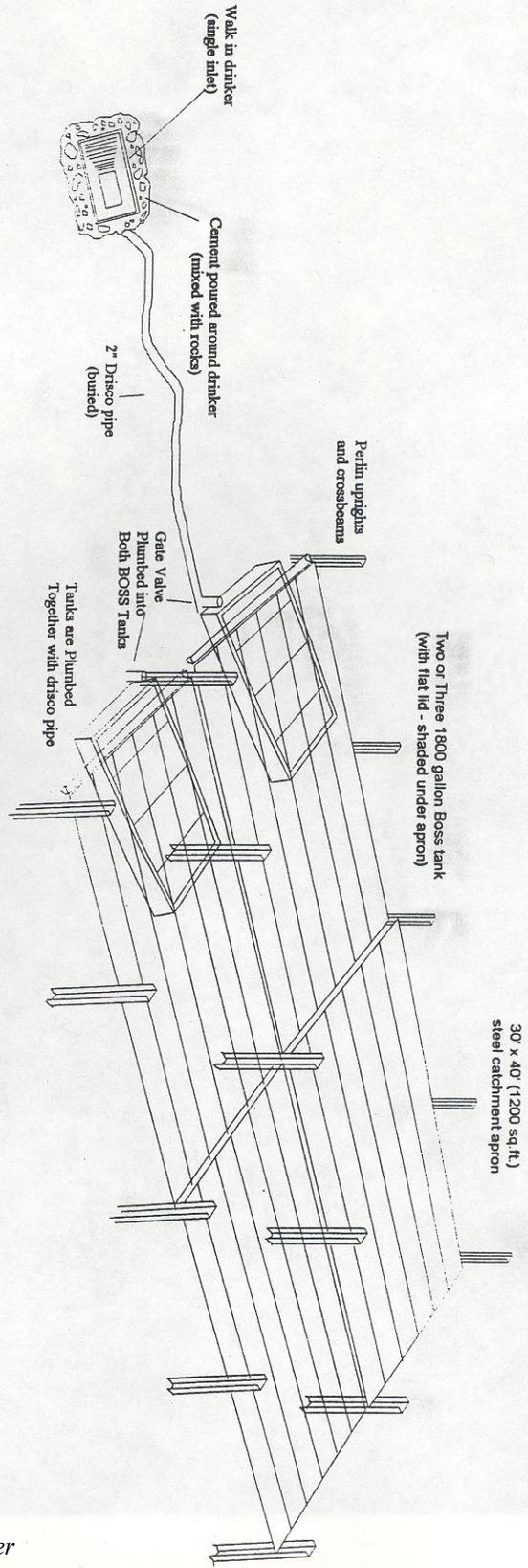
APPENDIX B
Nevada Division of Wildlife Big Game Water Development
(Bighorn Sheep Design)



This design has no fence included, typically a barbed wire and cable fence is constructed a

APPENDIX B
Nevada Division of Wildlife Big Game Water Development
(Bighorn Sheep Design)

1



This design has no fence included, typically a barbed wire and cable fence is constructed around the

Appendix D. Small Capacity Wildlife Water Development Basic Design

325 GALLON GUZZLER DESIGN

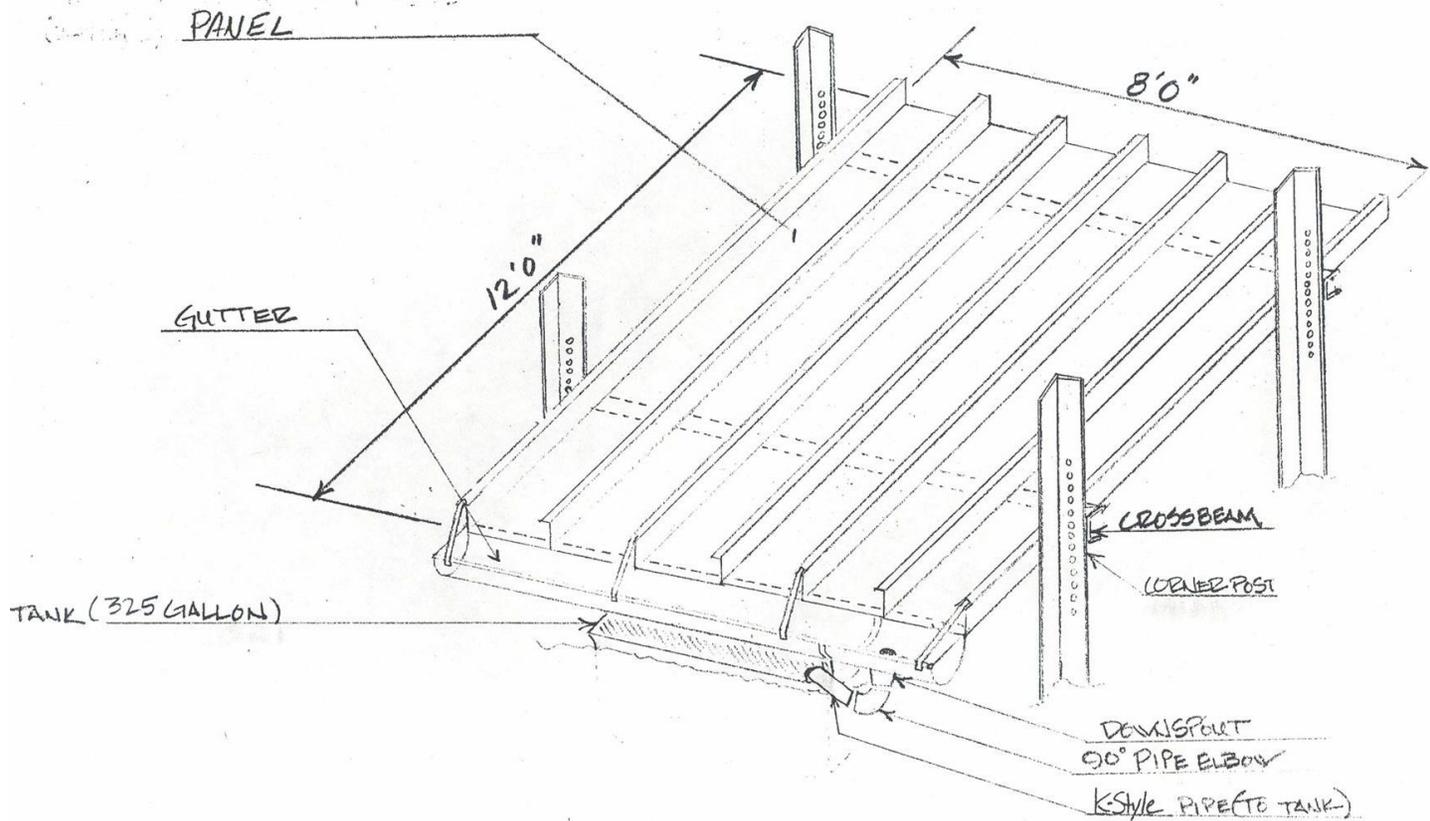


Figure D.1.