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BUREAU OF LAND MANAGEMENT

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SEP 12 2000

Dear Interested Public:

The Elko Field Office, Bureau of Land Management has completed an evaluation of monitoring data for the Owyhee Allotment to determine whether changes in existing grazing management are necessary to ensure significant progress toward attainment of multiple use objectives and Standards for Rangeland Health. I have enclosed a copy of the allotment evaluation for your review. Please provide any written comments by October 16, 2000.

Sincerely yours,

Clinton R. Oke
FOR CLINTON R. OKE
Assistant Field Office Manager
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Enclosures: as stated above

cc: Fund for Animals
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Resource Concepts, Inc.
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Nevada State Clearinghouse Department of Administration
Elko Board of County Commissioners
Wild Horse Organized Assistance
Agri Beef Company

Toiyabe Chapter of the Sierra Club
Colorado Wild Horse & Burro Coalition

**OWYHEE ALLOTMENT EVALUATION
ELKO FIELD OFFICE BLM
2000**

Prepared by: Elko Field Office Staff

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I. BACKGROUND/PURPOSE

Background: The Owyhee Allotment is located in the northwest corner of the Elko Resource Area along the Idaho-Nevada border (Map1). The majority of the allotment's boundaries are fenced; however a few portions are formed by natural barriers. The South Fork Owyhee River forms the northeastern boundary of the allotment while the Little Owyhee River forms a short section of the northwestern boundary. The total size of the allotment is 376,268 acres of which 371,431 acres are public and 4,837 acres are private (Map 2). The majority of the lands along the Fourmile and Winters Creeks are privately owned and are fenced separately from the allotment.

The allotment is characterized by a high rolling plateau underlain by basalt flows which are occasionally cut by deep, vertically walled canyons. Elevation ranges from about 5,100 to 5,600 feet. In general the vegetation consists of Wyoming big sagebrush (*Artemisia tridentata var. wyomingensis*), Sandberg bluegrass (*Poa secunda*), squirreltail (*Sitanion hystrix*) with scattered bluebunch wheatgrass (*Pseudoroegneria spicata*), Indian ricegrass (*Oryzopsis hymenoides*) and needlegrass. The allotment has experienced several consecutive years of drought conditions over the past several years. 1999 and 2000 are the most recent back to back years of drought conditions that have affected the allotment.

There are two Wilderness Study Areas (WSA's) within the allotment. The Owyhee Canyon WSA and the South Fork Owyhee WSA. In addition, wild horses occur within the designated Owyhee Herd Area within the allotment.

Purpose: The purpose of this evaluation is to determine whether or not present grazing management is achieving or making significant progress toward achieving the multiple use objectives established for the Owyhee Allotment and Standards and Guidelines for Rangeland Health for the Northeastern Great Basin Area of Nevada. This evaluation includes technical recommendations proposing either changes in management when needed to achieve the multiple use objectives (including recommendations on proper livestock stocking rates and establishing appropriate management levels (AML) for wild horses) or a recommendation of no change. The evaluation period is from 1977 to 2000.

II. INTRODUCTION/RESOURCES CONSIDERED

A. Livestock Use and Grazing System

The grazing permittee for the Owyhee Allotment is Agri Beef Company. Agri Beef Company's total permitted active grazing use for the allotment is 30,155 Animal Unit Months (AUMs). Agri Beef Company also has 1,692 of historic suspended AUMs in the allotment. The percent public land for which the allotment is licensed is 98%.

An Allotment Management Plan (AMP) was developed in 1987 for the allotment. In order to implement the AMP cross fencing of the allotment was completed which resulted

in five native pastures (Star Ridge, Dry Creek, Chimney Creek, Upper and Lower Fourmile Pastures), and one seeding pasture (Winters Creek Seeding). The AMP implemented a combination rest-rotation and deferred-rotation system to provide growing season rest in each of the native pastures one year out of two. The rest-rotation use on both the Star Ridge and Dry Creek pastures outlined in the AMP is from March 1 to August 15. However, in order to reduce hot season grazing use on the South Fork Owyhee River, the ranch has voluntarily ceased grazing use by June 30, within the Star Ridge Pasture since 1995. Deferred-rotation use on the Lower and Upper Fourmile and Chimney Creek Pastures is from March 1 to May 15 and November 15 to January 31 one year and August 16 to October 15 the next year. The grazing system outlined above was not fully implemented until the 1990 grazing season when all the fencing was in place to facilitate the necessary livestock control.

B. Wild Horse Use

1. Herd Management Areas Within the Allotment

The Owyhee Herd Management Area (HMA) is the only herd area located within the Owyhee Allotment (Map 3). The Star Ridge, Dry Creek and Chimney Creek Pastures are managed for wild horses as part of the herd management area. The Winters Creek Seeding, Upper and Lower Fourmile Pastures are not within the Owyhee HMA.

2. Appropriate Management Levels

The Elko RMP Record of Decision signed on September 30, 1986 and the Rangeland Program Summary (RPS) of July 1987, which was tiered to this decision, specified the initial management level for wild horses as 696 AUMs of wild horse use (58 horses) in this HMA. This decision stated that wild horses were to be managed at the numbers existing on March 11, 1981 as the starting point for monitoring purposes. In Nevada, the management levels for wild horses identified in the initial land use plans are not considered AML, based upon an interpretation of the Interior Board of Land Appeals (IBLA) Decisions 88- 88-591,88-638, 88-648, and 88-679, decided June 7, 1989. These IBLA decision required that AML be established through the analysis and evaluation of monitoring data to determine thriving natural ecological balance for wild horses and burros with all other resource uses as specified in the Act.

The Interior Board of Land Appeals (IBLA) issued a decision (IBLA 88-591,88-638, 88-648, and 88-679) clarifying that wild horse herd size is to be established based on the concept of maintaining a thriving ecological balance. The objective for managing wild horses has been reworded as follows:

"Manage for a wild horse herd size which will maintain a thriving ecological balance consistent with other multiple uses while remaining within the wild horse herd area."

3. Herd Area Use Patterns

Use patterns within the Owyhee HMA are dependent on the availability of water. Horses in the Dry Creek pasture can normally be found in the vicinity of Corral, Shallow and Silver Lakes which are seasonal lakes. When water is not available, the bands of horses move south to man-made reservoirs and Bookkeeper Spring.

In the Star Ridge Pasture, horses can be found in large concentrations on Star Valley Ridge. The ridge is close to a series of man-made reservoirs. When water is not available in the reservoirs, all of the horses must obtain water at the "pipeline" crossing in the South Fork Owyhee River. In the Chimney Creek Pasture, horses obtain water at the Desert Ranch Reservoir.

The bands of horses in the Dry Creek Pasture are the most impacted herd in the HMA during dry years. When normal water sources dry up, they must travel the longest distance to alternate water sources and may not know where to find water when their traditional sources dry up. In November of 1999, the BLM was alerted to a problem by the manager of the IL Ranch. It was reported that approximately 100 wild horses were standing around a reservoir that only contained mud and were unable to get a drink. The BLM hired a helicopter to assess the situation and found what the ranch had reported. Using the helicopter, the BLM attempted to move the horses to Bookkeeper Spring, the closest reliable water. It is not known how long the horses stayed at Bookkeeper, because there were already several hundred wild horses competing for water at that spring.

The BLM carefully monitored the water availability in the Dry Creek Pasture through the spring and early summer of 2000. In June of 2000, it was decided that Bookkeeper Spring would not be able to sustain the several hundred wild horses throughout the summer and an emergency horse gather was conducted. A total of 612 wild horses were removed from the Dry Creek Pasture and taken to the Palomino Valley Corrals. The younger, adoptable horses were placed into the Adopt-A-Horse program and the older, less adoptable animals will be placed in long term holding facilities.

C. Wildlife

1. Mule Deer (*Odocoileus hemionus*)

Reasonable and existing numbers by habitat and season of use as stated in the Final 1986 Elko Resource Management Plan/Environmental Impact Study (RMP) are provided in Table 1. Mule deer AUM demand is provided for analysis purposes only and does not affect AUMs estimated for livestock on the allotment.

Table 1. 1986 Final RMP existing and reasonable numbers and AUMs by habitat and season of use.

HABITAT AND SEASON OF USE (MONTHS)	REASONABLE NUMBERS	EXISTING NUMBERS	REASONABLE AUMs	EXISTING AUMs
Deer Year-long (summer period) [DY(s)] - (3/16-11/15)	113	56	224	111
Deer Year-long (winter period) - [DY(w)] - (11/16-3/15)	295	147	292	144
Deer Winter - DW) (11/16-3/15)	26	13	26	13

No critical mule deer management areas have been identified for the allotment. The area is managed by the Nevada Division of Wildlife (NDOW) as part of Management Area Six, Unit 066; the extreme southeast portion between Winter Creek and Fourmile Creek south of the Midas-Deep Creek Road is managed as part of Unit 067.

As per consultation with the NDOW Area 6 Biologist, habitat availability and observed and reported deer use on the allotment from 1987-1997; the portion of the allotment within two miles of the South Fork Owyhee River has the highest relative use during the winter (11/15 -3/15) through spring (3/15 - 4/15) period. Additional use can occur within four miles of the river as deer move from summer range areas south of the allotment. During severe winters, use occurs during the transitional spring and fall period as deer move to and from critical winter range areas at lower elevations adjacent to the South Fork Owyhee River in Idaho near the Idaho border. During milder winters, migratory deer utilize cover along the eastern allotment boundary adjacent to the South Fork Owyhee River during the November to mid-April period. A small number of deer inhabit portions of the allotment during the summer; this use generally occurs within two miles of the South Fork Owyhee River, and the lower Fourmile Creek and Star Valley Ridge areas.

2. Pronghorn Antelope (*Antilocapra americana*)

The 1986 RMP estimated existing numbers of pronghorns to be 102 (242 AUMs) and considered reasonable numbers to be 204 pronghorn (485 AUMs).

Current numbers are undetermined due to the difficulty in determining movements into and out of neighboring allotments. The allotment is managed by NDOW as part of

Management Area 6, Unit 066. The extreme southeast corner of the allotment is part of Unit 067. The population estimate for all of Unit 066 in April, 2000, prior to fawning, was 130 pronghorn. Unit 066 also encompasses pronghorn habitat on all or portions of the YP, Spanish Ranch, Squaw Valley, Indian Creek FFR, Petan-Owyhee, Little Humboldt, eastern portion of the Little Owyhee, and Bullhead Allotments. The population estimate for Units 067 and 066 during the same period was 550 pronghorn. Approximately 5-10% or 28 to 55 pronghorn may utilize suitable habitat in Units 066 and 067 covering both the Owyhee and Spanish Ranch Allotments. There is likely also movements by a small number of pronghorn between Idaho and the Star Valley Ridge portion of the allotment.

Crucial year-long pronghorn range has been identified on the Monument Hills and "Dry Lakes" area of the Dry Creek Pasture. The Winters Fire, that occurred in the early 1980s, and resulting mosaic of successional stages, has increased the suitability of pronghorn summer (3/15 to 11/15) habitat between Winters Creek and Fourmile Creek. The Upper and Lower Fourmile Pastures provide pronghorn summer and year-long habitat. Pronghorn are commonly observed off the Midas -Deep Creek Road near the IL Ranch, along Fourmile Creek, and on bench lands east of Desert Ranch Reservoir. Other Pastures: A small number of pronghorn are tied to water sources provided by Bookkeeper Spring, and the South Fork Owyhee River near the Southwest Gas "Pipeline Crossing" and "Twelvemile Crossing".

3. Other Wildlife

There are approximately 250 species of vertebrate wildlife which occur in northeastern Nevada. Many of these species frequent the Owyhee Allotment. The South Fork Owyhee River and associated canyonlands provide outstanding habitat for a wide variety of wildlife including species of special concern (See Wildlife Appendices, Tables 1 & 2).

Some of the more common wildlife species include chukar partridge (*Alectoris chukar*), Canada geese (*Branta canadensis*) and several species of ducks, mountain lion (*Felis concolor*), bobcat (*Lynx rufus*), and river otter (*Lutra canadensis*).

The quality of the canyon habitat for raptors is comparable to the nationally recognized Snake River Birds of Prey Area in Idaho (Bradley 1992). Although no surveys have been conducted, Bradley (1992) feels that habitat conditions are also excellent for bats. See Wildlife Appendix, Table 1 for a list of birds, mammals and reptiles that could potentially occur on sagebrush-grassland steppe habitat on the Owyhee Allotment.

4. Terrestrial Native Wildlife Considered For Reintroduction

The California bighorn sheep (*Ovis canadensis californiana*) historically inhabited suitable habitat on the allotment; unconfirmed isolated sightings have been made by the public on the South Fork Owyhee River near the Idaho border. The 1986 Resource

Management Plan (RMP) for the Elko Resource Area proposes the reintroduction of ten California bighorn sheep as a reasonable number (24 AUMs) on the allotment.

D. Threatened, Endangered, Candidate, and BLM Sensitive Species of Plants and Animals

A number of special status animal species have either been documented, or have been identified as potentially occurring, on the Owyhee Allotment on a seasonal or year-long basis (Wildlife Appendices, Table 2). Two BLM Sensitive Plant Species have been documented on the allotment. Listed wildlife input is based on consultation with NDOW regarding 1995 input submitted by the U.S. Fish and Wildlife Service and BLM file data.

The bald eagle (*Haliaeetus leucocephalus*), a migrant and winter resident on the allotment, is listed as threatened by the U.S. Fish and Wildlife Service. Suitable winter habitat exists on, and in close proximity to, the South Fork Owyhee River. In addition, bald eagles were observed adjacent to the allotment during a winter population survey in December of 1991 at the Petan Ranch.

While BLM has legal obligations to manage habitat for the benefit of listed species under the Endangered Species Act of 1973, it is also BLM policy to ensure its management actions conserve and enhance candidate and sensitive species and their habitats. Nevada BLM policy is to provide State of Nevada Listed Species, and Nevada BLM Sensitive Species of Plants and Animals with the same level of protection as is provided for candidate species. (See Wildlife Appendices, Table 2 for policy definitions).

The California floater (*Anodonta californiensis*) (freshwater mussel), a BLM sensitive species, was found at several locations along the South Fork Owyhee River during the 1995 stream survey. Although old shells were fairly common in certain locations both in upstream and downstream locations, live specimens were documented at survey stations S-8 and possibly at S- 5. Another species of freshwater mussel was also found to be fairly common in certain locations although this species is not known to be sensitive.

The redband trout, a BLM sensitive species, may occasionally be present in the South Fork Owyhee River within the Owyhee Allotment. Small populations exist in headwater areas and may drift downstream under certain flow conditions.

The BLM put the sage grouse (*Centrocercus urophasianus*) on the Nevada BLM Sensitive Species List in 1997. Several hundred sage grouse likely occur on the allotment on a seasonal or year-long basis. A total estimate of 118 male birds were observed on seven strutting grounds (leks) on the allotment during helicopter surveys completed by BLM on April 5-6, 2000. Several female birds were also observed on the leks as well as scattered unidentified and identified sage grouse seen on upland areas during these flights. A 1997 NDOW Job Progress Report indicated that sage grouse populations are

considered to be at low to moderate levels in NDOW-delineated Region II, which includes the allotment.

The allotment provides only limited upland habitat areas that are interspersed with meadow and riparian areas that would be considered preferred or "classic" nesting and summer/brood-rearing habitat. These areas include meadows and riparian areas associated with the South Fork Owyhee River; Fourmile, Winters and Chimney Creeks; one private spring along Fourmile Creek and two public lands (Bookkeeper and "Devil's Corral" Springs). However, the "Dry Lakes"- Monument Hills area is an important breeding, nesting, brood-rearing and wintering area. These areas are located in the northern portion of the Dry Creek Pasture and consist of upland big sagebrush-perennial grass sites interspersed by several dozen vegetated playas ("dry lakebeds") ranging from less than one acre to several hundred acres in size. Depending on water and forb availability for a given year, this area is utilized by sage grouse until at least early to mid summer as "early summer/early brood-habitat". As the summer progresses and forbs desiccate on the playas, surrounding uplands and ephemeral drainages, and free water is needed, it is likely that short distance movements to mesic (wet meadows, seeps and springs) on the Fourmile drainage, and North Tuscarora and Snowstorm Ranges occur. Twelvemile Flat (vegetated playa), the Star Valley Ridge area, and Winters Burn area from Winters Creek to Fourmile Creek also provide important sage grouse habitat.

Seven leks have been documented on the allotment. Three were observed on the Star Valley Ridge Pasture (two on upper ridge areas with low sagebrush-big sagebrush associations, one on vegetated playa), and four were observed on the Dry Creek Pasture (all on vegetated playas).

Four leks have been documented south of the Owyhee Allotment on the Spanish Ranch Allotment within three miles of the allotment boundary. Four leks have been recently documented in Idaho within less than one-half a mile to three and one-half miles of the Nevada-Idaho state line - allotment boundary. Seasonal use could occur away from these key areas into associated habitat within the allotment. Additional surveys are needed to confirm probable lek sites in the Monument Hills, and on a former burn ("Y-Burn") on an upland area between Silver Lake and the "Lower Humboldt Road".

Nesting and brood-rearing activities occur in suitable habitat associated with the seven leks documented on the allotment, eight leks within three and one-half miles of the allotment and those leks that have not been documented to date on or near the allotment. In regard to brood-rearing habitat and summer habitat, in general, a brood was observed approximately two miles north of Silver Lake in May, 1997. Another brood was observed south of Silver Lake in June, 1995. NDOW has reported a brood sighting on Corral Lake. A brood was observed in summer, 1995 on the Winters Burn area near a wildlife study transect. A brood was observed on Fourmile Creek in July, 1997.

Winter Habitat: Per sightings from BLM personnel along access roads to wildlife water

developments near Silver Lake and Corral Lake in late October, 1999, the upland areas on the Dry Creek Pasture provide winter habitat for sage grouse during the November to late February period.

E. Fisheries

The South Fork Owyhee River supports a wide diversity of fish species based on a survey completed in 1995 by BioWest, Inc. in 1995. Northern squawfish (*Ptychocheilus oregonensis*), Columbia redband shiners (*Richardsonius balteatus balteatus*), chiselmouth (*Acrocheilus alutaceus*) and largescale suckers (*Catostomus macrocheilus*) were found to be common to abundant while bridgelip suckers (*Catostomus columbianus*), speckled dace (*Rhinichthys osculus*) and smallmouth bass (*Micropterus dolomieu*) were found in limited numbers. Johnson (1994) also indicates that rainbow trout (*Onchorynchus gairdneri*) and largemouth black bass (*Micropterus salmoides*) may drift downstream from Wilson Reservoir and are occasionally caught by anglers in the South Fork Owyhee River. Redband trout, a Nevada BLM sensitive species, may also be present in the South Fork Owyhee River. This species has been documented in the headwater tributaries (Johnson 1994). Fish identified as rainbow trout on earlier surveys may have actually been redbands, but in the absence of collected specimens, species identification remains uncertain. Poor habitat conditions would probably limit numbers and occurrence of redbands in the river itself.

Historically, other fish species have been present in the South Fork Owyhee River. Salmon, presumably chinook (*Oncorhynchus tshawytscha*) were common during the spring-time in the late 1800's (Gruell 1964) and were present possibly as late as 1913 (Johnson 1994). Large numbers of salmonid species including brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), cutthroat trout (*Onchorynchus clarki*) and rainbow trout were stocked in the Owyhee River between 1918 and 1960. Channel catfish (*Ictalurus punctatus*) and smallmouth black bass (*Micropterus dolomieu*) were also stocked in the River in 1968 and 1972, respectively (Nevada Division of Wildlife (NDOW) file data).

F. Aquatic and Riparian Habitats

1. Streams - The only perennial stream occurring in the Owyhee Allotment is the South Fork Owyhee River. The lower reaches of Fourmile and Winters Creeks also drain into the allotment but are intermittent. Approximately 35 miles of the South Fork Owyhee River form the northeast and portions of the eastern boundary of the Owyhee Allotment, including approximately 25 miles administered by BLM. The Little Owyhee River forms approximately three miles of the far northwestern boundary of the allotment. This river is in a steep inaccessible canyon and may be intermittent in nature.

Riparian vegetation along the South Fork Owyhee River is limited to a mostly narrow

corridor situated between the canyon walls. Dominant species include: spikerush (*Eleocharis species*), American bulrush (*Scirpus americanus*), and Coyote willow (*Salix exigua*).

2. Seeps and Springs - Seep or spring habitat is extremely limited in the Owyhee Allotment. Only two springs have been documented and include the Devils Corral and Bookkeeper Springs, located in the Star Ridge and Dry Creek Pastures, respectively. The Devils Corral Spring is in a narrow rocky canyon and is completely inaccessible to livestock or wild horses. Bookkeeper Spring is in an incised drainage and represents a major water source for wild horses. Riparian vegetation including scattered amounts of grasses, sedges (*Carex* spp.) and rushes (*Juncus* and *Eleocharis* spp) is limited, primarily as a result of heavy use by wild horses.

G. Water Quality

The South Fork Owyhee River from its headwaters in the Bull Run, Independence, and Tuscarora Mountains to the Nevada state line drains a 1,029,113 acre basin as identified in the South Fork Owyhee River Subbasin Assessment and Total Maximum Daily Load (TMDL Report). 266,722 acres of the basin occurs within the Owyhee Allotment. Approximately one half of the entire river system is on public land. Sheep Creek and Indian Creek are the major tributaries to the river in Nevada, and are located on private and tribal lands. Fourmile Creek is the main tributary located within the Owyhee Allotment. Approximately 2/3 of this creek is on private lands and includes the Desert Ranch Reservoir.

The State of Nevada has compiled water quality standards for this river, which is found in NAC 445A.225 "Standards for Water Quality for the South Fork Owyhee River" (Water Quality Appendices, Table 1).

H. Wildland Fire

1. Fire Occurrence: The Owyhee allotment has a moderate number of wildfires. In the period from 1980 to 1996 there were 23 documented wildland fires. There is no easily accessible data for small fires from 1997 through 1999, but based on prior history, there were probably an additional two to three fires. This allotment is located in an isolated part of the District, so there are probably additional fires that burnt small acreages and went out prior to discovery. Due to lengthy response time of fire suppression resources and the fuel types present, most of the documented fires were from 10 to 50 acres. 35 percent of the fires were over 375 acres, averaging approximately 1,720 acres each.

2. Fire Management Plan: There are three different fire management polygons from the 1998 Elko Field Office Fire Management Plan occurring within this allotment (Fire Management Plan Appendices). These polygons include WSA areas, high potential response sagebrush/perennial grass and moderate response potential sagebrush/perennial

grass areas (minimal area). Both the WSA and the high potential response areas have fairly complex fire management goals that include both management ignited and wildland fire use areas (natural ignitions) as well as appropriate management response for wildland fire suppression.

I. Wilderness Study Areas

The western portions of the South Fork Owyhee River and Owyhee Canyon Wilderness Study Areas (WSA) are within the Owyhee Allotment (Map 4). The Bureau's WSAs are managed under the *Interim Management Policy for Lands Under Wilderness Review, Update Document, H-8550-1, Rel. 8-67, 7/5/95* (IMP). The objective of the IMP is "to continue resource uses on lands under wilderness review in a manner that maintains the area's suitability for preservation as wilderness". The IMP remains in effect, regardless of whether the area is recommended as suitable or not suitable as wilderness, until Congress designates an area as wilderness or releases the area to multiple use management. The IMP allows the "continuation of grazing, ... in the same manner and degree in which these uses were being done on October 21, 1976, as long as they do not cause unnecessary or undue degradation of the lands."

Any proposed actions in WSAs will be evaluated according to the policies and procedures detailed in the IMP. The policies detailed in Instruction Memorandum (IM) No. NV-96-008, New, Permanent Livestock Developments in Wilderness Study Areas, and IM No. 97-169, Alternatives to Fencing Riparian Zones within Wilderness Areas, will also be followed. If an environmental analysis finds that an action would enhance wilderness values, cause no surface disturbance, be substantially unnoticeable, and not require motorized access, the action may be approved. The cumulative effects of multiple actions or proposals must be evaluated (IM No. NV-89-313).

The South Fork Owyhee River and Owyhee Canyon WSAs were evaluated in the Owyhee Canyonlands Wilderness Environmental Impact Statement (1989). The Bureau has recommended 5,180 acres of the South Fork Owyhee WSA in Nevada as suitable for wilderness and 2,662 acres as not suitable for wilderness. 13,525 acres of the Owyhee Canyon WSA are recommended as suitable for wilderness, while the remaining 8,350 acres are recommended as not suitable. No legislative action has been taken on this recommendation. IMP management will continue until a Congressional decision has been made.

J. Special Recreation Management Area

The extreme eastern portion of the allotment, adjacent to the South Fork Owyhee River, is within the South Fork Owyhee River Special Recreation Management Area (SRMA). Management of this SRMA is described in the Owyhee River Recreation Area Management Plan (RAMP). The overall management objectives for the main stem Owyhee and South Fork Owyhee Rivers are to preserve their wild and primitive

qualities. Visitor and resource management will strive to enhance opportunities for high-quality, primitive recreation experiences. Recreation and other resource uses will be permitted to the extent that natural and cultural characteristics of the river environment are not degraded. Specific resource and recreation management objectives, management constraints, and actions are discussed in the RAMP. River use generally occurs from April through mid-June, depending on river flow and weather conditions. Pronghorn antelope hunting occurs during the fall, while chukar are hunted during the winter.

K. Wild and Scenic Rivers

A 1992 BLM study evaluated 24.6 miles of the South Fork Owyhee River and 2.6 miles of Fourmile Creek for eligibility as wild, scenic, or recreational river segments under the Wild and Scenic Rivers Act of 1968 (P.L. 90-542). This evaluation paralleled similar studies then underway for the Owyhee (Resource Area, Idaho) Resource Management Plan. The Elko study found that 23.6 miles of the South Fork Owyhee River meet the criteria for wild river areas and 1.0 mile meets the scenic river criteria. The study also found that 2.2 miles of Fourmile Creek meet the wild river criteria.

Wild and Scenic River management is described in BLM Manual Section 8351 - Wild and Scenic Rivers - Policy and Program Direction for Identification, Evaluation, and Management (Release 8-61) issued on May 19, 1992, and updated (Release 8-62) on December 22, 1993. Additional guidance on the management of eligible river segments is provided in Instruction Memorandum No. 98-129 - Protective Management Policy and Guidance for Identified Bureau of Land Management (BLM) Eligible River Segments Evaluated Pursuant to the Wild and Scenic Rivers Act issued on 7/1/98. The Bureau is directed to protect any eligible river segments and those values identified in the eligibility and classification study.

III. SUMMARY OF STUDIES DATA

A. Livestock Grazing

1. Actual Use

Actual use has been collected for the allotment since 1981. The average actual use is 18,862 AUMs, with a high of 29,379 AUMs and a low of 10,247 AUMs.

The average actual use by pasture from 1990 including the high and the low when the grazing system was fully implemented up to the present is listed in Table 2.

Table 2. Owyhee Allotment Actual Use by Pasture			
PASTURE	AVERAGE ACTUAL USE	HIGH	LOW
Dry Creek	12,361 AUMs	14,595 AUMs	10,017 AUMs
Star Ridge	11,744 AUMs	16,342 AUMs	7,813 AUMs
Chimney Creek	4,933 AUMs	8,454 AUMs	2,739 AUMs
Lower 4 Mile	4,014 AUMs	7,571 AUMs	1,998 AUMs
Upper 4 Mile	1,547 AUMs	4,042 AUMs	258 AUMs
Winters Creek Seeding	2,054 AUMs	3,634 AUMs	820 AUMs

2. Utilization

a. Key Areas

The Bureau established utilization, frequency and productions studies in 1982. These key areas are as follows:

<u>Pasture</u>	<u>Key Area</u>
Dry Creek	OW-01
Dry Creek	OW-02
Winters Creek Seeding	OW-03
Chimney Creek	OW-04
Upper 4-mile	OW-05
Lower 4-mile	OW-06
Star Ridge	OW-07
Star Ridge	OW-08

Additional key areas within the Dry Creek Pasture were used to collect utilization data. These key areas are OW-09 and OW-10.

In 1977 the Bureau also established seven long term cover (3X3) study plots within the allotment.

The locations of the above livestock as well as wildlife key areas within the Owyhee Allotment are shown on Map 5.

Utilization data have been taken at the established key areas during the years 1979 to 1998, and are summarized in the Range Appendices, Data Summary Tables. The RPS utilization objective of 50% was exceeded only six times out of 76 readings. Use levels

were exceeded in 1996 at key areas OW-01 (55%) and OW-10 (55%); in 1992 at key areas OW-05 (59%) and OW-06 (70%); in 1991 at key area OW-10 (62%); and in 1990 at key area OW-07 (65%).

b. Use Pattern Mapping

Use pattern maps were completed for the Dry Creek, Chimney Creek, Upper 4-mile, Lower 4-mile and the Winters Creek Seeding Pastures and are located in the Range Appendices, Use Pattern Maps Section. The percent of the pastures mapped in each use category (slight, light, moderate, heavy and severe) by year can be found in the Range Appendices, Data Summary Tables. A summary of results by pasture follows.

Dry Creek Pasture

Use pattern maps of the Dry Creek Pasture were completed for the years 1991 and 1989. In addition, an undated use pattern map was also completed sometime during the evaluation period for this pasture. During 1989 the Dry Creek and the Chimney Creek Pastures were not fenced separately from each other resulting in a combined actual use from both cattle and wild horses.

The 1991, 1989, and the undated use pattern maps primarily show slight and light use. The moderate and heavy use occurs around existing pit reservoirs which collect and hold water for an extended period of time within the pasture. Other areas which show moderate and heavy use occur in the vicinity of Corral Lake, Desert Ranch Reservoir and Chimney Creek and Threemile Creek both of which are intermittent drainages.

Chimney Creek Pasture

A use pattern map of the Chimney Creek Pasture was completed in 1989. The 1989 use pattern map primarily shows slight, light and moderate use levels. The majority of the moderate and heavy use levels occur around more permanent water sources in the area along Fourmile Creek which is an intermittent stream and around Desert Ranch Reservoir. There were no areas of the pasture mapped in either severe or no use areas.

Upper 4-mile Pasture

Use pattern maps of the Upper 4-mile Pasture were completed for the years 1992 and 1989. The 1992 use pattern map primarily shows slight and moderate use levels, with the majority of the heavy use occurring along Fourmile Creek. The 1989 use pattern map primarily shows light, moderate and heavy use with the majority of the moderate and heavy use occurring along Fourmile Creek and in the south end of the pasture. There were no areas of the pasture mapped in either severe or no use categories.

Lower 4-mile Pasture

Use pattern maps of the Lower 4-mile Pasture were completed for the years 1992, 1991, 1989 and 1987. In 1992 the majority of the pasture was mapped in heavy use. In 1991 the majority of the pasture was mapped as no use and slight. In 1989 the majority of the pasture was mapped in the slight use category and the majority of use in 1987 was mapped in the light use category. No severe use was mapped for the above years within the pasture.

Winters Creek Seeding

A use pattern map for the Winters Creek Seeding was completed in 1990. The use pattern map primarily shows moderate use levels. Some heavy use occurred mainly around the permanent water troughs and along Winters Creek which is an intermittent stream.

c. Utilization Based Adjustments

Carrying capacity for the Owyhee Allotment was determined by pasture derived from actual use, utilization and use pattern mapping data.

Actual use and utilization data were compared to the desired utilization level for the allotment. The formula used was taken from Rangeland Monitoring: Analysis, Interpretation, and Evaluation (TR 4400-7).

$$\frac{\text{ACTUAL USE (AUMS)} \times \text{DESIRED UTILIZATION}}{\text{UTILIZATION}} = \text{ESTIMATED CARRYING CAPACITY}$$

The key area objectives for the Owyhee Allotment have specified a desired utilization level of 50% for native herbaceous plant species.

The calculation outlined above assumes a linear relationship between actual use and utilization.

Carrying capacity calculations for the Owyhee Allotment by pasture are shown in Range Appendices, Carrying Capacity Section, and summarized in Livestock Technical Recommendation 2.

3. Key Area Ecological Status and Trend

Table 3. Key Area Ecological Status and Trend.

Pasture	Key Area	Key Species	Percent Frequency ^{1,2}			Ecological Status			Trend
			1982	1987	1994	1982	1987	1994	
Dry Creek	OW-01	SIHY	69a	86b	85b	Mid-Seral (32)	Mid-Seral (32)	Mid-Seral (33)	Stable
Dry Creek	OW-02	SIHY	22a	40b	26a	Mid-Seral (29)	Mid-Seral (31)	Mid-Seral (36)	Stable to Upward
Chimney Creek	OW-04	AGSP	39a	64b	52c	Late-Seral (62)	Mid-Seral (41)	Late-Seral (54)	Stable
Upper 4-mile	OW-05	AGSP SIHY	22a 39a	26a 45a	9b 24b	Mid-Seral (34)	Mid-Seral (42)	Mid-Seral (33)	Stable
Lower 4-mile	OW-06	AGSP SIHY	35a 56a	61b 72b	44a 57a	Late-Seral (57)	Mid-Seral (45)	Mid-Seral (37)	Downward
Star Ridge	OW-07	ORHY SIHY	9a 48a	9a 65b	4b 38a	Early (29)	Mid-Seral (36)	Mid-Seral (34)	Upward
Star Ridge	OW-08	ORHY SIHY	33a 65a	28a 30b	29a 32b	Early (23)	Early (23)	Early (22)	Stable

1 Numbers that followed by the same letter are not significantly different at the 0.10 level of significance.

2 Differences that are indicated as significant were significant at the 0.10 level of significance.

4. Ecological Status Inventory

A field ecological status inventory of public lands was conducted in 1985. Of the public acres inventoried 9,798 acres were in early-seral status; 320,184 acres were in mid-seral status; 31,130 acres were in late-seral status; 951 acres were in potential natural community, and 3,780 acres were unclassified. The dominant range site descriptions and ecological status of the public acres inventoried are identified in Table 4.

**Table 4. 1985 Ecological Status Inventory
Dominant Range Sites by Condition and Public Acres**

Range Site	Range Site #	Early-Seral	Mid-Seral	Late-Seral	PNC	% Allotment Classified
Loamy 8-10"	025XY019NV	8,662	312,926	6,405	0	90
Loamy 10-12"	025XY014NV	0	324	10,083	0	3
Claypan 10-12"	025XY018NV	0	0	5,467	0	1
South Slope 8-12"	025XY015NV	0	736	3,361	405	1

B. Wild Horse Use

1. Actual Use Data

The BLM has collected census data on the three pastures which make up the Owyhee HMA beginning in 1982; there are several years that no census data were collected (see Wild Horse Appendices). The AUMS were calculated by multiplying the total number of horses (adults and foals, foals included in counts as per IBLA 92-241) observed in the allotments from 3/1 to 2/28 using wild horse numbers from census flight to census flight. Wild horse numbers for years when a census was not conducted were projected from the last census using a 25% foaling rate. Table 5 displays the use in AUMs by wild horses, and Table 6 displays the actual use by pasture.

Table 5. Owyhee HMA. Average Estimated Use by Wild Horses

Pasture	Average Estimated Use (AUMs)	Average Number of Wild Horses ¹
Dry Creek	958	96
Star Ridge	1218	128
Chimney Creek	168	33
Total	2344	257

¹ Census flights have observed fewer than 300 horses up until 1997. From 1997 to the present, there have been between 500 -1000 head observed in the HMA. The reason for this sudden, rapid increase is not clear.

Table 6. Owyhee HMA Actual Use by Pasture			
PASTURE	AVERAGE ACTUAL USE	HIGH	LOW
Dry Creek	958 AUMs	4713 AUMs	12 AUMs
Star Ridge	1218 AUMs	3708AUMs	131 AUMs
Chimney Creek	168 AUMs	737 AUMs	0 AUMs

2. Key Area Utilization Data

Several of the key areas in the Owyhee HMA established for livestock monitoring receive use by wild horses. Wild horses utilization prior to the entry of livestock has not been collected in the Owyhee HMA; therefore, utilization data represents combined use by wild horses and livestock. Utilization data can be found in the Livestock Appendices, Data Summary Section.

C. Wildlife Use

Mule Deer Winter Habitat Key Plant Species - Three study transects on Upper and Lower Fourmile Pastures and Star Ridge Pasture were established in 1987 and monitored from 1987 to 1997 per BLM-Nevada State Office Manual Supplement #6630 to evaluate the condition of mule deer year-long (winter emphasis) habitat : Wyoming big sagebrush (*Artemisia tridentata wyomingensis*).

Pronghorn Summer and Crucial Yearlong Habitat - Five habitat study transects were established from 1982 to 1987 and monitored from 1982 to 1997 per the BLM Manual #6630 to help evaluate the condition of pronghorn summer and crucial yearlong habitat. The locations, habitat designations, and key species were 1) Dry Creek Pasture in Monument Hills and Corral Lake Guzzler areas, crucial yearlong, Wyoming big sagebrush; 2) Dry Creek Pasture - Silver Lake, crucial yearlong, Bolander silver sagebrush (*Artemisia cana bolanderi*); 3) Star Ridge Pasture - Star Ridge, crucial yearlong, Wyoming big sagebrush; and 4) Chimney Creek Pasture - Winters Burn, summer habitat, Wyoming big sagebrush.

Observations of habitat conditions were also made from 1982 to 2000. Data collected at all sites included percent plant composition by cover (line intercept), browse form and age class evaluation (key browse condition), and height of vertical cover (vertical cover analysis). Also, livestock forage production data collected during three years from 1982 to 1994 were used to help evaluate vegetative composition at the five transects on the allotment that are dual wildlife/livestock key areas. As pertinent, data obtained from these studies were also used to evaluate the condition of sage grouse habitat.

Water distribution (pronghorn only) and documented disturbance or interference factors

that are judged by the evaluator to negatively influence big game habitat, are taken into consideration to help determine the overall habitat rating of big game habitat conditions. Stream inventory monitoring data of the South Fork Owyhee River collected in 1977, 1986, and 1995 were used to evaluate riparian habitat conditions associated with mule deer and sage grouse summer use areas.

Absolute shrub foliar canopy cover data (not used in the 6630 rating system) was also used to extrapolate data from line intercept measurements to assist in determining if shrub cover was excessive for specific range sites and vegetation types at the key areas. Excessive shrub foliar cover as a result of past and present land management on the allotment, may affect forage diversity and native herbaceous cover which could affect the condition of wildlife habitat. Absolute shrub foliar cover is the percentage of ground covered by a downward vertical projection of the aerial portion of shrub foliage, excluding openings in the canopy.

Data from the 1986 ecological status inventory in the allotment was used to help evaluate habitat conditions for California bighorn sheep.

1. Mule Deer

Mule deer winter habitat conditions improved from “**Fair**” ratings in 1987 to “**Good**” to “**Excellent**” ratings in 1996 on the Lower (DY-T-87-28) and Upper Fourmile (DY-T-87-29) Pastures, respectively as indicated by monitoring efforts.

Mule deer winter habitat conditions remained in **Fair** rating category on the Star Ridge Pasture (DY-T-87-31) in both 1987 and 1997. Poor forage diversity and lack of shrub and perennial native herbaceous vegetative cover contributed to the fair rating. Heavy composition of cheatgrass, due in part to past and pre-AMP livestock management, has helped to prevent the establishment of native vegetation needed for cover. The study transect is a joint livestock key area study transect that has rated as low mid-seral (low fair condition) in 1982, 1987 and 1994. The key area has a relative absence of desired perennial native herbaceous vegetation and moderate to high relative composition of cheatgrass in comparison to some other key areas on the same range site on the allotment. Recent voluntary livestock movements out of the pasture by the livestock permittee, concerted through the BLM to help improve riparian conditions on the South Fork Owyhee River, might help to improve forage diversity on the key area. However, it is likely that perennial native bunchgrass species composition has been impacted on the key area prior to the implementation of the rest rotation livestock grazing system in 1990 due to the loss of potential seed banks and competition with cheatgrass. This key area is located within two miles of the Twelvemile Crossing water source and stockponds.

Absolute shrub foliar canopy cover: Desired shrub cover for the Wyoming big sagebrush vegetation type is 15% or less (Winward 1991). When shrub cover exceeds 15%, grass and forb cover is likely to decrease due to competition and forage diversity is reduced.

Absolute shrub foliar canopy cover was 13.6% and 11.8% in 1996 on the Lower (DY-T-87-28) and Upper Fourmile (DY-T-87-29) Pastures study transects, respectively. No shrub canopy cover data was collected on the Star Ridge Pasture (DY-T-87-31) in 1997; it was 5.2% in 1987.

Species Composition for 1987 versus 1994: The NRCS ecological (range) site description expresses percentages of forbs, grasses and shrubs in air-dry weight as used for forage production sampling in 1994. Thus, composition by cover [linear measurements (line intercept) used to calculate the big game forage diversity index in 1987], and composition by air-dry weight (weight measurements either used to calculate range site seral status or forage diversity index in 1994/96-97) are separate measurements. Per 6630 Manual, both methods are acceptable for calculating forage diversity on the study area.

See Wildlife Appendices, Table 4 for habitat condition rating summary of mule deer yearlong (winter-rated) habitat.

2. Pronghorn Antelope

Summer habitat on Chimney Creek Pasture - Key Area transect AS-T-87-30 (Livestock Key Area #OW-04) - Loamy 8-10 p.z. range site. This transect is located between Winters Creek and Fourmile Creek. Vegetative forage production data from 1987 and 1994 was used to help rate 1987 and 1996 pronghorn habitat conditions, respectively, for the summer period (March 16 to November 15). Summer habitat condition was rated as "**Fair**" per July 1987 data; and "**Good**" per July 11, 1994/July 26, 1996 data.

Summer and Yearlong habitat on Upper and Lower Fourmile Pastures - Key Area transect DY-T-87-29 (LKA #OW-05)-Upper Fourmile and Key Area transect DW-T-87-28(LKA #OW-06)-Lower Fourmile - Wyoming big sagebrush vegetation type, Loamy 8-10 p.z. range site. These transects were not rated as pronghorn habitat but rather rated with emphasis as mule deer winter range; however, both pastures provide pronghorn summer (Upper Fourmile) and yearlong (Lower Fourmile) range. Pronghorn are commonly observed on the Upper Fourmile Pasture off the Midas-Deep Creek Road, along Fourmile Creek on both pastures, and in the vicinity of Desert Ranch Reservoir (Lower Fourmile).

Crucial pronghorn yearlong habitat on Dry Creek Pasture- Pronghorn crucial yearlong habitat condition ratings improved from 1982 to 1994-96 as indicated by monitoring efforts as follows:

AY1-01 (Monument Hills)- LKA # OW-02, Wyoming big sagebrush vegetation type, Loamy 8-10 p.z. range site: 1982: **Poor**; 1985 and 1994-96: **Fair**.

AY1-02 (Silver Lake), Bolander silver sagebrush/mat muhly vegetation type,

Wet Clay Basin Range Site: 1982 and 1985: **Fair**; 1996: **Good**.

AY1-03 (Corral Lake Guzzler), Wyoming big sagebrush vegetation type, Loamy 8-10 p.z. range site: 1982: **Poor**; 1985: **Fair**; 1997: **Good**. There was no forb composition on July 21, 1982; 1.8% June 4, 1985; and 1.8% on July 12, 1994. The inclusion of moss evaluated as a forb and that it comprised 36.9% of the species composition likely helped the attainment of a "Good" habitat rating in 1997. Most of the moss was sampled under the protective canopy of Wyoming big sagebrush. Moss was likely intercepted but not recorded during sampling in 1982 and 1985. Excessive shrub foliar cover (27.25%) could affect understory perennial herbaceous growth due to competition.

Crucial vegetative limiting factors - On AY1-01/LKA # OW-02 there was essentially no forb composition on July 14, 1982 or June 5, 1985; to 2.6% on July 12, 1994.

Pronghorn yearlong habitat on the Star Ridge Pasture - Wyoming big sagebrush vegetation type is Loamy 10-12" p.z. Range Site- Pronghorn yearlong habitat condition ratings improved from 1982 to 1994-97 as indicated by monitoring efforts as follows:

AY-T-87-40 (Star Ridge): 1987: **Fair**; 1997: **Good**. The inclusion of moss evaluated as a forb and that it comprised 47% of the species composition likely helped the attainment of a "Good" habitat rating in 1997. The moss was sampled both under the protective canopy of Wyoming big sagebrush and in the interspersions between plants. It is unknown if moss was sampled in 1987.

D. Threatened, Endangered, Candidate, and BLM Sensitive Species of Plants and Animals.

1. Sage grouse

Information obtained from big game habitat and livestock monitoring studies, ecological status inventories and trend studies, stream surveys, and ocular surveys was used to evaluate habitat conditions for this species. Specific objectives for sage grouse habitat in terms of vegetative composition were not established in the 1987 Resource Management Plan. Late seral ecological condition of upland areas, coupled with a mosaic of habitat in early to mid successional stages as a result of natural or prescribed disturbances, is desirable. Riparian areas, in proper functioning condition, is also desirable.

Vegetative canopy cover and height available for nesting cover at six key areas were compared, in part, with cover and height data collected at successful nesting sites found during studies conducted in Oregon and rangeland studies regarding shrub canopy cover (See Wildlife Appendices, Table 3).

Habitat evaluated included nesting and early brood-rearing/summer habitat, and

foraging/resting areas associated with leks in the vicinity of the following established wildlife/livestock key areas.

1. LKA #OW-1 (Corral Lake Road-Dry Creek Pasture) is within three miles of a lek.
2. AY1-01/LKA #OW-2 (Monument Hills-Dry Creek Pasture) is within two miles of a lek; a Class I (newborn chicks) sage grouse brood was observed approximately 0.5-mile below the transect in uplands on May 28, 1997.
3. AY-1-03 (Guzzler #1-Dry Creek Pasture), within 2.5 miles of a lek.
4. AS-T-87-30/LKA #OW-4 (Winters Burn-Chimney Creek Pasture), within 2.5 miles of a lek on the Spanish Ranch Allotment; a sage grouse brood was observed within 100 yards of the transect in summer 1995.
5. DY-T-87-28/LKA #OW-06 (Lower Fourmile Pasture), Preferred nesting and early brood-rearing habitat on uplands in close proximity to Fourmile Creek drainage. Associated meadows and riparian areas provide brood-rearing/summer habitat. A sage grouse brood was observed approximately 3.5 miles west of the key area on Fourmile Creek on July 23, 1997.
6. DY-T-87-29/LKA #OW-05 (Upper Fourmile Pasture), within seven miles of a lek; pasture boundary approximately 3.5 miles from same lek. Preferred nesting and early brood-rearing on uplands in close proximity to Fourmile Creek drainage. Associated meadows and riparian areas provide brood-rearing/summer habitat. A sage grouse brood was observed on Fourmile Creek on July 23, 1997.
7. DY-T-87-31/LKA #OW-7 (Twelvemile Crossing-Star Ridge Pasture) and LKA #OW-8 (Star Ridge Road): within four and five miles, respectively, of a lek.

In 1994 (latest data), the ecological status (present state of vegetation in relation to the potential natural community) was early seral (poor) at OW-8; mid-seral (fair) at Key Areas OW-1, OW-2, OW-5, OW-6 and OW-7; and late seral (good) at OW-4. Good ecological condition of upland areas, coupled with a mosaic of habitat in early to mid successional stages as a result of natural or prescribed disturbances, is desirable in sage grouse habitat. A response by native herbaceous vegetation to these disturbances in a mosaic pattern results in improved forage diversity and enhancement of perennial herbaceous cover. In 1994, forage production data indicated that forb production was good at OW-04 (Chimney Creek Pasture) and nonexistent to marginal (0.0% to 4%) at the other key areas.

Information obtained from a 1994 sage grouse nesting habitat study in Oregon (Gregg et al 1994) indicated that the following factors significantly improved sage grouse nesting success:

1 An average of 8-12% shrub canopy cover (Wyoming big sagebrush vegetation type) that averages 16-32 inches in height. Other information from other 1994 Oregon studies indicate that shrub canopy cover specific to the Wyoming big sagebrush vegetation type (8-15% or less on a site specific basis for key areas in this evaluation), and specific height and basal cover of understory vegetation surrounding nest sites, were factors that improved sage grouse nesting success. Desired shrub cover for the Wyoming big sagebrush vegetation type is 15% or less (Winward 1991). When overall shrub cover exceeds 15%, grass and forb cover needed as lateral herbaceous nesting cover could decrease due to competition.

2. An average of 18% basal cover of tall genera grasses with residual (old growth) height greater than 7 inches. Lateral cover at 94% of successful nests was composed entirely of residual tall grasses. Information obtained by studies regarding shrub cover on western rangelands indicated that overall shrub canopy cover specific to the Wyoming big sagebrush vegetation type (8-15%) were factors that improved understory production. Understory production provides lateral herbaceous cover for active nest sites.

Allotment specific data for these factors are:

Shrub Canopy Foliar Cover and Height: Shrub canopy foliar cover, for overhead nesting cover, was satisfactory at all key areas except AY1-03 (Corral Lake Guzzler). At AY1-03, it was excessive in regard to limiting the growth of herbaceous cover in this vegetation type. Shrub foliar cover was not measured at OW-1, OW-7 in 1997, or OW-8.

Based on density board measurements, photographs, and Cole Browse age and form class measurements, shrub height was satisfactory at all key areas evaluated for sage grouse habitat.

Lateral Herbaceous Cover- Average utilization by all ungulates for the periods referenced (Footnote #3) in Table 20 indicated that use was generally below 50% at all key areas after the season-of-use period. Some exceptions of utilization above 50% (maximum RMP and AML levels) for given years include AY-T-87-40 (Star Ridge) in 1997) OW-1 in 1996, OW-5 (Upper Fourmile Pasture) in 1989 and 1992, and OW-6 (Lower Fourmile Pasture) in 1992. Use levels at or below the 50% degree of allowable use would be expected to allow adequate residual herbaceous cover (stubble and ungrazed plants) associated with overstory shrub species at sites selected for nests during the following spring period. Areas with above mid-moderate (>50%), heavy (61% to 80%) to severe (>80%) utilization levels would likely be deficient in residual grass cover during the following spring nesting period. Nesting success would be expected to increase with the availability of adequate lateral herbaceous cover (both ungrazed plants and new spring growth) due to factors that include a potential decrease in nest predation by both terrestrial and avian predators and protection from the elements.

Basal cover of all perennial grass species encountered during monitoring that do or do not potentially allow at least a seven-inch height of residual growth, where measured, ranged from 1% to 6.7% between 1982 and 1996-97. The best cover values were sampled on Star Ridge and Upper Fourmile Pasture (1987). Late seral status on Chimney Creek Pasture likely contributed to increased basal cover in 1994-96 (not measured) from 1987 (3.25%). New perennial grass growth enhances lateral nesting cover; however, no monitoring data was collected during the mid-April to early June nesting period.

Upland forbs are important for hens prior to and during the nesting period, in close proximity to nesting sites. Forbs are also important in the diets of sage grouse chicks from two to nine weeks of age as well as comprising the bulk of the adult diet during the summer period. From 1994 to 1997, average forb composition ranged from none to 12.9% and would be considered a limiting factor on a range site specific basis at most key areas when considering potential native vegetation. For comparison, forb composition at AS-T-87-30/OWLH-4 (Chimney Creek Pasture), in the Loamy 8-10" Ecological Site, averaged 16% and reflects late seral ecological status in 1982 to 1994 and mid seral status in 1987. Thus, forb composition was sampled as being better on a site with lower potential composition and production versus the key areas located on Loamy 10-12" p.z. Range Sites. Forb preference was not analyzed per key area. Moss (*Tortula spp.*) was not evaluated as a forb utilized by sage grouse as a food source.

Riparian area (stream and spring) conditions are an important factor in brood-rearing/summer habitat because of their importance as major foraging areas as the upland plants complete their life cycle and desiccate. Ocular surveys on Bookkeeper Spring and Fourmile Creek as well as stream surveys on the South Fork Owyhee River indicated that livestock-accessible riparian areas potentially used by sage grouse are characterized by heavy grazing, lowered water tables, severe erosion, and loss of plant species associated with moist soil profiles. Riparian areas in poor condition would be considered a limiting factor in brood-rearing/summer habitat since they are major foraging areas as the summer season progresses and upland forbs desiccate.

Lek (strutting) areas are another crucial part of sage grouse habitat. Key Area AY1-02 (Silver Lake) is the only key area where evaluation of vegetation (vegetated playa) directly associated with leks was completed as part of pronghorn habitat monitoring on a Wet Clay Basin Range Site. There is concern regarding potential excessive utilization of native herbaceous vegetation on the range site. Competition for forage between livestock, wild horses and big game could likely affect sage grouse habitat conditions and ecological site status on this range site which is highly susceptible to disturbance. Improper use by an excessive number of wild horses or livestock could affect range site dynamics and allow decreases in perennial native grass and forb species, and mosses, and increases in annual vegetation.

"Loafing" habitat is also associated with leks. With the exception of Key Area AS-T-87-

30 (Chimney Creek. Pasture) and AY1-02 (Silver Lake), monitoring has indicated that forb composition is a limiting factor at potential lek-associated resting and foraging areas or "loafing" habitat. Forbs are important in the diet, as they become available, during the latter part of the mating season. At some key areas in close proximity to leks, monitoring has indicated that shrub cover in associated resting and foraging areas exceeds or is close to upper limit cover values in regard to potential decreases in herbaceous vegetation needed in the diet during the latter part of the mating season due to competition.

Man-made structures near lek areas have been identified in the BLM Nevada Draft High Risk Assessment for sage grouse and include fences, pit reservoir berms, corrals that serve as perches/rests for avian predatory species and vertical structures that could limit vision of sage grouse or act as intimidating factors. These structures exist near several of the leks on the allotment. In addition, downed barbed wire from a corral built prior to the current wooden corral poses as an entanglement threat for sage grouse on/near the Silver Lake lek. Sage grouse usually fly low and direct in their habitat, at, or just above the standard fence heights. Mortalities have been documented on public lands due to entanglement with fences which could add to unnatural "additive" mortalities.

E. Fisheries

See the Aquatic and Riparian Habitat Conditions section below for summary of studies data for fisheries.

F. Aquatic and Riparian Habitat Conditions

1. Streams

a. South Fork of the Owyhee River

BLM established a baseline stream survey on the entire South Fork Owyhee River in 1977 which included stream segments in both the Star Ridge and Fourmile Pastures. All of the River within the Star Ridge Pasture was resurveyed in 1995, while a portion of the River was resurveyed in both the Star Ridge and Fourmile Pastures in 1986. Use of the 1986 data is limited primarily to observations and photographs however, since problems with sampling techniques exist for some of the measured parameters. In an effort to acquire more current information on condition of the South Fork Owyhee River within the Fourmile Pasture, a functioning condition (PFC) assessment on this segment of river was completed in April of 2000. Stream survey station locations are shown on Map 6.

1. General Findings - Star Ridge Pasture

Approximately 21 miles of the South Fork Owyhee River including 1.6 miles of private land occur within the Star Ridge Pasture. Habitat conditions for this part of the River were documented as poor in 1977 but showed some improvement by 1995. Substantially

lower utilization levels were recorded at many locations along the river in July of 1995 than in June of 1977 and 1986 possibly reflecting differences in grazing practices since the adjacent Petan Ranch ownership changed in August of 1989.

Four reaches were identified along portions of the South Fork Owyhee River within the Star Ridge Pasture during the 1995 survey (refer to Map 6). Stream reaches are identified on the basis of similarities in geology, flood plain characteristics, gradient and response potential. The portion of river represented by reach 2 is entirely privately owned and no information was collected for this area in 1995 at the request of the Petan Ranch.

A comparison of stream characteristics by reach shows that much of the South Fork Owyhee River exists as a highly entrenched system with a flat gradient, limited floodplain development, a high bankful width/depth ratio and low to moderate sinuosity (Stream Survey Appendices, Table 1). The entire river has been identified as an "F" type channel (Rosgen 1994), although portions have been designated as F4 or F5. Sand is the dominant streambottom substrate in an F5 channel, while F4 channel stream beds are characterized by high percentage of gravel. Potential for recovery of an F4 or F5 channel to a prior stream type (such as a narrower, deeper channel meandering through an unincised flood plain) is poor; however, improvement in the riparian zone is important since streamside vegetation is moderately effective at influencing the width/depth ratio and stability of these stream types (Rosgen 1994). Stream and riparian habitat conditions are discussed by reach.

Reach 1 (S-17, S-18, S-19, S-20, S-21)¹

With the exception of reach 2, this stretch of river has the best potential for improvement within the Owyhee Allotment. Although channel entrenchment and river confinement are important influences here as elsewhere on the river, floodplain width is significantly greater here than for reaches 3 and 4. Cattle have access to all stations within the reach and were observed on all three stream surveys (1977, 1986, and 1995).

A comparison of changes in selected habitat parameters between 1977 and 1995 show some improvement in variables influenced by grazing (Stream Survey Appendices, Table 2). Streambank cover as well as the stream width to depth ratio improved substantially from the 1977 survey. Pool quality also appeared to improve; however, differences in this variable as well as differences in the percent of the stream width in pools may be related to better flow conditions in 1995 compared to 1977. Poor pool-riffle ratios occur under unusually high or unusually low flow conditions, while quality pools tend to develop in association with deep water. The average depth of the river in 1995 was 144% greater than in 1977. With the exception of the pool width data, the only other variable to decline was streambank stability. Reasons for the decline are unclear but may be

¹Although stream survey stations S-20 and S-21 occur upstream from the Owyhee Allotment they are part of the homogeneous reach represented by data from S-17 through S-21.

related to increased channel entrenchment as a result of degraded conditions in the upstream watershed. A lack of clean streambottom substrates remains a significant problem, although there has been little change between 1977 and 1995. Utilization of streamside forage within this reach was documented as heavy in both June of 1977 and in August of 1986, but was observed to be light in July of 1995.

Additional information on habitat conditions collected in 1995 indicates bank and riparian zone development for this reach is still poor although trend may be upward (refer to Stream Survey Appendices, Table 2). Woody vegetation overhanging the stream channel is absent, while a lack of undercut banks and a shallow shore water depth show minimal bank development at the shore water interface. The fairly steep bank angle is more representative of channel entrenchment than bank building. Trend of the riparian community however, may be upward as evidenced by a greater width of type "B" (cover greater than 50%) riparian vegetation than type "A" (cover less than 50%) riparian vegetation. Increased filling in of open areas indicates an advance in succession. Riparian zone development would normally be expected to occur before bank development.

Although data and photographic comparisons indicate improvement in the riparian zone, mature willows remain lacking. Very few plants over 1-2 feet tall were observed. The scouring action of the river during high flows may limit willow establishment and survival; however, the structure and composition of the riparian zone suggests grazing occurring later in the summer is also an important influence.

Reach 2 (S-15 and S-16, S-16A)

Reach 2 represents a short stretch of river located entirely on private land. This reach has the best potential for development of a broad riparian zone because of its wide floodplain. It is the only area along the river within the Owyhee Allotment that is not laterally contained by steep canyon walls. No information on habitat conditions was collected for this reach during 1995. Visual observations in 1998 and 1999 indicate aquatic and riparian habitat conditions are poor.

Reach 3 (S-6 - S-14)

The river is entrenched and is laterally confined between canyon walls throughout this reach. Recovery potential is for a narrow corridor of riparian vegetation along either side of the stream. There was virtually no utilization evident along this reach in mid July of 1995. However, the 1977 survey data show heavy levels of use at S-6 and S-7. Utilization levels declined by S-8 and were reduced to near zero between S-9 and S-14. No information is available for this area in 1986.

A comparison of changes in habitat parameters between 1977 and 1995 show trends in data similar to reach 1. Streambank cover and the stream width to depth ratio improved,

while streambank stability declined somewhat over the 17 year period between surveys (Stream Survey Appendices, Table 3). Percent of the stream width in pools declined, while pool quality improved. As discussed earlier, changes in pool features are likely related to flow conditions at the time of survey. There was no appreciable change in percent desirable streambottom substrates.

Additional information on habitat conditions collected in 1995 shows some evidence of an improving riparian zone; however, channel entrenchment probably limits streambank development (refer to Stream Survey Appendices, Table 3). The fairly steep bank angle is characteristic of entrenched streams, while high flow energies probably limit formation of undercut banks. The greater quantity of type "B" riparian vegetation in comparison to type "A" riparian vegetation in addition to at least some depth at the shore water interface suggests upward trend; however, a lack of overhanging vegetation indicates willows are not becoming established as a result of late season grazing and/or hydraulic scouring.

Reach 4 (S-1, S-2, S-3, S-4, S-5)

This reach includes survey stations 1-5 and is located in a very rugged canyon area in the northern part of the allotment. Floodplain development is limited by steep canyon walls in close proximity to the river channel. Although livestock grazing impacts are evident in accessible areas, riparian zone development over the majority of the reach is limited by scouring associated with concentrated flood flows within an entrenched channel.

A comparison of changes in habitat parameters among 1977 and 1995 shows the same kinds of trends observed for other reaches (Stream Survey Appendices, Table 4). The data indicate there has been some improvement in variables influenced by grazing practices (primarily bank cover and stream width to depth ratio), while there has been little change in percent desirable streambottom substrates. Changes in pool-riffle ratios and pool quality are likely related to flow conditions as discussed earlier. Photographic comparisons, as well as recorded observations, indicate utilization levels on riparian vegetation were heavy at areas accessible to cattle (survey stations S-3, S-4 and S-5) in June of 1977 and August of 1986 but were light at these same locations in July of 1995.

Additional information on habitat conditions collected in 1995 show stream conditions within this reach are similar to upstream areas with the exception that the riparian zone development may be slightly more limited (refer to Stream Survey Appendices, Table 4). However, some evidence of bank building is occurring as shown by the presence of depth at the shorewater interface, slightly undercut streambanks, and a small amount of overhanging bank vegetation. The fairly steep recordings for bank angle are likely related to channel entrenchment.

While riparian habitat conditions overall have improved, willows in excess of two feet remain absent where cattle have access. In areas totally inaccessible to grazing (including the portion of the river represented by S-1 and S-2), a moderately dense corridor of older

willows are present. Channel scouring during flood conditions probably impacts riparian zone development along this reach; however, differences in willow heights and densities between accessible and unaccessible areas suggest current grazing practices are also an important influence.

South Fork Owyhee River - Fourmile Pasture (S-35, S-36, S-37, S-38, S-39)

Approximately 5.5 miles of the South Fork of the Owyhee River occur within the Fourmile Pasture including 2.7 miles of private land. As with other segments of the Owyhee River in the Owyhee Allotment, much of public land portion of the River occurs as a Rogsen (1994) "F" channel type situated within a narrow, rocky canyon.

Although comparative stream survey data are not available, a proper functioning condition (PFC) assessment completed on about a two mile reach in 2000 shows stream and riparian habitat conditions are poor. The entire reach was rated as nonfunctional as a result of channel entrenchment and associated absence of a functional floodplain, excessive sediment deposition, unstable streambanks, and almost complete absence of a riparian zone. Although the assessment was completed in April prior to the initiation of plant growth, virtually all plant growth occurring in the previous year had been cropped to a one inch or less stubble height by livestock. Comparisons to photographs taken in 1977 and 1986 support the conclusion that habitat conditions are poor and have deteriorated over time.

2. Seeps and Springs

Habitat conditions are excellent for the Devils Corral Spring. Because of its inaccessibility to grazing animals, this sedge dominated site exists at its potential (Wilkinson, personal communication, 2000). Habitat conditions are poor for Bookkeeper Spring. This small seep occurs as ponded water in a badly incised drainage and receives heavy use by wild horses (Jensen, personal communication, 2000).

G. Water Quality

Analysis of the 29 years of water sampling of the South Fork of the Owyhee River by the Nevada Department of Environmental Protection (NDEP) (Water Quality Appendices, Table 2) indicates that water quality standards are being met. Three of the parameters may exceed the standards if sampled at specific times of the year. They are:

1. Water temperature measured above the 21°C standard (May-Oct) when visits were in the summer and temperature taken later in the day. The steep canyon walls intensify the summer sun effect increasing daytime temperatures.
2. Turbidity and suspended solids samples occasionally tested higher than the standard (>10 NTU/>25 mg/L) when sampling was done in the spring and early

summer when higher streamflows stir up sediment.

3. Total phosphorus reflects higher readings (>0.1 mg/L) in early season water flow because phosphorus can be tied up with soil sediments in the water during spring runoff..

BLM installed two temperature loggers on June 18, 1999 in the South Fork Owyhee (Water Quality Appendices for temperature graphs). One was placed at the gas pipeline crossing site, and the other at the old USGS gage site. Data were collected there through October 28, 1999. Temperatures were exceeded nearly daily at the pipeline crossing site beginning on the day the logger was installed until August 30, 1999. The only days during that period that the temperatures were not exceeded were on August 6, 10, 11, and 12, 1999.

Similar results were obtained at the gage site, however, the water temperatures decreased earlier in August, and exceeded the temperature standard seventeen times, rather than twenty-six times at the pipeline site. The average daily maximum water temperature during August was nearly 2 degrees C warmer downstream at the pipeline crossing than upstream at the old gage site.

The loggers were reinstalled at the same locations on June 6, 2000. Temperature loggers were also set at these locations to measure air temperature as well this year, to determine the correlation between air and water temperature.

The water quality parameters sampled by the BLM in the last two years (Water Quality Appendices, Table 3) have shown the same trend for temperature, turbidity, suspended solids, and total phosphorus. Certified state water quality laboratories analyzed the BLM samples one to three times per year. Fecal coliform sampling was added because of recreational uses of the river. Laboratory analysis using membrane filtration and colony counts indicates conformance with this standard (< 200 per 100 ml as an annual geometric mean or < 400 per 100 ml in a single sample). Fecal coliform appears higher in the spring perhaps due to water flowing through livestock bedding areas and pastures where manure would be concentrated.

Idaho Department of Environmental Quality (IDEQ) also collected water quality and temperature data during 1999 on the South Fork Owyhee River. One of the sampling points was also at the gas pipeline site in Nevada. Their water quality results were similar to those of BLM. IDEQ data is found in the *South Fork Owyhee River Subbasin Assessment and Total Maximum Daily Load* report, written in December, 1999.

Seasonal high stream flows and geology of the canyon topography appear to strongly influence some of the water quality parameters.

H. Wildland Fire

See Owyhee Allotment Fire Management Plan (Fire Management Appendix) for summaries of wildland fire occurrence.

I. Wilderness Study Areas

The study or second phase of the BLM wilderness study process was completed for the South Fork Owyhee River and Owyhee Canyon WSAs during the evaluation period. The study phase concluded with the Owyhee Canyonlands Wilderness Final Environmental Impact Statement (1989). This document provided recommendations and analyses on the suitability and non-suitability for wilderness designation for the two Nevada WSAs and eight other WSAs in Idaho and Oregon.

The reporting or third phase of the wilderness study process culminated in the Nevada BLM Statewide Wilderness Report in 1991. Volume II - Elko District contains the recommendations that were submitted to the President.

All existing (as of the intensive wilderness inventory) ways and cherrystem roads and trespass ways were documented photographically. This information can be found in the Owyhee Canyon WSA and South Fork Owyhee River WSA case files.

J. Special Recreation Management Area

No studies have been conducted concerning the SRMA. The 1987 AMP proposed a post-use survey of river runners, but this was never implemented. Such a survey would be very difficult to accomplish because all river registrations forms are sent to the Lower Snake River District office in Boise, ID. Compounding the problem is the fact that many river users do not submit the required registration forms.

K. Wild and Scenic Rivers

A 1992 BLM study evaluated 24.6 miles of the South Fork Owyhee River and 2.6 miles of Fourmile Creek for eligibility as wild, scenic, or recreational river segments under the Wild and Scenic Rivers Act of 1968 (P.L. 90-542). This study found that 23.6 miles of the South Fork Owyhee River meet the criteria for wild river areas and 1.0 mile meets the scenic river criteria. The study also found that 2.2 miles of Fourmile Creek meet the wild river criteria.

IV. CONCLUSIONS

Land Use Plan (RMP/ROD) Objectives

1. Maintain or improve the condition of the public rangelands to enhance productivity for all

rangeland values.

2. Conserve and enhance terrestrial, riparian, and aquatic wildlife habitat.
3. Manage wild horse populations and habitat in the established herd areas consistent with other resource uses.
4. Manage as wilderness those portions of the Wilderness Study Areas that are manageable as wilderness and where wilderness values are capable of balancing other resource values and uses which would be forgone.

The attainment or non-attainment of General Land Use Plan objectives are addressed by the more specific Rangeland Program Summary (RPS) and Key Area Objectives below.

A. **Livestock**

1. Rangeland Program Summary Objectives

- a. In the long-term, provide forage to sustain 37,428 AUMs for livestock grazing.

Not Met. Carrying capacity calculations indicate that there are only 27,879 AUMs of forage available for livestock grazing.

- b. Improve ecological status from mid-seral to late-seral on 5,130 acres and late-seral to PNC on 12,526 acres.

Partially Met. At key areas OW-02 and OW-07 the ecological condition information shows that these key areas are currently in mid-seral condition with an upward trend, but have not yet reached late seral condition. Key areas OW-01, OW-05, have been maintained in mid-seral ecological condition with trend being stable. Key area OW-04 has been maintained in late-seral condition also with a stable trend. Key area OW-06 has declined in range condition from late-seral condition in 1982 to mid-seral condition in 1994 and shows a downward trend. Key area OW-08 has maintained itself in an early seral stage with trend being stable also.

Some progress has been made in improving 5,130 acres from mid-seral to late-seral as measured at OW-02 and OW-07 in which ecological condition information show improvement. However, the key area ecological condition information does not show any improvement from late-seral to Potential Natural Community (PNC). Overall, the allotment has maintained its current ecological condition since 1982 and is showing some slight improvement with the exception of key area OW-06 in which the ecological condition has declined, and with key area OW-08 which is currently in early seral condition and has not shown any improvement since 1982.

c. Maintain or enhance the current forage value condition on non-native range.

Met. The forage value condition for the Winters Creek Seeding has been maintained. The forage production for the seeding has increased from 698 lbs/acre in 1982 to 847 lbs/acre in 1994. The seeding is currently grazed early in the spring to reduce the amount of wolfy plants and then grazed again the following fall after seedripeness as outlined in the existing allotment management plan. This type of grazing prescription has allowed the seeding to maintain its current forage value condition.

d. In the short-term, maintain or enhance native vegetation with utilization levels not to exceed 50% on the key species.

Partially Met. Evaluation of existing key area utilization information indicates that the utilization objective level of 50% has been exceeded during the evaluation period at key areas OW-01, OW-05, OW-06, OW-07 and OW-10. However, the utilization level was only exceeded 6 times out of 71 readings at the existing key areas since 1979 in which collection of utilization information was initiated.

Use pattern mapping information also indicates that utilization levels have been exceeded within portions of the Dry Creek, Chimney Creek, Lower 4-mile and Upper 4-mile Pastures. The most extensive amount of heavy use was mapped in both the Lower and Upper 4-mile Pastures.

2. Allotment Management Plan (AMP) Objectives

a. By the year 2006, improve the ecological status of 5,130 acres from mid-seral to late-seral condition, 12,526 acres from late-seral to potential natural community condition, maintain or enhance the current livestock forage value on 5,588 acres of crested wheatgrass seeding, and maintain the remaining 318,187 acres in their present ecological condition as identified in the RMP.

Partially Met. There has been progress made in improving 5,130 acres from mid-seral to late-seral condition. There has been no improvement shown in improving 12,526 acres from late-seral to PNC. The current livestock forage value of the Winters Creek Seeding has been maintained, and the existing key area ecological condition data indicates that overall the majority of the allotment has been maintained in its present ecological condition. Refer to livestock RPS objectives 1(b) and (c).

b. Obtain proper use of key species at key areas annually after implementation of the grazing system.

Partially Met. Refer to livestock RPS objective 1(d).

c. Improve livestock distribution through development of additional watering sources.

Partially Met. Since the implementation of the AMP several pit reservoirs have been constructed within the Star Ridge Pasture and the Dry Creek Pasture. These pit reservoirs have supplied additional seasonal water sources within these pastures and have resulted in some improvement in livestock distribution. However, additional more permanent water sources are needed to improve distribution further.

d. Permittee objective : Improve the current conception rate of 85% to between 90 and 95% within 5 years of implementation by confining the cattle to smaller pastures during breeding.

Met. This objective has been met.

e. Permittee objective: Maintain two different herds of cattle on the allotment separately from March 1 through May 15.

Met. This objective has been met.

3. Key Area Objectives.

a. Key Area OW-01

1. Obtain 50% use or less on bottlebrush squirreltail (*Sitanion hystrix*) and Sandberg bluegrass (*Poa secunda*) annually after implementation of allotment grazing system.

Met. Utilization was not exceeded on bottlebrush squirreltail (*Sitanion hystrix*) or Sandbergs bluegrass (*Poa secunda*). However use levels were exceeded on foxtail wheatgrass (*Agrositiation saxicola*).

2. Achieve a statistically significant increase in bottlebrush squirreltail and Sandberg bluegrass frequencies by the year 2006.

Met. Frequency data show a significant increase of bottlebrush squirreltail (*Sitanion hystrix*) and Sandbergs bluegrass (*Poa secunda*).

3. Increase the percent composition by weight of bottlebrush squirreltail (*Sitanion hystrix*) in the community from .28% to 2% and Sandberg bluegrass (*Poa secunda*) from .08% to 2% by the year 2006.

Met. Production data show that this objective has been met.

b. Key Area OW-02

1. Obtain 50% use or less on bottlebrush squirreltail (*Sitanion hystrix*), Sandbergs

bluegrass (*Poa secunda*) and Indian ricegrass (*Oryzopsis hymenoides*) annually after implementation of allotment grazing system.

Met. Utilization objectives for these species were not exceeded.

2. Achieve a statistically significant increase in bottlebrush squirreltail (*Sitanion hystrix*), Sandberg bluegrass (*Poa secunda*) and Indian ricegrass (*Oryzopsis hymenoides*) frequencies by the year 2006.

Partially Met. There was a significant increase in Sandbergs bluegrass (*Poa secunda*) from 1987 to 1994. There was no significant change in bottlebrush squirreltail (*Sitanion hystrix*) from 1982 to 1994. There was a significant decrease in the frequency of Indian ricegrass (*Oryzopsis hymenoides*) from 1982 through 1994.

3. Increase the percent composition by weight of bottlebrush squirreltail (*Sitanion hystrix*) in the community from .4% to 2%, Sandberg bluegrass (*Poa secunda*) from .2% to 2% and Indian ricegrass (*Oryzopsis hymenoides*) from .2% to 2% by the year 2006.

Partially Met. Production data show that this objective was met for Sandbergs bluegrass (*Poa secunda*) and bottlebrush squirreltail (*Sitanion hystrix*). However, production data information for Indian ricegrass (*Oryzopsis hymenoides*) shows that there has been a decline in composition from 1982 through 1994.

c. Key Area OW-03

1. Obtain light (21-40%) use of crested wheatgrass (*Agropyron cristatum*) in spring and heavy (60-65%) use in fall.

Met. Utilization information indicate that this objective has been met.

2. Maintain or improve the current production of the crested wheatgrass (*Agropyron cristatum*) at or above 514 pounds/acre.

Met. This objective has been met. Refer to Livestock RPS objective 1(c).

d. Key Area OW-04

1. Obtain 50% use or less on bluebunch wheatgrass (*Psuedorogneria spicatum*) when grazed during the growing season (or 60% use or less when grazed in the fall) after implementation of allotment grazing system.

Met. Utilization information indicate that this objective has been met.

2. Improve ecological status from mid-seral to late-seral by year 2006 as identified.

Met. Key area ecological condition information indicate that this objective has been met.

3. Achieve a statistically significant increase in bluebunch wheatgrass (*Psuedorogneria spicatum*) frequency by the year 2006.

Met. Frequency information indicate that there was a significant increase in bluebunch wheatgrass (*Psuedorogneria spicatum*) between 1982 and 1994.

4. Increase the percent composition by weight of bluebunch wheatgrass (*Psuedorogneria spicatum*) in the community from 10.5% to 20% by the year 2006.

Partially Met. 1994 key area ecological condition information indicate that the percent composition of bluebunch wheatgrass has increased to 11.62%.

e. Key Area OW-05

1. Obtain 50% use or less during growing season grazing (or 60% use or less during fall grazing) on bluebunch wheatgrass (*Psuedorogneria spicatum*) and Thurbers needlegrass annually after implementation of allotment grazing system.

Partially Met. 1992 utilization information indicate that use level on bluebunch wheatgrass (*Psuedorogneria spicatum*) during the growing season was 59% exceeding the objective level of 50%.

2. Improve ecological status from mid-seral to late-seral by year 2006 as identified in the above range objectives for ecological condition.

Not Met. Key area ecological condition information collected in 1982, 1987 and 1994 for key area OW-05 indicate that the ecological condition has remained in mid-seral condition.

3. Achieve a statistically significant increase in bluebunch wheatgrass (*Psuedorogneria spicatum*) frequency by the year 2006.

Not Met. Frequency information indicates that there was a statistically significant decrease in bluebunch wheatgrass (*Psuedorogneria spicatum*) from 1982 through 1994.

4. Increase the percent composition by weight of bluebunch wheatgrass (*Psuedorogneria spicatum*) from .4 to 20% by the year 2006.

Not Met. Key area ecological condition data indicate that the composition by weight of

bluebunch wheatgrass (*Pseudoroegneria spicata*) has decreased from 1982 through 1994.

f. Key Area OW-06

1. Obtain 50% use or less during growing season grazing (or 60% use or less during fall grazing) on bluebunch wheatgrass (*Pseudoroegneria spicata*) annually after implementation of allotment grazing season.

Met. Key area utilization information indicate that this objective for bluebunch wheatgrass (*Pseudoroegneria spicata*) has been met.

2. Improve ecological status from mid-seral to late-seral by year 2006 as identified in the above range objectives for ecological condition.

Not Met. Key area ecological condition information indicate that key area OW-06 has remained in mid-seral condition.

3. Achieve a statistically significant increase in bluebunch wheatgrass (*Pseudoroegneria spicata*) frequency by year 2006.

Not Met. Frequency information indicate that between 1982 and 1987 a statistically significant increase in bluebunch wheatgrass occurred. However, 1994 frequency information indicate that there was a statistically significant decrease in bluebunch wheatgrass from that recorded in 1987.

4. Increase the percent composition of bluebunch wheatgrass (*Pseudoroegneria spicata*) from 12.3% to 20% by the year 2006.

Not Met. Key area ecological condition information indicate that this objective has not been met. Composition by weight of bluebunch wheatgrass (*Pseudoroegneria spicata*) has declined since 1982.

g. Key Area OW-07

1. Obtain 50% use or less during the growing season on bottlebrush squirreltail (*Sitanion hystrix*), Sandberg bluegrass (*Poa secunda*), and Indian ricegrass (*Oryzopsis hymenoides*) (or 60% on Indian ricegrass (*Oryzopsis hymenoides*) during the fall) annually after implementation of the allotment grazing system.

Met. Key area utilization information indicate that this objective has been met.

2. Improve ecological status from mid-seral to late-seral by the year 2006 as identified in

the above range objectives for ecological condition.

Not Met. Key area ecological condition information indicate that this objective has not been met. However, ecological condition at this key area has improved from early seral condition in 1982 to a mid-seral condition in 1994 showing progress towards improving the ecological condition.

3. Achieve a statistically significant increase in bottlebrush squirreltail (*Sitanion hystrix*), Sandberg bluegrass (*Poa secunda*), and Indian ricegrass (*Oryzopsis hymenoides*) frequencies by the year 2006.

Partially Met. Frequency information indicate that Sandbergs bluegrass (*Poa secunda*) has significantly increased. However, Indian ricegrass (*Oryzopsis hymenoides*) frequency information shows a statistically significant decrease in frequency and bottlebrush squirreltail (*Sitanion hystrix*) has remained the same between the 1982 and 1994 frequency readings.

4. Increase the percent composition of bottlebrush squirreltail (*Sitanion hystrix*) from 6.3% to 10%, Sandberg bluegrass (*Poa secunda*) from 1.8 to 2% and Indian ricegrass (*Oryzopsis hymenoides*) from .3 to 2% by the year 2006.

Partially Met. Key area ecological condition information indicate that this objective has been met for Sandbergs bluegrass (*Poa secunda*). The 1994 ecological condition information indicates the composition by weight for bottlebrush squirreltail (*Sitanion hystrix*) was 5.26% and that Indian ricegrass (*Oryzopsis hymenoides*) has remained around 0.3%.

h. Key Area OW-08

1. Obtain 50% use or less during the growing season on bottlebrush squirreltail (*Sitanion hystrix*), Sandberg bluegrass (*Poa secunda*), and Indian ricegrass (*Oryzopsis hymenoides*) (or 60% use or less during the fall) annually after implementation of allotment grazing system.

Met. Key area utilization information indicates that this objective has been met.

2. Achieve statistically significant increases in bottlebrush squirreltail (*Sitanion hystrix*), Sandberg bluegrass (*Poa secunda*), and Indian ricegrass (*Oryzopsis hymenoides*) frequencies by the year 2006.

Partially Met. Frequency information indicates that the there has been no statistically significant increase in Indian ricegrass (*Oryzopsis hymenoides*) and bottlebrush squirreltail (*Sitanion hystrix*). Sandbergs bluegrass (*Poa secunda*) has shown a

statistically significant increase in frequency of occurrence.

3. Increase the percent composition of Indian ricegrass from .5% to 2% and Sandberg bluegrass (*Poa secunda*) from 0 to 2% by the year 2006.

Partially Met. 1994 key area ecological condition information indicate that the percent composition of Indian ricegrass (*Oryzopsis hymenoides*) has increased to 1.5% and that Sandbergs bluegrass (*Poa secunda*) has increased to .03% indicating that progress towards attaining this objective is being made.

B. Wild Horse

1. Rangeland Program Summary Objectives

a. Manage for a wild horse herd size which will maintain a thriving ecological balance consistent with other multiple uses while remaining within the wild horse herd management area boundary. The original RPS objective read "Maintain management levels at 58 horses (696 AUMs) within the Owyhee Herd Management Area". However, the Interior Board of Land Appeals rendered a decision (88-591,638, 648, and 679), decided June 7, 1989 which clarified that a wild horse herd size is to be established based on the concept of maintaining a thriving ecological balance, thus the objective has been reworded as follows:

Manage wild horses within HMA boundaries and maintain a thriving, natural ecological balance consistent with other resource needs.

Partially Met. The Owyhee wild horse herd has been managed within the boundary of the HMA; however, there is an over population of wild horses in the three pastures of the Owyhee HMA. The water resources have not been able to sustain the current numbers of horses as evidenced by the emergency water situation experienced in the Dry Creek Pasture in the summer of 2000. In addition, several key areas have shown utilization levels which exceed the objective level at the end of the combined use period.

The establishment of an AML within the Owyhee HMA through this allotment evaluation should improve historic wild horse distribution problems and associated areas of over-utilization.

2. Allotment Management Plan (AMP) Objectives.

a. Maintain the wild horse herd on the allotment at the target level of 58 head identified in the RMP. Horse numbers will be allowed to fluctuate between 50 and 100 head.

Not Met. Wild horse numbers have not been maintained at the target level of 58 head as identified in the RMP. However, as stated above, this objective has been reworded due to

an interpretation of IBLA decisions 88-591,638, 648, and 679. Wild horses within the Owyhee HMA are to be managed to maintain a thriving, natural ecological balance, consistent with other resource uses.

b. Provide additional water sources for wild horses during dry periods.

Not met. No additional water sources have been developed for wild horses.

c. Eliminate impediments to wild horse movements as far as possible while ensuring control of livestock movements.

Partially Met. There have been no range improvements proposed that would hinder the movements of wild horses. The existing range improvements are necessary for the control of livestock. One fence near the Desert Ranch Reservoir was modified to a let-down fence to allow horses access to the water. However, the let-down portion of the fence was not placed in a location that the horses naturally want to use, and the horses consistently push over the fence in a different area. This fence will be modified and relocated.

C. Wildlife

1. Rangeland Program Summary Objectives

a. Manage rangeland habitat and forage condition to support 242 AUMs for reasonable numbers of mule deer, 485 AUMs for reasonable numbers of pronghorn antelope and 24 AUMs for reasonable numbers of California bighorn sheep.

Partially met for mule deer. This objective is being met on Lower (Good Rating) and Upper Fourmile (Excellent Rating) Pastures and not met on Star Ridge Pasture (Fair Rating) per BLM Manual 6630 habitat ratings criteria. Reasonable AUMs for mule deer are provided for by attainment of good to excellent habitat conditions. Monitoring data collected in 1987 and 1994/1996-97 indicated that mule deer yearlong (winter emphasis) habitat was rated as being in fair to excellent condition. Limiting factors at Key Area Transect DY-T-87-31 on Star Ridge Pasture were poor forage diversity and lack of shrub and perennial native herbaceous vegetative cover. The heavy composition of cheatgrass is due, in part, to past and pre-AMP livestock management, which has helped to prevent the establishment of native vegetation needed for satisfactory cover. Per the NRCS write-up for the Loamy 8-10" p.z. Ecological Site, "Where management results in abusive livestock use, big sagebrush and rabbitbrush become dominant with an increase of Sandberg's bluegrass, bottlebrush squirreltail and phlox in the understory. Cheatgrass...are species likely to invade this site." Habitat components that could be improved include poor mule deer habitat conditions on riparian areas associated with the South Fork Owyhee River. Recent voluntary livestock movements out of pastures by the livestock permittee in early summer (July 1 to July 15) since 1995, concerted through the

BLM, will help improve riparian conditions on the South Fork Owyhee River, and possibly help improve forage diversity on the Star Ridge key area. The Upper and Lower Fourmile Pastures division fence is a barrier for big game movements (mule deer fawns and pronghorn) due to present wire spacing configurations. Modification of this fence will help to facilitate big game movements on the allotment.

Partially met for pronghorn. Met at the following locations with “**Good**” habitat condition ratings:

- i. Summer habitat on Chimney Creek Pasture (AS-T-87-30/OW-4).
- ii. Crucial yearlong habitat at two locations on Dry Creek Pasture: AY1-02 (Silver Lake) and AY1-03 (Corral Lake Guzzler).
- iii. Yearlong habitat on Star Ridge Pasture: AY-T-87-40 (Star Ridge).

Not met on crucial yearlong habitat at AY1-01/OW-2 (Monument Hills) on Dry Creek Pasture due to a “**Fair**” habitat condition rating. Limiting Factors: Essentially no forb composition on July 14, 1982 or June 5, 1985; to 2.6% on July 12, 1994. Reasonable AUMs for pronghorn are provided for by attainment of good habitat conditions.

This objective is met for California bighorn sheep. No studies have been completed to evaluate bighorn sheep habitat conditions. However, ecological status inventories conducted in 1986 indicated that conditions for the South Slope 8-12" p.z. Ecological Site in potential bighorn habitat were in late seral status. This site is predominately found on boulder-strewn talus slopes on both sides of the South Fork Owyhee River. Since late seral status would reflect the availability of forage needed for reasonable AUMs, this objective has been met.

b. Maintain or improve to at least good condition all crucial mule deer, California bighorn sheep and pronghorn antelope habitat.

Not applicable for Mule Deer. Crucial habitat was not identified in the 1986 Final Elko RMP or 1987 RMP Record of Decision.

This objective has been partially met for Pronghorn. This objective has been partially met as indicated by big game monitoring data completed from 1982 to 1997.

This objective is undetermined for California bighorn sheep. No studies have been completed to evaluate California bighorn sheep habitat conditions.

c. Manage rangeland to protect or enhance crucial sage grouse strutting or nesting habitat.

Partially met for strutting habitat. Key Area AY1-02 (Silver Lake) is the only key area where evaluation of vegetation (vegetated playa) directly associated with leks was completed as part of pronghorn habitat monitoring on a Wet Clay Basin Range Site.

There is concern regarding potential excessive utilization of native herbaceous vegetation on the range site by combined livestock, wild horses and big game use which, on a continued basis, could likely affect sage grouse habitat conditions and ecological site status on this range site. This site is highly susceptible to disturbance as indicated by low densities of cheatgrass and high composition of povertyweed sampled during monitoring efforts in 1996. Per NRCS site description for the site, "When management results in abusive livestock use, Nevada bluegrass and mat muhly decrease as povertyweed and other annual forbs increase in composition". Improper use by an excessive number of wild horses or livestock could affect range site dynamics and allow decreases in perennial native grass and forb species, and mosses, and increases in annual vegetation.

"Loafing" Habitat Associated with Leks: With the exception of Key Area AS-T-87-30 (Chimney Cr. Pasture) and , AY1-02 (Silver Lake), monitoring has indicated that forb composition is a limiting factor at potential lek-associated resting and foraging areas or "loafing " habitat. Forbs are important in the diet, as they become available, during the latter part of the mating season. At some key areas in close proximity to leks, monitoring has indicated that shrub cover in associated resting and foraging areas exceeds, or is close to, upper limit cover values in regard to potential decreases in herbaceous vegetation needed in the diet during the latter part of the mating season due to competition (See Sage Grouse Shrub Canopy Foliar Cover and Height narrative above under management evaluation).

Manmade Structures near Leks: BLM Nevada Draft High Risk Assessment for sage grouse include fences, pit reservoir berms, corrals that pose as perches/rests for avian predatory species and vertical structures that could limit vision of sage grouse or act as intimidating factors. These structures exist near several of the leks on the allotment and were inadvertently constructed without knowledge of potential impacts to leks. Downed barbed wire from a corral on-site prior to a current wooden corral poses as an entanglement threat for sage grouse on/near the Silver Lake lek. Sage grouse usually fly low and direct in their habitat, at, or just above the equivalent of, standard fence heights. Mortalities have been documented due to entanglement with fences which could add to unnatural "additive" mortalities.

Partially met for nesting habitat. Chimney Creek Pasture: Likely met at AS-T-87-30 where ecological status was late seral and shrub foliar cover was 12.5% in 1994-96. Forb composition needed for nesting hens was satisfactory at 12.9%. Much of this area, on or in close proximity to the Winters Creek Burn, is representative of the desired mosaic and edge effect potential on the allotment, as a result of fire, needed for improved sage grouse nesting and early brooding/early summer habitat.

Dry Creek Pasture: Not met due to mid seral ecological status from 1982 to 1994 coupled with unsatisfactory perennial grass basal cover during 1982-1987. This cover was no greater than 1.3% in 1982 and 2.6% in 1987; no measurements were taken in 1994-97. Shrub foliar cover at AY1-01 and AY1-03 was 14.4% and 27.3%, respectively,

in 1996 and 1997 which is near or above values (15%) where shrub cover generally limits the growth of perennial grass cover needed for lateral nesting cover. Forb composition needed for nesting hens was unsatisfactory in 1994-97 ranging from 0.0% to 2.6% at three study transects.

Upper Fourmile Pasture: Partially met. Shrub foliar cover was 12.5% in 1994-96. Ecological status was mid seral in 1982, 1987 and 1994. Perennial grass basal cover was only measured in 1987 at 5.6%. Forb composition, needed for nesting hens, was satisfactory in 1982 at 24%, but has dropped to 8% and 4% in 1987 and 1994, respectively.

Lower Fourmile Pasture: Partially met. Shrub foliar cover was 13.6% in 1994-96. Ecological status was late seral in 1982, and mid seral in 1987 and 1994 with a downward trend in the numerical (percent) rating. Perennial grass basal cover was only measured in 1987 at 7.75%. Forb composition, needed for nesting hens, was satisfactory in 1982 at 18.6%, but has dropped to 5% and 3.9% in 1987 and 1994, respectively.

d. Improve and maintain meadow and riparian areas for mule deer, pronghorn antelope and sage grouse.

Refer to the Aquatic and Riparian Habitats, RPS Objective 1(a) in the conclusions section for the determination of met or not met.

e. Utilization levels will not exceed 50 percent on meadow and riparian areas.

Refer to the Aquatic and Riparian Habitats, RPS Objective 1(b) in the conclusions section for the determination of met or not met.

2. Allotment Management Plan (AMP) Objectives

a. Improve wildlife habitat to provide 542 AUMs of forage for mule deer, 485 AUMs of forage for pronghorn antelope and 24 AUMs of forage for California bighorn sheep as identified in the RMP by the year 2006.

Partially met for mule deer and pronghorn; met for California bighorn sheep. See Wildlife RPS objective 1(a).

b. Provide additional water sources for antelope and mule deer during dry periods.

Met for crucial yearlong pronghorn habitat on the Dry Creek Pasture. Six water developments (Pronghorn Guzzlers #2-#7) were completed from 1995 to 1999, complementing a seventh water development initiated in the early 1980s and reconstructed in 1997-99. All are fully functional with maximum capacities of approximately 28,000 gallons. These developments will contribute significantly to

suitability of crucial pronghorn habitat by allowing firm sources of free water during the summer period (3/15 to 11/15). Additional water developments will be recommended as part of this evaluation for the Star Ridge and Chimney Creek Pastures. Those developments recommended for the Star Ridge Pasture could benefit mule deer. **Not completed for mule deer** to date since most use occurs during the winter and spring periods within two miles of the SF Owyhee River where water is available.

c. Eliminate impediments to wildlife movements, particularly antelope.

Not completed to date. However, fence modifications are recommended for the pasture division fence between the Upper and Lower Fourmile Pastures as a result of an inspection completed in 1996. Other inspections have been completed in crucial habitat on the allotment with satisfactory results. Modifications will be recommended, as needed. There is a technical recommendation to remove downed barbed wire and metal fence posts on Silver Lake associated with an abandoned corral.

d. Reduce competition between domestic cattle and wildlife by improving cattle distribution and rotating periods of use under the grazing system.

Partially met. The AMP, and resulting rest rotation livestock grazing system since 1990-91 on the allotment, has helped reduce competition between domestic cattle and wildlife. Although riparian habitat was in poor condition during the evaluation period, this grazing system and refinements of the system since 1995 completed by the permittee, in consultation with the BLM, should help to improve riparian habitat on the SF Owyhee River and help improve ecological status on the allotment.

e. Increase grass and forb forage diversity for pronghorn antelope and mule deer, especially within crucial pronghorn antelope habitat.

Partially met. This objective has been met on AY1-02 (Silver Lake) located on a vegetated playa within a Wet Clay Basin Range Site. This objective has not been met at AY1-01 (Monument Hills) and AY1-03 (Corral Lake Guzzler) which are located on upland areas characterized by the Wyoming big sagebrush vegetation type within Loamy 8-10" p.z. Range Sites.

3. Key Area Objectives.

a. Big Game Study AY-1-001 (Monument Hills)

1. Improve habitat condition rating from fair to good by year 2006.

Apparent trend upward. Latest rating for 1994 as a "high fair" due, in large part, to the development of reliable water sources in the vicinity of the study area and increase in sampled perennial grass production. Vegetational manipulation practices that would

result in a reduction in shrub cover and increase in perennial grasses and forbs need to be completed to help improve habitat conditions and ecological status on the study area. Any treatment actions need to be followed by management actions that would help to maintain improved habitat conditions on the study area.

2. Increase line intercept percent composition of forbs from 1% to 5-10% by year 2006.

Apparent trend towards being met. Forb composition was 0.0% in 1982, 1.5% in 1987, and 2.6% in 1994.

3. Increase line intercept percent composition of grasses from 7% to 20-50% by year 2006.

Apparent trend towards being met. The trend is unknown using line intercept method. This method was used in 1985 for baseline of 7% composition of grasses. Apparent trend towards being met by 2006 using forage production method (acceptable substitute for line intercept). Grass composition was 2.5% in 1982, 9.2% in 1987 and 37.7% in 1994.

4. Increase dry weight production from 146 lbs./acre to 500-1,000 lbs./acre by year 2006.

Apparent trend towards being met. Dry weight production was 325 lbs./ac. in 1982, 467 lbs./ac. in 1987 and 453 lbs./ac. in 1994.

b. Big Game Study AY-1-002 (Silver Lake)

1. Improve habitat condition rating from fair to good by year 2006.

Met. Habitat was rated as being in "Good" condition in 1996.

2. Maintain line intercept percent composition of forbs between 10 and 15% by year 2006.

Apparent trend towards not being met in the context of the objective. Forb composition was 30.6% in 1996 of which 18.6% was poverty weed and 10.7% was moss (*Tortula spp.*). The only two other forbs sampled *Collinsea spp.* and *Lepidium spp.*, both annual forbs, collectively made up 1.3% of the total sample. This objective was written in regard to the percent composition of broadleafed forbs with late seral to potential natural community ecological status, not exceeding five percent (air dry weight) composition of povertyweed. Per NRCS ecological site description excerpt for the Wet Clay Basin Range Site, "Where management results in abusive livestock use, Nevada bluegrass and mat muhly decrease as poverty weed and other annual forbs increase in composition...".

3. Maintain line intercept percent composition of grasses between 80 and 95% by year 2006.

Apparent trend towards not being met. Grass composition decreased from 88% in 1985 to 60% in 1996. Of this grass composition, mat muhly, an indicator species, decreased from 83% of total composition to 45.7% total composition. Cheatgrass did not occur in the overall sample in 1985 but made up 4.2% of the total composition in 1996. (See ecological site description excerpt, in 2 above.)

4. Increase line intercept percent composition of shrubs from 0% to 2-5% by year 2006.

Apparent trend towards not being met. Shrub composition was 9.4% in 1996 comprised of Bolander silver sagebrush.

5. Maintain dry weight production at 400-450 lbs./acre by year 2006.

Not evaluated. No forage production sampling was completed in 1994-96.

c. Big Game Study AY-1-003 (Corral Lake Guzzler)

1. Improve habitat condition rating from fair to good by year 2006.

Met. The inclusion of moss evaluated as a forb comprising 36.9% of the species composition likely helped the attainment of a "Good" habitat rating in 1997. Most of the moss was sampled under the protective canopy of Wyoming big sagebrush.

2. Increase line intercept percent composition of forbs from 1% to 5-10% by year 2006.

Apparent trend towards not being met. Broadleafed forb composition was 1.8% in 1997. This excludes moss composition.

3. Increase line intercept percent composition of grasses from 14% to 20-50% by year 2006.

Apparent trend towards not being met. Grass composition was 5.2% in 1997.

4. Increase dry weight production from 208 lbs./acre to 500-1,000 lbs./acre by year 2006.

Unknown. Per composition of plants observed during 1997 monitoring, likely trend of dry weight production of perennial grasses and broadleafed forbs towards not being met. No forage production sampling was completed in 1994-97.

D. Threatened, Endangered, Candidate, and BLM Sensitive Species of Plants and Animals.

No objectives established. Refer to objectives for Wildlife and for Aquatic and Riparian Habitats.

E. Fisheries

No objectives established. Refer to objectives for Aquatic and Riparian Habitats.

F. Aquatic and Riparian Habitats

1. Rangeland Program Summary Objectives.

a. Improve and maintain meadow and riparian areas for mule deer, sage grouse, pronghorn antelope, bighorn sheep, and native trout on South Fork Owyhee River.

Progress has been made in meeting this objective for the South Fork Owyhee River within the Star Ridge Pasture. Surveys conducted in 1977 and 1995 show some improvement in stream and riparian habitat conditions along the South Fork Owyhee River within the Star Ridge Pasture. Streambank cover and the stream width to depth ratio show improvement over earlier surveys, while at least some depth at the shore/water interface as well as the presence of "B" riparian vegetation (cover is in excess of 50%) are indicative of early streambank and riparian zone development. However, other factors including a lack of mature willows, heavy sedimentation of the streambottom, a lack of overhanging streambank vegetation, and a limited riparian zone width suggest current grazing practices are still influencing the ability of the system to recover in areas accessible to cattle. Although utilization of riparian vegetation was documented as light along the South Fork Owyhee River in July of 1995, composition and structure of the plant community as well as an absence of well developed streambanks indicates grazing utilization rates are heavier later in the growing season. Degraded conditions in the upstream watershed as well as the natural confinement of the South Fork Owyhee River within the Owyhee Allotment are also important influences.

This objective has not been met for the South Fork of the Owyhee River within the Fourmile Pasture. A PFC assessment conducted in 2000 shows this segment of river is nonfunctional. Overuse of the riparian zone by livestock is the primary cause of poor habitat conditions, although the natural confinement of the canyon as well as upstream watershed conditions are also important influences.

b. Utilization levels will not exceed 50 percent on meadow and riparian areas.

Progress in meeting this objective cannot be conclusively determined at this time for riparian habitats along the South Fork Owyhee River in the Star Ridge Pasture.

Utilization of streamside vegetation was documented as light in July of 1995; however, structure and composition of the riparian plant community as well as stream habitat conditions within the South Fork Canyon suggest utilization is heavier by the end of the growing season. In addition, heavy use of riparian vegetation has been documented other years the South Fork Owyhee River was surveyed.

This objective has not been met for the South Fork Owyhee River within the Fourmile Pasture. A evaluation of habitat conditions completed in April of 2000 showed utilization of streamside forage by livestock in the previous year was heavy to severe. Heavy use of riparian vegetation was also evident in photographs taken for the area in 1986.

This objective has been partially met for non-stream riparian habitats. Devils Corral Spring is inaccessible to livestock or wild horses. Utilization of Bookkeeper Spring, however, is heavy and severe primarily as a result of grazing by wild horses.

2. Allotment Management Plan (AMP) Objectives.

a. Improve the ecological condition of riparian areas along Four-Mile Creek and South Fork Owyhee River by the year 2006.

This objective is not applicable for the portion of Four-Mile Creek located on public lands within the Owyhee Allotment. Stream flow is intermittent and occurs primarily within a narrow, rocky canyon which is mostly inaccessible to livestock.

Progress has been made in meeting this objective for the South Fork Owyhee River. Stream survey data show some improvement in selected habitat parameters for the portion of the South Fork Owyhee River within the Star Ridge Pasture over the 17 year period between surveys. Ecological condition is still poor however, as indicated by heavy sedimentation of the streambottom and by the absence of a well developed riparian zone.

b. Protect approximately 1½ miles of riparian vegetation from livestock grazing by gap fencing Four-Mile Canyon above the river.

This objective does not currently apply. Gap fencing Four-Mile Canyon has been determined to be unnecessary since flows are intermittent and much of the public portion of the creek occurs within a rocky inaccessible canyon.

G. Water Quality

No objectives established.

H. Wildland Fire

No objectives established.

I. Wilderness Study Areas

1. Rangeland Program Summary Objectives. None

2. Allotment Management Plan (AMP) Objectives (Listed Under Recreation).

a. Improve vegetative condition along portions of the river by decreasing seasonal concentrations of livestock from the Owyhee Allotment.

Partially Met. Utilization of streamside vegetation was documented as light in July of 1995; however, structure and composition of the riparian plant community as well as stream habitat conditions within the South Fork Owyhee River Canyon suggest utilization is heavier by the end of the growing season. Progress has been made in decreasing seasonal concentrations of livestock on the South Fork Owyhee River. Since 1995, the permittee working in cooperation with the BLM has voluntarily removed cattle from the Star Ridge Pasture between 6/30 and 7/15 in order to reduce hot season grazing on the river.

J. Special Recreation Management Areas

1. Rangeland Program Summary Objectives. None

2. Allotment Management Plan (AMP) Objectives. None

3. Owyhee River Recreation Area Management Plan (Resource Management Objectives Only).

a. Manage the river canyon to protect its primitive environments. Maintain a natural setting that provides outstanding opportunities for solitude and for primitive and unconfined recreation activities.

This objective has been met. Because the river canyon is within two WSAs, this designation has protected the primitive environment and has maintained the natural setting.

b. Manage the river canyons to protect significant cultural resource sites. Cooperate with State Historic Preservation Offices to protect and stabilize resources on state and private lands.

This objective has not been met. There have been no cultural inventories done in the river canyons in Nevada, so no sites have been identified for protection and/or stabilization in cooperation with SHPO.

c. Manage livestock use in a manner that will not adversely affect the natural, recreational and cultural values of the river canyons.

Partially Met. The permittee through cooperation with the BLM has voluntarily removed cattle from the Star Ridge Pasture between 6/30 and 7/15 in order to reduce the amount of hot season grazing on the South Fork Owyhee River. It has been documented that this type of grazing treatment will result in the improvement of various resources within the river canyons.

d. Negotiate to obtain appropriate easements through state or private lands when necessary to protect the canyon environment, or preserve recreation use.

This objective has not been met. No efforts have been made to obtain easements in Nevada. At present, the Petan Ranch has allowed the public to cross their private lands when permission is obtained at ranch headquarters.

e. Operations on existing valid mineral rights, future mining claims and oil and gas leases will be accomplished under regulations designed to protect natural, cultural and recreational resources.

This objective does not currently apply. There are no existing valid mineral rights or oil and gas leases in Nevada. Because most of the SRMA is within WSAs, any activity in those portions would be administered under the IMP, which would restrict any surface disturbing activities.

f. Manage the river canyon to protect the habitats for fish and wildlife species. Cooperate with the Nevada Department of Fish and Game (sic) (NDOW) in protecting and restoring habitats for fish and wildlife, with particular emphasis given to bighorn sheep, river otter, and Canada geese.

Progress has been made in meeting this objective. Stream survey data show some improvement in stream and riparian habitat conditions for the South Fork of the Owyhee River within the Star Ridge Pasture. Problems including excess sedimentation of the streambottom and overuse of the riparian zone by livestock in some areas are still present.

K. Wild and Scenic Rivers

1. RPS Objectives. None

2. Allotment Management Plan (AMP) Objectives (Listed Under Recreation).

a. Improve recreational experience of white water rafters in the Owyhee Canyon by decreasing cattle use in the canyon from the Owyhee Allotment until after the end of the float season in mid-June.

Met. The grazing system outlined in the AMP allows for the Star Ridge Pasture which contains that portion of river which attracts white water rafters to be rested from grazing every other year thus eliminating cattle use in the canyon from cattle on the Owyhee Allotment. Furthermore, since 1995 the permittee through cooperation with the BLM has voluntarily remove cattle from this pasture earlier than normal in those years in which it is scheduled for use which also has reduces the amount of cattle use in the canyon.

3. Owyhee River Recreation Area Management Plan (Resource Management Objectives Only).

a. As required by the Wild and Scenic Rivers Act, maintain the free flowing condition of the South Fork Owyhee River. Water quality will be maintained in accordance with state and federal water quality standards.

This objective has been met. The free flowing condition of the South Fork Owyhee River has been maintained. Water quality standards are within acceptable ranges for the State of Nevada.

IV. STANDARDS AND GUIDELINES FOR RANGELAND HEALTH

Standard 1. Upland Sites: Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form.

Some progress is being made toward attainment of this standard. Based on the evaluation of Livestock RPS Objectives 1(b), (d) and Livestock AMP Objectives 2(a) and (b), it has been determined that some progress has been made toward attainment of the standard. Livestock management practices as well as the number of wild horses within the HMA portions of the allotment are causal factors contributing to the non-attainment of this standard.

Standard 2. Riparian and Wetland Sites: Riparian and wetland areas exhibit a properly functioning condition and achieve state water quality criteria.

Not Met. Based on the evaluation of Aquatic and Riparian Habitats RPS Objectives 1a and 1b., it has been determined that this standard has not been met, although some progress has been made. Livestock management practices have contributed to the non-attainment of this standard.

The State of Nevada considers that the water quality criteria are being met based on their 29 years of data collection. Continuous temperature monitoring that was done during June through October, 1999 by BLM would indicate otherwise. On a daily basis, temperatures were exceeded approximately 53% of the time. This represents only one warm season of monitoring however. Water temperatures increased between the upstream and downstream sites.

Standard 3. Habitat: Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet life cycle requirements of threatened and endangered species.

Some progress is being made toward the attainment of this standard. Based on the evaluation of RPS Objectives 1(a-c), and AMP objectives 2(a-e) it was determined that, although this standard has not been met, progress is being made towards attainment of this standard on the allotment. Livestock grazing management practices are one of the causal factors contributing to the non-attainment of this habitat standard.

Standard 4. Cultural Resources: Land use plans will recognize cultural resources within the context of multiple use.

Met. Based on evaluation of actions taken within the Owyhee Allotment, this standard has been met. All range improvements that cause surface disturbance have been subject to cultural resources review and modification by BLM or contract archeologists, as required by standard operating procedure specified in the Elko RMP Record of Decision.

VI. TECHNICAL RECOMMENDATIONS

A. Livestock Grazing

Recommendation 1. Vacate the 1987 Allotment Management Plan (AMP) for the Owyhee Allotment.

Rationale: Future management of the Owyhee Allotment will be in accordance with the Owyhee Allotment Evaluation and the subsequent Assistant Field Manager's Final Multiple Use Decision.

Recommendation 2. Establish permitted use for livestock within the Owyhee Allotment as follows:

Table 7. Total permitted livestock use for the Owyhee Allotment.

Allotment	Livestock Number & Kind	Begin Period ¹	End Period ¹	%PL	Type Use	AUMs
Owyhee	3,053 Cattle	2/15	2/28	98	Active	1,377
	3,053 Cattle	3/1	12/15	98	Active	28,526
Total						29,903

¹ Grazing use will be in accordance with the prescribed grazing system which outlines the period of use and AUMs allocated for each pasture.

Rationale: Carrying capacity was calculated by using actual use and key area utilization data. The actual use from 3/1 (start of growing season) to the date monitoring took place for all pastures was used in calculating the carrying capacity. Within the Dry Creek, Star Ridge and Chimney Creek Pastures, which are all within the Owyhee Herd Area, the actual use for livestock and wild horses were combined for calculating carrying capacity.

The Elko Resource Management Plan outlined an objective level of 50% utilization on native pastures. Therefore, the desired utilization level of 50% was used in calculating the carrying capacity for the Dry Creek, Star Ridge, Chimney Creek, Lower 4-mile and Upper 4-mile pastures. A desired utilization level of 60% was used for the Winters Creek Seeding.

When utilization levels were recorded for more than one species at the same key area, the highest use level was used. This method uses the concept of the "limiting factor" which recognizes that the species used the most will determine the level of grazing use that will best manage for maintenance of the key forage species.

The "key area limiting factor" was used to determine the carrying capacity for Star Ridge Pasture. This concept recognized that the key area with the highest use level for a given year will determine the level of grazing use that will best manage for maintenance of the key forage species.

The estimated carrying capacity figures were averaged for all years selected within the Star Ridge, Chimney Creek, Lower 4-mile, Upper 4-mile and Winters Creek Seeding Pastures. Carrying capacity figures that were widely divergent from the rest were not used in calculating the average carrying capacity for each pasture.

Carrying capacity for the Dry Creek Pasture was derived from analysis and interpretation of actual use and use pattern mapping data. For those years where use pattern mapping data were available, the utilization calculated by weighted average of the light, moderate, heavy, and severe use zones was utilized to calculate carrying capacity rather than key area utilization data. The use pattern maps indicate that the majority of the pasture receives slight use with areas of no use. The large amounts of slight and no use areas are associated with those areas of the allotment which have only seasonal waters available at

which time they are grazed, usually during the spring months (March through May). The majority of the light, moderate, heavy and severe use occurs in the areas where more permanent water sources within the pasture exist and where cattle tend to congregate during the summer months. Because the lack of water is the limiting factor, the weighted average using only the light, moderate, heavy and severe use was used for determining carrying capacity.

Prior to development and approval of the Owyhee Allotment Management Plan (AMP) in 1987 the Chimney Creek Pasture was part of the Dry Creek Pasture. The AMP proposed creating Chimney Creek Pasture by fencing it separately from the Dry Creek Pasture to facilitate livestock control and to implement the rest rotation and deferred grazing system for the allotment. The fence construction was completed in the fall of 1989. Therefore, the 1989 use pattern map was not used in determining the carrying capacity for the Dry Creek Pasture because actual use specifically for Dry Creek could not be determined because actual use was combined for both pastures.

Although the undated map gives important information on distribution patterns of livestock and wild horses, it could not be used in determining carrying capacity because the actual use for livestock and wild horses could not be determined.

The average carrying capacities shown in the Range Appendices for the Dry Creek, Star Ridge and Chimney Creek Pastures which are within the Owyhee Herd Area were then allocated between livestock and wild horses based on their percentage of the total average actual use made for each pasture. The average actual use for both livestock and wild horses was based on actual use submitted by the permittee and from wild horse census data. Due to the fact that the Chimney Creek Pasture was fenced separately from the Dry Creek Pasture in the fall of 1989 the average actual use for livestock and wild horses was for the period between 1990 to the present. The allocation of AUMs between livestock and wild horses is shown in Table 8 below:

Table 8. Carrying capacity allocations for livestock and wild horses

Pasture	Average Actual Use ¹		Total Actual Use ²	Percent of Total Actual Use		Carrying Capacity (AUMs)	
	Cattle	Wild Horses		Cattle	Wild Horses	Cattle	Wild Horses
Dry Creek	12,361	1,013	13,374	92%	8%	10,077	876
Chimney Creek	4,933	284	5,217	95%	5%	7,543	397
Star Ridge	8,492	1,072	9,564	89%	11%	12,101	1,496

1. Average actual use for both livestock and wild horses is from 1990 to present.
2. Actual use for livestock and wildhorses combined.

This technical recommendation would also implement Guidelines 1.1, 2.1, 2.4, 3.1, 3.2

and 3.3 which have been developed by the Northeastern Great Basin Resource Advisory Council of Nevada to establish significant progress toward conformance with the Standards for Rangeland Health for Upland Sites, Riparian and Wetland Sites, and Habitat.

Recommendation 3. The terms and conditions for the Owyhee Allotment on the term grazing permit will be as follows:

“Authorized grazing use will be in accordance with the Final Multiple Use Decision for the Owyhee Allotment _____.”

“There are 1,692 Historic Suspended AUMs in the Owyhee Allotment”

“An annual grazing application outlining the annual operation which reflects the terms and conditions in the term grazing permit and multiple use decision must be submitted prior to the start of the grazing season. An actual use report will be submitted as indicated below. A billing notice will be prepared for grazing use within the Owyhee Allotment after the grazing season based on actual grazing use in accordance with 43 CFR 4130.8-1(e).”

“Supplemental feeding is limited to salt, mineral, and/or protein supplements in block, granular or liquid form. Such supplements will be placed at least ¼ mile from live waters (springs, streams, and troughs), wet or dry meadows, and aspen stands.”

“An actual use report (Form 4130-5) showing use by pasture will be turned in within 15 days after completing annual use.”

“All riparian exclosures, including spring development exclosures, are closed to livestock use unless specifically authorized in writing by the Assistant Field Manager for Renewable Resources.”

“Payment of grazing fees is due on or before the due date specified on the grazing bill. Failure to pay the grazing bill within 15 days of the due date specified on the bill shall result in a late fee assessment of \$25.00 or 10 percent of the grazing bill, whichever is greater, but not to exceed \$250.00.”

“Pursuant to 43 CFR 10.4(g) the holder of this authorization must notify the authorized officer, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the **immediate** vicinity of the discovery and protect it **from your activities** for 30 days or until notified to proceed by the authorized officer.”

This technical recommendation would also implement Guidelines 1.1, 2.1, 2.4, 3.1, 3.2

and 3.3 which have been developed by the Northeastern Great Basin Resource Advisory Council of Nevada to establish significant progress toward conformance with the Standards for Rangeland Health for Upland Sites, Riparian and Wetland Sites, and Habitat.

Recommendation 4. Implement the following rest rotation and deferred grazing system for the Owyhee Allotment outlined in the tables below and with the following special grazing stipulations:

Table 9. Year 1 (odd years) of grazing system.

Allotment	Pasture	Livestock Number & Kind	Begin Period	End Period	%PL	Type Use	AUMs
Owyhee	Star Ridge	2,761 Cattle	2/15	2/28	98	Active	1,245
		2,761 Cattle	3/1	6/30	98	Active	10,856
	Chimney Creek	1,709 Cattle	3/1	5/15	98	Active	4,184
		1,709 Cattle	10/16	12/15	98	Active	3,359
	Lower 4-mile	1,857 Cattle	7/1	10/15	98	Active	6,403
	Upper 4-mile	181 Cattle	7/1	10/15	98	Active	625
48 Horses		3/1	12/15	98	Active	444	
Winters Creek Seeding	518 Cattle	3/1	5/30	98	Active	1,518	
	518 Cattle	10/1	12/15	98	Active	1,269	
	Dry Creek					Rest	
Total							29,903

Table 10. Year 2 (even years) of grazing system.

Allotment	Pasture	Livestock Number & Kind	Begin Period	End Period	%PL	Type Use	AUMs
Owyhee	Dry Creek	1,872 Cattle	2/15	2/28	98	Active	844
		1,872 Cattle	3/1	7/31	98	Active	9,233
	Chimney Creek	3,838 Cattle	8/1	9/30	98	Active	7,543
	Lower 4-mile	1,307 Cattle	3/1	5/15	98	Active	3,201
		1,307 Cattle	10/1	12/15	98	Active	3,202
	Upper 4-mile	255 Cattle	3/1	5/15	98	Active	625
48 Horses		3/1	12/15	98	Active	444	
Winters Creek Seeding	518 Cattle	3/1	5/30	98	Active	1,518	
	518 Cattle	10/1	12/15	98	Active	1,269	
	Star Ridge					Rest	
Total							27,879

“The numbers of livestock to be grazed will remain flexible according to the needs of the permittee. The grazing system is based on the maximum number of AUMs that may be removed from each pasture. Livestock would be moved in accordance with the dates outlined in the grazing system.”

“Pasture moves may be adjusted by 10 days either way based upon the availability of feed and water, with the exception of the Star Ridge Pasture in which grazing use will not extend beyond 6/30.”

“Deviations from the grazing system beyond flexibility outlined above will be allowed to meet the needs of the resources and the permittee as long as these deviations are consistent with multiple use objectives. Deviations beyond the limits of the flexibility outlined above, including deviations in turnout date, increases in livestock numbers and deviation from the grazing system, will require an application, and written authorization from the Assistant Field manager for Renewable Resources prior to grazing use.”

Rationale: The current existing grazing system which was outlined and implemented through the existing AMP will be modified and implemented as outlined above. The overall concept of rest rotation and deferred rotation between specific pastures will remain the same. Seasons of use within specific pastures were slightly altered in order to eliminate hot season grazing use on the South Fork Owyhee River within the Star Ridge Pasture.

The current grazing system has resulted in some improvement in condition of the

uplands. Changes in the period of use for specific pastures is necessary to remove hot season grazing use on the South Fork Owyhee River in order to improve existing riparian habitat conditions, this has already been done voluntarily by the permittee within the Star Ridge Pasture since 1995. Although cattle from the adjoining YP Allotment currently have access to the river, management changes proposed through the YP Multiple Use Decision will eliminate hot season use of the South Fork Owyhee River by YP livestock.

The proposed grazing system will still consist of a two pasture rest-rotation system and a two-pasture deferred rotation system. Under these systems, complete rest from livestock grazing or the deferment of grazing during critical growth period of key management plant species will allow these species to maintain and/or increase their density, composition, vigor, production, and reproduction. This should result in continued ecological improvement of the allotment. In addition, improvement in existing riparian conditions will improve as a result of removing hot season grazing on the South Fork Owyhee River.

This technical recommendation would also implement Guidelines 1.1, 2.1, 2.4, 3.1, 3.2 and 3.3 which have been developed by the Northeastern Great Basin Resource Advisory Council of Nevada to establish significant progress toward conformance with the Standards for Rangeland Health for Upland Sites, Riparian and Wetland Sites, and Habitat.

Recommendation 5. Construct the following range improvement projects within the Owyhee Allotment as follows:

Table 11. Proposed Range Improvements Projects for the Owyhee Allotment			
Proposed Project ¹	Pasture	Legal Description	Units
Star Ridge Well & Pipeline	Star Ridge	T47N R46E Sec. 11 & 12 T47N R47E Sec. 7	1 well 3 miles pipeline
Star Valley Well Pipeline Extension	Star Ridge	T46N R46E Sec. 13 & 14 T46N R47E Sec. 19	3 miles of pipeline from existing well.
Pipeline Extension	Dry Creek	T43N R47E Sec. 14 & 15	2 miles of pipeline from proposed well located on private land.
Winters Creek Seeding Well Pipeline Extension	Dry Creek	T42N R48E Sec. 4 & 5	2 miles of pipeline from existing well in Winters Creek Seeding.
Pipeline Extension	Dry Creek	T42N R48E Sec. 28, 29, 33, 34 & 35	4 miles of pipeline from existing well on private land.
Exxon Storage Tank Pipeline Extension	Chimney Creek Winters Creek Sdg.	T43N R49E Sec. 30 T43N R48E Sec. 25 & 36	2 miles of pipeline extension from Exxon Storage Tank.
Exxon Well Pipeline Extension	Chimney Creek Lower 4-mile	T43N R49E Sec. 9, 16 & 17	1 mile of pipeline extension from Exxon Well.
Cattleguard	Star Ridge	T46N R46E Sec. 21	1 cattleguard
South Fork Owyhee River Gap Fence	Lower 4-mile	T44N R50E Sec. 30, 31 & 32 T43N R50E Sec. 5, 6 & 7	2 miles of gap fence.
Fourmile Creek Limited Gap Fencing	Lower 4-mile Chimney Creek	T44N R49E Sec. 29 & 32 T43N R49E Sec. 5, 8, 9 & 16	To be determined.
Bookkeeper Spring Development & Exclosure	Dry Creek	T41N R47E Sec. 5	Located at Bookkeeper Spring.

¹ See Map 8 for locations of proposed range improvement projects.

Rationale: Completion of the proposed water development projects will create more permanent water sources for both livestock and wildhorses within the allotment resulting in improved livestock distribution and a more uniform use pattern within the Star Ridge, Dry Creek, Chimney Creek, Lower 4-mile and Winters Creek Seeding Pastures. At the present time the majority of the water available to livestock and wild horses within the allotment is only seasonally available. These seasonal water supplies are provided by numerous dry lakes and pit reservoirs existing in the allotment. The availability and amount of this water contained within the dry lakes and existing pit reservoirs depends

upon the amount of precipitation in the form of snow which accumulates during the winter.

The proposed fencing within the Lower 4-mile pasture along the South Fork Owyhee River will prevent livestock from Owyhee Allotment from entering approximately 5 miles of stream associated with that section of the river within this pasture. As a result, the reduction in livestock use of the streamside vegetation will help to improve the ecological conditions of that portion of the South Fork Owyhee River, and will also help to meet recreation and wildlife objectives, as well as water quality standards. Preliminary information indicates that accessibility of livestock into this portion of the South Fork Owyhee River from the adjacent grazing allotments is minimal. Livestock accessibility from the adjacent allotments into this section of stream will continue to be monitored. If it is determined that livestock from the adjacent allotments are impacting recovery of this section of the South Fork Owyhee River then necessary changes in management will be addressed.

Proposed gap fencing of those public portions of Fourmile Creek will prevent livestock from entering these fenced areas. As a result, the reduction in livestock use of the streamside vegetation will help to improve the ecological conditions of the public sections of Fourmile Creek which has response potential. This improvement will help to meet the riparian and wildlife objectives.

That portion of Bookkeeper Spring complex located on public land would be fenced and water developed for wild horses and livestock. This small spring and seep complex has been impacted severely by wild horses and livestock hoof action through soil compaction and hummocking beyond normal frost heaving. Fencing would allow for improved hydrologic function of the spring complex through the growth and establishment of its associated riparian community.

The proposed cattleguard located within the Star Ridge Pasture between the Owyhee Allotment and the Little Owyhee Allotment will reduce the amount of cattle and wild horses drifting back and forth between both allotments as a result of the existing gate being left open.

Completion of these projects will help achieve the multiple use objectives and standards for rangeland health in the Owyhee Allotment.

This technical recommendation would also implement Guidelines 1.1, 2.1, 2.4, 3.1, 3.2 and 3.3 which have been developed by the Northeastern Great Basin Resource Advisory Council of Nevada to establish significant progress toward conformance with the Standards for Rangeland Health for Upland Sites, Riparian and Wetland Sites, and Habitat.

Recommendation 6. Establish two additional upland monitoring sites within the Star

Ridge Pasture, one additional monitoring site within the Chimney Creek Pasture and one additional monitoring site (AY-1-02) on Silver Lake within the Dry Creek Pasture

Rationale: There are no upland monitoring sites to measure impacts of wild horses and livestock within the northern portion of the Star Ridge pasture in the vicinity of Star Valley Ridge and Rubber Hill and the northern portion of the Chimney Creek Pasture. In addition, there are currently no monitoring sites to monitor wild horse and livestock use within the Wet Clay Basin Range Sites which is representative of Silver Lake.

Allowable percentages of perennial grasses and perennial forbs will be determined after baseline data are collected for those monitoring sites established in the Star Ridge and Chimney Creek Pastures. Monitoring objectives for proposed key area (AY-1-02) have been proposed and are located in the Owyhee Allotment Objectives Appendices.

Recommendation 7. Modify and/or requantify the allotment specific and key area objectives for the Owyhee Allotment to read as described in the Owyhee Allotment Objectives Appendices. The general land use plan objectives and Standards for rangeland health developed for the Northeastern Great Basin Area remain unchanged.

Rationale: The Record of Decision for the Elko Environmental Impact Statement (EIS) and the Resource Management Plan (RMP) was issued on March 11, 1987. These documents established the multiple use goals and objectives which guide management of the public lands in the Owyhee Allotment. The Rangeland Program Summary (RPS) was issued on July 23, 1987. This document further identified the allotment specific objectives for these allotments.

Monitoring was established on the Owyhee Allotment to determine if existing grazing uses were consistent with attainment of the multiple use objectives established by the Elko RMP and RPS. Monitoring data were analyzed through the allotment evaluation process, to determine progress in meeting multiple use objectives and to determine what changes in existing grazing management, if any, are required.

The Owyhee Evaluation summarized current grazing management, determined whether or not progress was being made toward attainment of the multiple use objectives, and provided recommendations for future management. The allotment specific objectives which were analyzed in the allotment evaluation were formulated based on management issues which existed in 1987 when the RPS was published. Based on monitoring data and conclusions presented in this allotment evaluation, it is necessary to modify and/or requantify the allotment specific objectives to address the following resource issues:

- upland range conditions
- lotic and lentic riparian conditions
- wildlife habitat conditions

This technical recommendation would also implement Guidelines 1.1, 2.1, 2.4, 3.1, 3.2, 3.3, and 3.4 which have been developed by the Northeastern Great Basin Resource Advisory Council of Nevada to establish significant progress toward conformance with the Standards for Rangeland Health for Upland Sites, Riparian and Wetland Sites, and Habitat.

Recommendation 8. Continue to conduct necessary monitoring studies and periodically evaluate the effects of grazing to determine if significant progress is being made in meeting the multiple use objectives. The Owyhee Allotment will be re-evaluated in accordance with priorities established in the Elko Field Office Monitoring and Evaluation schedule. If monitoring studies indicate a need to bring grazing use in line with capacity, necessary adjustments will be made. Studies will be conducted in accordance with BLM policy manual guidance as outlined in the Nevada Rangeland Monitoring Handbook and will include, but are not limited, to the following:

Uplands

forage production
ecological condition
trend frequency
utilization
actual use
Upland Proper Functioning Condition Assessment
Ecological Site Inventory
Cover

Riparian

stream inventory (BLM Manual 6720-1, BLM Manual 6671)
Proper Functioning Condition Assessments (BLM TR 1737-16, 1999)

Wildlife Habitat

habitat condition studies, Cole browse, utilization, condition studies, (BLM Manual 6630)
wildlife population census/updated maps (NDOW)

Wild Horses

wild horse population census
wild horse utilization data

Rationale: Additional monitoring and analysis will be required to determine whether objectives are being met and determine any necessary changes in grazing management.

B. Wild Horses

Recommendation 1. Establish appropriate management level for wild horses for the

Owyhee Allotment and Owyhee HMA as follows:

Table 12. Appropriate Management levels for wild horses by pasture within the Owyhee Herd Area.

Pasture	Season of Use	Wild Horse Numbers ¹	Wild Horse AUMs
Star Ridge	3/1-2/28	68 - 125	1,496
Dry Creek	3/1-2/28	41 - 73	876
Chimney Creek	3/1-2/28	18 - 33	397
Total		127 - 231	2,769

¹ Range was derived using the following equation: Maximum AML ÷ 1 + Recruitment Rates

Rationale: Refer to Livestock Recommendation 2 above.

Recommendation 2. Remove sufficient number of wild horses to attain the appropriate management level and maintain wild horse populations at a level which will maintain a thriving natural ecological balance consistent with other resource values.

Rationale: Horses would be gathered down to the low end of the AML and allowed to increase over a four year period to the maximum AML. The maximum AML is the upper threshold, in numbers of adult animals, the range can sustain before deterioration of the thriving natural ecological balance begins. The minimum AML is the lowest number of adult animals allowed to graze on the range and considers genetics (herd viability), gather/removal cycles, and minimum disturbance to the herd by using as long a gather cycle as possible. Removals would never remove animals below this level except in extreme emergency.

This technical recommendation would implement Guidelines 1.1, 2.1, 2.4, 3.1, 3.2, 3.3

Recommendation 3. Continue to collect combined use utilization data and collect wild horse use only utilization data.

Rationale: Collection of utilization data is necessary to determine if management practices are meeting objectives and will indicate management changes needed in response to climatological changes, such as drought, etc. Continued monitoring would also determine if the AML is maintaining a thriving natural ecological balance within the Owyhee HMA.

Recommendation 4. Continue to collect seasonal distribution and census data on the Owyhee HMA.

Rationale: The BLM is required by FLPMA to keep a current inventory of wild horses inhabiting public lands. In 1991, intensive seasonal distribution flights were begun within the Elko district. These flights have provided valuable information on horse

movements and should continue until monitoring data indicates that the appropriate management level has been attained. Once AML is established and maintained, census flights may be conducted on a four year rotational basis.

C. **Wildlife**

Recommendation 1. Develop additional water developments (guzzlers) for use by wildlife. Consider four sites on Star Ridge Pasture and three sites in the southern portion of the Chimney Creek pasture.

Rationale: Water developments would provide reliable sources of water in suitable habitat with emphasis for pronghorn where present sources are over three to four miles apart. Sage grouse, a BLM Sensitive Species, would likely benefit from the water developments.

This technical recommendation would also implement Guideline 3.4 which has been developed by the Northeastern Great Basin Resource Advisory Council of Nevada to establish significant progress toward conformance with the Standard for Rangeland Health for Habitat.

Recommendation 2. Increase forage diversity and herbaceous cover for wildlife and herbaceous forage for livestock by creating a mosaic pattern of vegetational succession stages through vegetative manipulation practices. Treat selected areas on a maximum of 12,000 acres (See Owyhee Allotment Fire Management Plan) in the Wyoming big sagebrush vegetation type where vegetative data has indicated that big sagebrush shrub cover is excessive, existing native herbaceous plants would respond to reduced shrub competition, and livestock and wild horse utilization has been documented ranging from slight (1-20%) to mid moderate (50%). Treatments would replicate natural disturbances. Desired Plant Community objectives for treated areas would be established based on range site potentials.

Rationale: Based on comparisons with range site potentials, shrub cover has been documented as being excessive at AY1-01 (Monument Hills) and AY1-03 (Corral Lake Guzzler) within the Loamy 8-10" p.z. range site on the Dry Creek Pasture and is potentially excessive on other areas on the allotment. Range sites with excessive shrub cover have generally been documented as having poor forage diversity which would not be improved through only a change in the grazing system. Recent studies have documented that shrub cover in healthy stands of Wyoming big sagebrush is generally less than 15%; as shrub cover increases over 15% the grass and forb cover decreases due to competition.

The treatment objective would be to reduce shrub canopy cover in a mosaic pattern within small irregular shaped blocks and allow the treated areas to replicate shrub cover in early to mid successional stages for given range sites. Dense cover would remain in

the untreated areas for wildlife. Nongame, big game and sage grouse habitat would be enhanced through increased forage diversity and herbaceous cover. Small lightning strike burn areas near Key Area OW-1, observed in 1993, have resulted in enhancement of perennial native grass and forb (herbaceous) cover and improved forage diversity. Shrub manipulation would release moisture and stimulate herbaceous plant and younger age class shrub growth which would improve sage grouse nesting and summer use habitat. Sage grouse nesting success is likely to allow increase in habitats that contain 8-12% shrub cover in Wyoming big sagebrush stands, coupled with at least 18% basal cover of perennial grasses growing at least seven inches in height. Thinning dense stands could also increase the palatability and leader growth of sagebrush for mule deer, pronghorn and sage grouse by inducing plant physiological changes related to competition for moisture, nutrients and lower monoterpene levels. Sage grouse selection for plants with lower monoterpene levels has been observed.

Techniques to be considered would include mechanical treatment, prescribed burning, and herbicidal treatment. The treatment methodology would be tailored to the vegetative type at each specific site where stands are dominated by mature age class and decadent shrubs.

This technical recommendation would also implement Guideline 3.4 which has been developed by the Northeastern Great Basin Resource Advisory Council of Nevada to establish significant progress toward conformance with the Standard for Rangeland Health for Habitat.

Recommendation 3. Identify and prioritize any needed fence project modifications that do not meet BLM specifications starting with the pasture division fence between Upper and Lower Fourmile Pastures. Complete any needed modifications by BLM crews or third party crews hired by BLM.

Rationale: Most fence projects within the allotment were constructed as "standard four-wire fences" to specifications that were in existence in the early 1960s. Since that time, new fence specifications have been developed that consider the behavior and abilities of wildlife. Modification of fences in crucial big game habitats is a recommended management action in the 1987 Record of Decision for the RMP. Fences that are not constructed to BLM standards might pose problems for big game movements. Modifying these fences would facilitate big game movements.

Recommendation 4. Complete actions to mitigate the effects on wildlife resources due to man-made structures within the allotment. Identify existing BLM range improvements near documented key sage grouse habitat areas and prioritize them for predatory bird-proofing. These actions would include completion of measures on allotment and pasture fence braces and horizontal /vertical corral/guzzler posts, leveling pit reservoir berms (without compromising water holding/catching ability), or relocating corrals through consultation with the permittee. Actions to visually outline projects to minimize

collisions would include painting t-post fence tops white or addition of fence stays to make the fence more visible to sage grouse or other wildlife that travel/fly during periods of low or no light.

Rationale: BLM projects might allow artificial perch or nesting sites for predatory birds such as ravens or raptor species that prey on sage grouse where these structures were previously unavailable or limited. Collisions with fence structures during flight are documented mortality factors for sage grouse, particularly, during periods of low light or no light. These factors are associated with the grazing allotment and could negatively affect sage grouse populations. They could be minimized by completion of measures to mitigate the effects of man-made structures on sage grouse in the vicinity of leks and other key habitat areas.

Recommendation 5. To improve the conditions of Wet Clay Basin 8-10" p.z. Ecological Site on vegetated playas, consider relocation of water sources away from these playas on the allotment to help reduce livestock and wild horse concentrations and overutilization of vegetative resources. Complete actions by constructing water catchments on drainage areas or recommended pipelines (see Livestock Grazing Recommendation #5) within two to three miles from given man-made playa reservoirs to mitigate loss of these artificial water resources to cattle, wild horses and wildlife. Reclaim pit reservoir surfaces to natural state on these playas after development of the proposed new artificial water sources.

Rationale: Vegetated playas (dry lakes) on the allotment are highly preferred by cattle, wild horses and wildlife due, in part, to potential forage diversity afforded by available shrubs, mainly Bolander silver sagebrush, and several species of perennial grasses and forbs. These playa areas have been the desired location for constructing reservoirs for livestock due to water holding potential of clay and for potential for seasonal large-volume water drainage into them. This could lead heavy to severe utilization of herbaceous perennial plant species on the playas. Heavy use, through use pattern mapping, was measured on Corral Lake in 1989 and 1991. Heavy use was also measured on a playa near Key Area #1 in 1991. Utilization of mat muhly, a perennial native grass species that grows on vegetated playas, and squirreltail was estimated to be 60% by July 25, in 1996. The overall plant composition (by cover) included 4.2% cheatgrass, an undesirable annual grass that competes with native vegetation and effectively compromises forage diversity and cover on the site. A high composition of povertyweed (*Ivax axillaris*), with high composition as an indicator of disturbance, was sampled during monitoring efforts in 1996. A total of 192 head of wild horses was counted in one group coming off a pit reservoir four miles southwest of Silver Lake on July 30, 1998; these horses were later seen near Silver Lake. Keen competition for forage between livestock, wild horses and big game could likely affect big game habitat conditions and ecological site status on this range site which is highly susceptible to disturbance. Per NRCS site description for the site, "When management results in abusive livestock use, Nevada bluegrass and mat muhly decrease as povertyweed and other annual forbs increase in

compositions". Improper use by an excessive number of wild horses or livestock could affect range site dynamics and allow decreases in perennial native grass and forb species, and mosses, and increases in povertyweed and annual vegetation.

Actions to deepen pit reservoirs to increase water holding capacities can effectively dewater playas and, thus, affect plant composition and range site dynamics on the range site.

This technical recommendation would also implement Guideline 1.1 and 3.4 which have been developed by the Northeastern Great Basin Resource Advisory Council of Nevada to establish significant progress toward conformance with the Standard for Rangeland Health for Upland Sites and Habitat.

D. Threatened, Endangered, Candidate, and BLM Sensitive Species of Plants and Animals.

Recommendation 1. Refer to Livestock Grazing Recommendation 4 and 5 which will facilitate improvement of riparian resources.

Rationale: Reductions in livestock use of streamside vegetation through fencing or through a combination of rest and early grazing will result in improved ecological condition of the South Fork Owyhee River for the benefit of redband trout and the California floater.

E. Fisheries

Refer to Livestock Grazing Recommendation 4 and 5 which will facilitate for the improvement of riparian resources.

Rationale: Refer to rationale for Livestock Grazing Recommendation 4 and 5.

F. Aquatic and Riparian Habitats

Refer to Livestock Recommendations 4 and 5 which will facilitate improvement of riparian resources.

Rationale: Reductions in livestock use of streamside vegetation through fencing or through a combination of rest and early grazing will result in improved ecological condition of the South Fork Owyhee River. Increases in growth and establishment of riparian vegetation will allow for the attainment of objectives including the development of stable, well vegetated streambanks and for improved hydro logic function of aquatic systems.

G. Water Quality

Recommendation 1. Continue to monitor water quality at both monitoring locations, including discharge.

Rationale: At least ten samples should be collected that measure all the constituents that the state has established standards for at both locations to determine if the standards are being met, and if they are not, what the cause of the problem is. Some of the previous samples did not have discharge measurements to correlate the water quality data with, which is necessary to properly interpret the data. There were some exceedences for total phosphorus, total suspended solids, and turbidity. The BLM results are inconclusive at this time. It is likely that the exceedances occur only during spring runoff high flow periods.

Recommendation 2. Continue water and air temperature monitoring at both sites.

Rationale: Only one season of temperature monitoring has been done and it shows that the temperature standard was exceeded. Not enough data was collected to draw any firm conclusions as to the cause for the exceedances and whether they are natural or caused by overgrazing, nor whether this situation occurs every year.

H. Wildland Fire

Recommendation 1: Implement the Owyhee Allotment Fire Management Plan (Fire Management Appendices).

Rationale: The 1998 Elko Field Office Fire Management Plan identified fire and fuels management goals and objectives for the Elko District. The Owyhee Allotment Fire Management Plan is tiered off the Field Office Plan and identifies site specific fire suppression, prescribed fire and fuels management goals and objectives for the public lands within this complex. The Owyhee Allotment Fire Management Plan is required to effectively implement the goals and objectives of the Elko Field Office Fire Management Plan within the Sheep Complex.

I. Wilderness Study Areas

Recommendation: Continue monitoring of use and ensure that all proposed use meets WSA standards.

Rationale: BLM is mandated to manage the WSA under the standards established in the *Interim Management Policy for Lands Under Wilderness Review* (Rev. 7/5/95).

J. Special Recreation Management Areas

Recommendation: Continue implementing the South Fork of the Owyhee River

Special Recreation Management Area (SRMA).

Rationale: This will ensure that the management objectives for the area are met and will continue to preserve the rivers' wild and primitive qualities.

K. Wild and Scenic Rivers

Recommendation: Continue to manage the designated river segments as Wild and Scenic Rivers.

Rationale: The Bureau is directed to protect any eligible river segments and those values identified in the eligibility and classification study.

WILDLIFE APPENDIX

Table 1. Partial Wildlife Species List - Upland Areas*
(not including species previously mentioned in Owyhee Allotment evaluation)

Lower Sagebrush/Grassland Steppe - Northeastern Nevada

Mammals

Badger	<i>Taxidea taxus</i>
Coyote	<i>Canis latrans</i>
Least chipmunk	<i>Tamias minimus</i>
Deer mouse	<i>Peromyscus maniculatus</i>
Black-tailed jackrabbit	<i>Lepus californicus</i>
Townsend's ground squirrel	<i>Spermophilus townsendii</i>
Northern pocket gopher	<i>Thomomys bottae</i>
Little pocket mouse	<i>Perognathus longimembris</i>
Great Basin pocket mouse	<i>Perognathus parvus</i>
Ord's kangaroo rat	<i>Dipodomys ordii</i>
Sagebrush vole	<i>Lemmyscus curtatus</i>
Nuttall's cottontail	<i>Sylvilagus nuttalli</i>
Golden-mantled ground squirrel	<i>Citellus lateralis</i>
Pygmy rabbit	<i>Sylvilagus idahoensis</i>
Yellow-bellied marmot	<i>Marmota flaviventris</i>

Birds

Gray (Hungarian) partridge	<i>Perdix perdix</i>
Mourning dove	<i>Zenaida macroura</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
American kestrel	<i>Falco sparverius</i>
Prairie falcon	<i>Falco columbarius</i>
Western kingbird	<i>Tyrannus verticalis</i>
Horned lark	<i>Eremophila alpestris</i>
American crow	<i>Corvus brachyrhynchos</i>
Common raven	<i>Corvus corax</i>
Sage thrasher	<i>Oreoscoptes montanus</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
Brewer's sparrow	<i>Pooecetes gramineus</i>
Vesper sparrow	<i>Chondestes grammacus</i>
Lark sparrow	<i>Amphispiza belli</i>
Western meadowlark	<i>Sturnella neglecta</i>
Magpie	<i>Pica pica</i>
Northern harrier	<i>Circus cyaneus</i>

Reptiles

Western Whiptail
Desert Collared Lizard
Long-nosed Leopard Lizard
Sagebrush Lizard
Western Fence Lizard
Side-blotched Lizard
Desert Horned Lizard
Short-horned Lizard
Long-nosed Snake
Night Snake
Gopher Snake
Striped Whipsnake
Western Rattlesnake

Cnemidophorus tigrus
Crotaphytus insularis
Gambelia wislizenii
Sceloporus graciosus
Sceloporus occidentalis
Uta stansburiana
Phrynosoma platyrhinos
Phrynosoma douglassii
Rhioncheilus lecontei
Hypsiglena torquata
Pituophis melanoleucus
Masticophis taeniatus
Crotalus viridus

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*Consult Nevada BLM Elko District Mammal, Reptile and Amphibian, and Bird Lists for more complete listing of potential wildlife species on the Owyhee Allotment.

Table 2. Threatened, Endangered, Candidate, State of Nevada Listed and BLM Sensitive Species of Plants and Animals Documented or Potentially Occurring on the Owyhee Allotment on a Seasonal or Year-long Basis (as of December 15, 1999¹).

COMMON NAME	SCIENTIFIC NAME
Federally Endangered Species	
none	none
Federally Threatened Species	
<i>Birds</i>	
bald eagle	<i>Haliaeetus leucocephalus</i>
Federal Candidate Species	
Columbia spotted frog	<i>Rana luteiventris</i>
State of Nevada Listed Species^{2,3}	
<i>Birds</i>	
golden eagle ⁴	<i>Aquila chrysaetos</i>
burrowing owl ⁴	<i>Athene cunicularia</i>
ferruginous hawk	<i>Buteo regalis</i>
Swainson's hawk	<i>Buteo swainsoni</i>
osprey	<i>Pandion haliaetus</i>
white pelican ⁴	<i>Pelecanus erythrorhynchos</i>
white-faced ibis ⁴	<i>Plegadis chihi</i>
Nevada BLM Sensitive Species³	
<i>Mammals (bats)</i>	
small-footed myotis	<i>Myotis ciliolabrum</i>
long-eared myotis	<i>Myotis evotis</i>
fringed myotis	<i>Myotis thysanodes</i>
long-legged myotis	<i>Myotis volans</i>
Yuma myotis	<i>Myotis yumanensis</i>
pale Townsend's big-eared Bat	<i>Plecotis townsendii pallescens</i>

Pacific Townsend's big-eared bat	<i>Plecotis townsendii townsendii</i>
Birds	
western sage grouse ⁴	<i>Centrocercus urophasianus</i>
Fishes	
interior redband trout	<i>Onchorhynchus mykiss gibbsi</i>
Mussels	
California floater ⁴	<i>Anodonta californiensis</i>
Plants	
grimy ivesia ⁴	<i>Ivesia rhypara var. rhypara</i>
Packard stickleaf ⁴	<i>Mentzelia packardiae</i>

¹ Based on input provided by BLM, Nevada Division of Wildlife, and U.S. Fish and Wildlife Service in BLM Instruction Memorandum No. NV-98-013 (February 27, 1998). BLM Elko Field Office input provided for BLM Instruction Memorandum No. NV-98-013 was entitled "Former Candidate Category 2 Species On Or Suspected On Elko District -BLM Lands Recommended As BLM Sensitive Species As Of 5/96". Information: Per October 25, 1999 Federal Register, peregrine falcon is no longer listed as a threatened species, and, in effect, is no longer "listed".

² Per wording for Table IIa. in BLM Instruction Memorandum No. NV-98-013 for Nevada State Protected Animals That Meet BLM's 6840 Policy Definition: Species of animals occurring on BLM-managed lands in Nevada that are: (1) "protected" under authority of Nevada Administrative Codes 501.100 - 503.104; (2) also have been determined to meet BLM's policy definition of "listing by a State in a category implying potential endangerment or extinction"; and (3) are not already included as BLM Special Status Species under federally listed, proposed, or candidate species.

³ Nevada BLM policy is to provide State of Nevada Listed Species and Nevada BLM Sensitive Species with the same level of protection as is provided for candidate species in BLM Manual 6840.06C.

⁴ Documented on or within the allotment.

Table 3. Summary of habitat conditions for sage grouse use areas in the vicinity of established key areas within the Owyhee Allotment.

Key Area	Ecological Status and (Year) ¹ and Trend ²	Perennial Grass Basal Cover ³	Average Key Area Utilization ⁴	Riparian Condition and Closest Location ⁵	% Shrub Canopy Cover and (Year)	% Forb Comp ⁷
Dry Creek Pasture - Loamy 8-10" p.z. Range Site						
OW- 1	Mid 32 (82) Mid 32 (87) Mid 33 (94) Upward	Not Measured	AGSP 27% SIHY 20%	Poor - Bookkeeper Spring	Not Measured	12.1% (82) 0.35% (87) 0.0% (94)
AY1-01/ OW-2	Mid 29 (82) Mid 31 (87) Mid 36 (94) Upward	1.3% (1982) 1.6% (1987) Not sampled in 1994-96	AGSP 12% SIHY 9%	Poor- Fourmile Creek	10.3% (1982) 21.9% (1987) 14.4% (1996)	0.0% (82) 1.5% (87) 2.6% (94)
AY-1-03	Not Sampled	1.0% (1982) 2.6% (1987) 1.5% (1997)	Not Sampled	Poor- Bookkeeper Spring	10.7% (1982) 15.9% (1985) 27.3% (1997)	0.0% (82) 1.8 (85) 1.8% (97)
Chimney Creek Pasture - Loamy 8-10" p.z. Range Site						
AS-T-87-30/ OW-4	Late62 (82) Mid 41 (87) Late 54 (94) Upward	Not Measured (82) 3.25% (1987) Not Measured (94-96)	AGSP 25% SIHY 14% ELCI 30% STTH 30%	Poor - Fourmile Creek	17.5% (87) 12.5% (96)	14.9% (82) 20.5% (87) 12.9% (94)
DY-T-87-28/ OW-6	Late 57 (82) Mid 45 (87) Mid 37 (94) Downward	Not Measured (82) 7.75% (87) Not Measured (94-96)	AGSP 24% SIHY 6% STTH 32%	Poor - Fourmile Creek	11.8% (87) 13.6% (96)	18.6% (82) 5%(87) 3.9% (94)
DY-T-87-29/ OW-5	Mid34 (82) Mid 42 (87) Mid 33 (94) Downward	Not Measured (82) 5.6% (87) Not Measured (94-96)	AGSP 26% SIHY 13% ELCI 49%	Poor - Fourmile Creek	11.8% (87) 11.8% (96)	24% (82) 8%(87) 4% (94)

Star Ridge Pasture - OW-7: Loamy 8-10" p.z. Range Site; OW-8 and AY-T-87-40: Loamy 10-12" p.z. Range Site							
DY-T-87-31/ OW-7	Mid 29 (82) Mid 36 (87) Mid 34 (94) Downward	Not Measured (82) 4.9% (87) Not Measured (94-97)	SIHY 18% ORHY 23% STWE 32%	Poor - SF Owyhee River	5.2% (87) Not measured (97)	2.4% (87) 1.9% (94)	
OW-8	Early23 (82) Early23 (87) Early22 (94) Downward	Not Measured	AGSP 16% FEID 35%	Poor - SF Owyhee River	Not Measured	0.0% (82) 1.0% (87) 0.2% (94)	
AY-T-87-40	Not Sampled	6.7% (87) 5.8% (97)	Moderate (50%) on July 23,1997	Poor - SF Owyhee River	8.1% (87) 6.9% (97)	0.5% (87) 2.7% (97) ⁹	

¹ The present state of vegetation on a range site in relation to the potential natural community for that range site. Early seral status, mid-seral, late seral numerical ratings correspond to 1-25%, 26-50%, and 51-75%, similarity to the potential natural community, respectively. Based on a comparison of forage production transect data results from 1982, 1987, and 1994.

² Based on changes of the numerical (percent) rating of ecological status between 1987 and 1994, which constitutes period when AMP was initiated.

³ Within line intercept transect. Basal cover for all perennial grasses that do or do not have the potential to attain at least a seven-inch height of residual growth

⁴ Average utilization by all ungulates per individual key species based on livestock key area monitoring during all or given years from 1982 to 1998. Agsp: Bluebunch wheatgrass; Sihy: Bottlebrush squirreltail; Feid: Idaho fescue; Orhy: Induan ricegrass; Sth: Thurber's needlegrass; Stwe: Webber's needlegrass; Elci: Great Basin wildrye

⁵ Based on stream surveys in the vicinity of given key area on SF Owyhee River, ocular surveys completed for Fourmile Creek and Bookkeeper Spring; and livestock use pattern mapping completed on Winters and Chimney Creeks by the BLM.

⁶ Absolute shrub canopy cover from line intercept data.

⁷ Average percent forb composition derived from 1982, 1987 and 1994 forage production data except for AY1-03 (Corral Lake Guzzler) and AY-T-87-40 (Star Ridge) where forb composition by cover from line intercept data.

Table 4. Habitat Condition Rating Summary - Owyhee Allotment. Mule deer winter range habitat on the Loamy 8-10" p.z. range site

Transect #/ Livestock Key Area #, Pasture-Locale	Habitat Condition Rating ¹ - Date Evaluated	Species Composition ^{2,3}			Key Browse Age Class	Key Browse Form Class	Vertical Cover	Diversity Index	Shrub Foliar Cover
		Shrubs	Grasses	Forbs					
Loamy 8-10" p.z. Range Site, Key Browse: Wyoming big sagebrush									
DY-T-87-28/LKA #OW-06, Lower Fourmile Pasture	Fair (53) - 7/21/87	58.4%	38.3%	3.3%	Satis.	Unsatis.	Satis.	.6877 (Poor)	11.8%
	Good (75)- 7/11/94 and 7/26/96	78.9%	17.3%	3.8%	Satis.	Satis.	Satis	.998 (Good)	13.6%
DY-T-87-29/LKA #OW-05, Upper Fourmile Pasture	Fair (58)- 7/21/87	62.8%	29.7%	7.5%	Satis.	Satis.	Satis	.81 (Fair)	11.8%
	Excellent (81)- 7/1/94 and 7/20/96	82.9%	13.4%	1.6%	Satis.	Satis.	Satis.	1.07(Excellent)	11.8%
DY-T-87-31/LKA #OW-07, Star Ridge Pasture	Fair (53)- 7/23/87	50%	47.6%	2.4%	Satis.	Satis.	Unsatis.	.786 (Poor)	5.2%
	Fair (51)- 7/11/94 and 7/23/97	70%	28.1%	1.9%	Satis.	Satis.	Unsatis.	0.896 (Fair)	Not Available

¹ Based on the following scale per NV 6630-6 form: 81-100=Excellent; 61-80=Good; 51-60=Fair; 10-50=Poor.

² May not add to 100% due to rounding.

³ Line intercept: composition by cover in 1987; forage production: composition by air dry weight in 1994. See management evaluation narrative below for explanation of differences.

WATER QUALITY APPENDIX

NAC 445A.225 Owyhee River- South Fork.

STANDARDS OF WATER QUALITY
South Fork Owyhee River

Control Point at Petan Access Road.

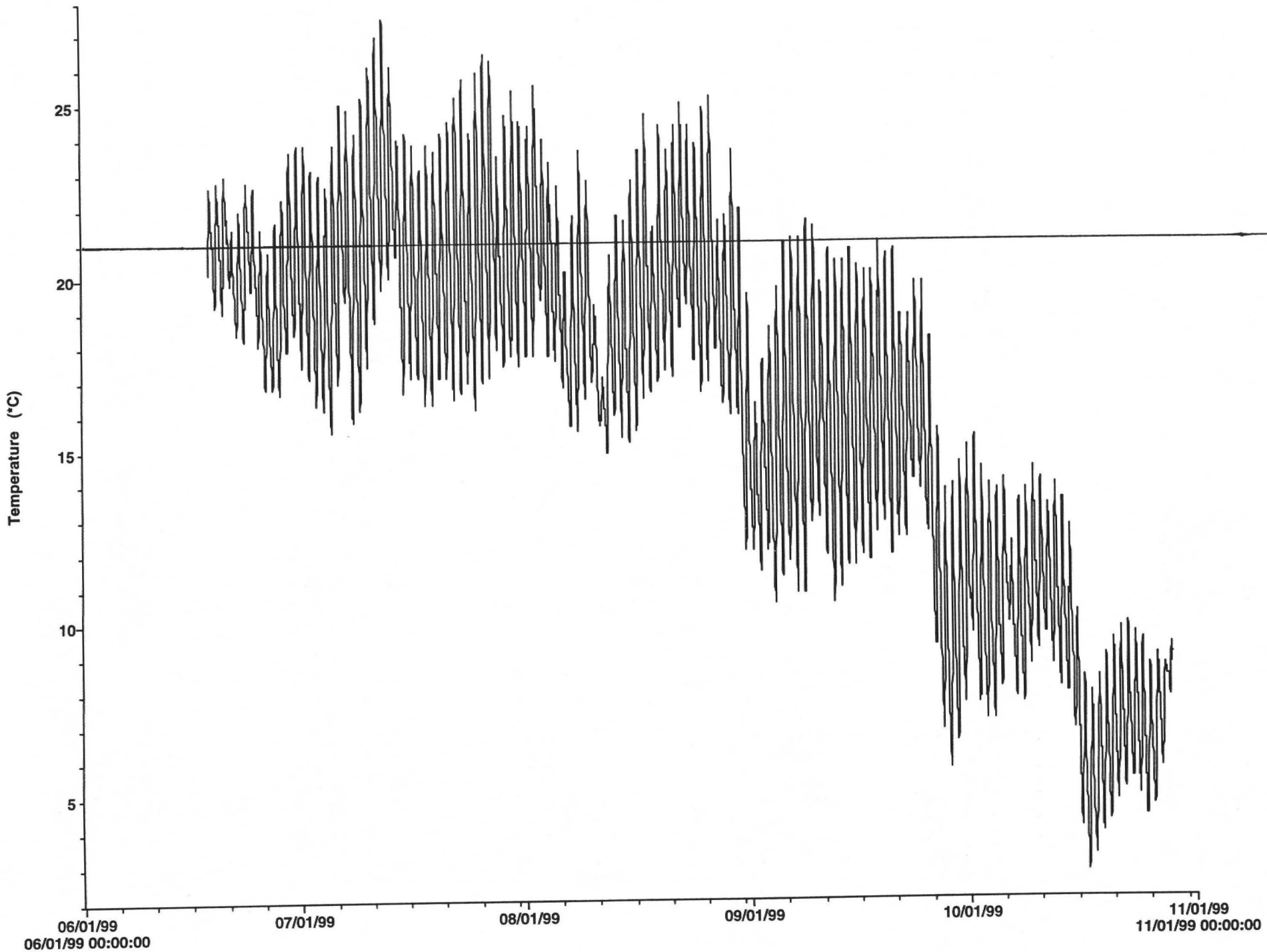
PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY STANDARDS FOR BENEFICIAL USES	BENEFICIAL USES
Temperature °C Maximum* T°C	AT = 0°	May-Oct < 21° Nov-Apr < 13° T<1°	Aquatic life. water contact recreation.
pH Units	pH ±0.5	6.5 - 9.0	Aquatic life. municipal and domestic supply, water contact recreation.
Total Phosphorus (as P) in mg/l	-	< 0.1	Aquatic life. water contact recreation, municipal and domestic supply, noncontact recreation.
Nitrogen Species (as N) in mg/l	Nitrate S.V. < 1.0	Nitrate S.V. < 10 Nitrite S.V. < 0.06 Ammonia S.V. < 0.02 (un-ionized)	Municipal and domestic supply, aquatic life, water contact recreation, noncontact recreation.
Dissolved Oxygen in mg."l	-	> 6.0	Aquatic life, water contact recreation. wildlife propagation, stock watering, municipal and domestic supply, noncontact recreation.
Suspended Solids - mzf	-	S.V. < 25	Aquatic life. municipal and domestic supply.
Turbidity - NTU	-	S.V. < 10	Aquatic life. municipal and domestic supply
Total Dissolved Solids - me,l	SV < 280	S. V. < 500	Municipal and domestic supply. irrigation. stock watering.
Chlorides - mg/l	S.V. < 15.0	S.V. < 250	Municipal and domestic supply, wildlife propagation, irrigation, stock watering
Alk-alinity (as CO) - mg/l		< 25 % change from natural conditions	Aquatic life, wildlife propagation.
Fecal Coliform - N(/100 ml)		< 200/400'	Water contact recreation, noncontact recreation municipal and domestic supply. irrigation. wildlife propagation.
Color		c	Municipal or domestic supply.

- a. Maximum allowable increase in temperature above water temperature at the boundary of an approved mixing zone. but the increase must not cause a violation of the single value standard.
- b. The annual geometric mean must not exceed 200 per 100 milliliters nor may the number of fecal coliform in a single sample exceed 400 per 100 milliliters.
- c. Increase in color must not be more than 10 color units above natural conditions.

(Added to NAC by Environmental Comm'n, eff. 9-20-90)-(Substituted in revision for NAC 445.13976)

SOUTH FORK OWYHEE AT PIPELINE CROSSING

sfowyhee1



06/01/99
06/01/99 00:00:00

07/01/99

08/01/99

09/01/99

10/01/99

11/01/99
11/01/99 00:00:00

sfowyhee2

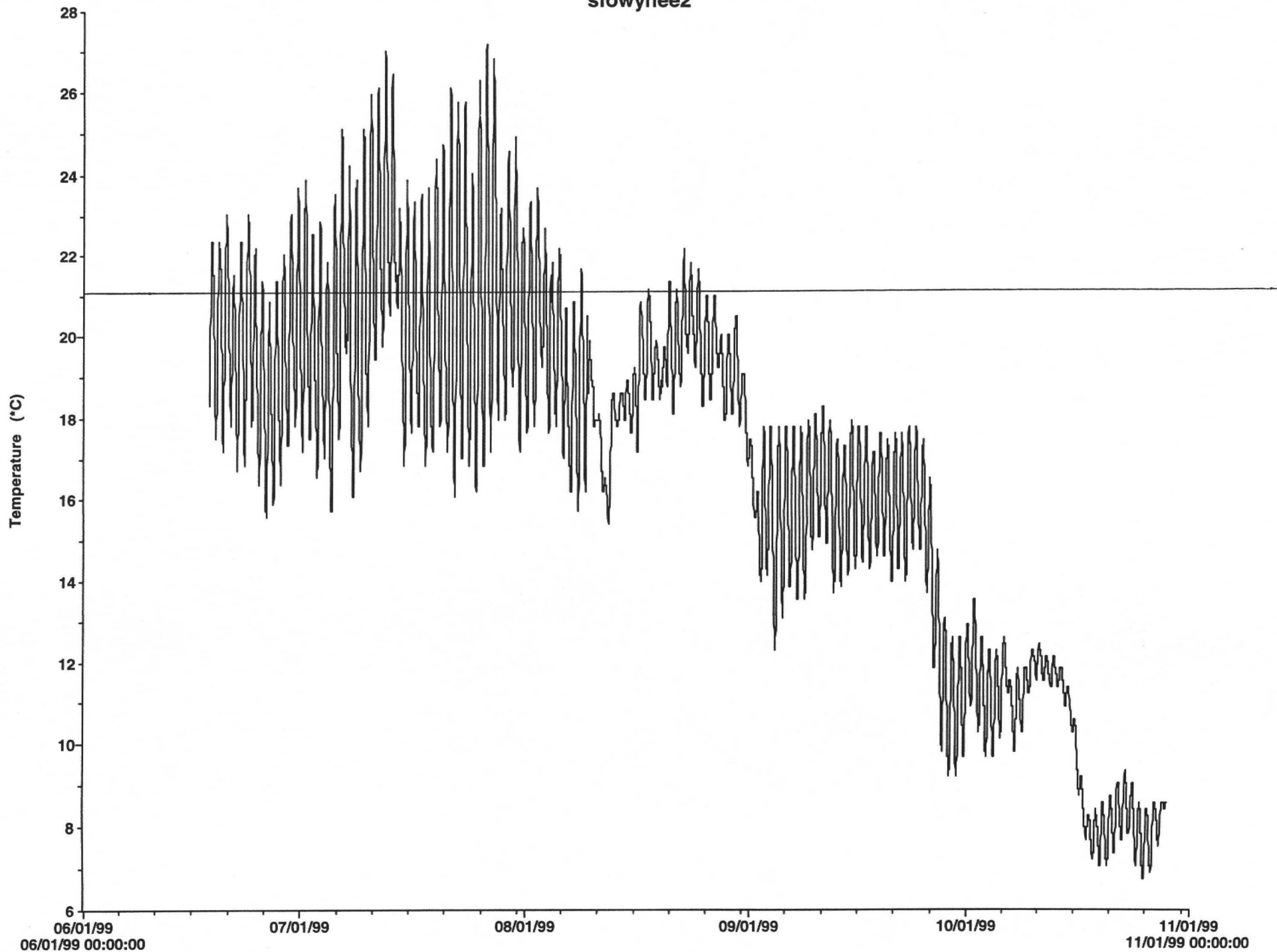


TABLE 3

South Fork Owyhee River at the old USGS gage site #13177800

Station Information

County	Latitude	Longitude	Datum (Above mean sea level)	7.5' USGS topo
Elko	41° 48' N	116° 29' W	4900 ft (approx.)	Petersen Table East

Water Quality Data

Parameter	Requirements to Maintain Existing Higher Quality	Standards of Water Quality for Beneficial Uses (NAC 445A.225)	Field Kit Results for 6/6/00	Laboratory Results for 7/5/00
Temperature °C Maximum (a) ΔT °C	ΔT = 0°	May-Oct < 21° Nov-Apr < 13° ΔT = 0°	21.6 14:00	
pH Units	ΔpH ±0.5	6.5-9.0	8.18	
Total Phosphorus (as P) in mg/L		<0.1	0.21 (calculated from orthophosphates)	
Nitrogen Species (as N) in mg/L				
Nitrate	S.V. <1.0	S.V <10	<1	

Nitrogen Species (as N) in mg/L				
Nitrite		S.V. <0.06	<0.1	
Ammonia (un-ionized) in mg/L		S.V. <0.02		
Dissolved Oxygen in mg/L		>6.0	9.9	
Suspended Solids in mg/L		S.V. <25	3	
Turbidity in NTU		S.V. <10	2.49	
Total Dissolved Solids in mg/L	S.V. <280	S.V. <500	304 (calculated from EC)	
Chlorides in mg/L	S.V. <15.0	S.V. <250		
Alkalinity (as CaCO ₃) in mg/L		< 25% change from natural conditions	220	
Fecal Coliform No./100 ml		<200/400b		
Color		c		

EC (us/cm)			460	
Discharge			55.6 cfs	

- a. Maximum allowable increase in temperature above water temperature at the boundary of an approved mixing zone, but the increase must not cause a violation of the single value standard.
- b. The annual geometric mean must not exceed 200 per 100 milliliters nor may the number of fecal coliform in a single sample exceed 400 per 100 milliliters.
- c. Increase in color must not be more than 10 color units above natural conditions.

South Fork Owyhee River at the pipeline crossing.

Station Information

County	Latitude	Longitude	Datum (Above mean sea level)	7.5' USGS topo
Elko	41° 56' 57.75" N	116° 40' 32.21" W	4668.07 ft	Rubber Hill

Water Quality Data

Parameter	Requirements to Maintain Existing Higher Quality	Standards of Water Quality for Beneficial Uses (NAC 445A.225)	Laboratory Results for 4/30/98	Field Kit Results for 6/25/98	Laboratory Results for 7/16/98	Laboratory Results for 9/29/98	Laboratory Results for 5/5/99	Field Kit Results for 6/18/99	Field Kit Results for 7/22/99
Temperature °C Maximum (a) ΔT °C	ΔT = 0°	May-Oct < 21° Nov-Apr < 13° ΔT = 0°	13.3	16.1	20.6 ²	11.7	4.4	22.2 14:30	16.1 8:30 AM
pH Units	ΔpH ±0.5	6.5-9.0	8.05	7.52	8.39	7.57	7.73	7.5 color w.	7.75
Total Phosphorus (as P) in mg/L		<0.1	0.22	0.14	0.04	0.02	0.21	0.16	0.04
Nitrogen Species (as N) in mg/L									
Nitrate	S.V. <1.0	S.V <10	<1		<0.02	<0.1	0.039		

Nitrogen Species (as N) in mg/L									
Nitrite		S.V. <0.06	<0.5 ¹		<0.02	<0.1 ¹	<0.01		
Ammonia (un-ionized) in mg/L		S.V. <0.02	<0.0013		<0.003	<0.0001	<0.05		
Dissolved Oxygen in mg/L		>6.0	9.2	9.2	7.1	8.6	>11		9.2
Suspended Solids in mg/L		S.V. <25	75	7	1	<1	360	5	201
Turbidity in NTU		S.V. <10	36	8.76	0.63	0.82	43	5.80	
Total Dissolved Solids in mg/L	S.V. <280	S.V. <500	180		160	260	192	EC = 410 approx. 254	
Chlorides in mg/L	S.V. <15.0	S.V. <250	4.0		5.1	10	4.2		
Alkalinity (as CaCO ₃) in mg/L		< 25% change from natural conditions	89		154	171	108		
Fecal Coliform No./100 ml		<200/400b	26		>16/Infinite³	0	190		14 Wendover lab
Color		c	200-300		15-20	15	15-20		

EC (us/cm)				310				410	278
									44.2 cfs

- a. Maximum allowable increase in temperature above water temperature at the boundary of an approved mixing zone, but the increase must not cause a violation of the single value standard.
- b. The annual geometric mean must not exceed 200 per 100 milliliters nor may the number of fecal coliform in a single sample exceed 400 per 100 milliliters.
- c. Increase in color must not be more than 10 color units above natural conditions.
 1. Detection limit on laboratory analysis not low enough.
 2. Temperature was taken at 07:30.
 3. Most Probable Number method was used. A count greater than 16 per 100ml is equivalent to infinite using this method.

VISION OF WATER QUALITY RECORD							NEVADA DIVISION OF ENVIRONMENTAL PROTECTION BUREAU OF WATER QUALITY PLANNING GRAB/SURFACE WATER SAMPLES PROVISIONAL RECORDS										
DATE	P00618 NITRATE MG/L as N	P00608 N,AMMON DISS MG/L N	P00619 NH3-NH3 UNIONZD MG/L	P00625 N-TOTAL KJELDAHL MG/L	P00665 P TOT MG/L P	P00671 P DISS PO4 MG/L P	DATE	TIME	P00941 CHLORIDE DISS MG/L	P00946 SULFATE DISS MG/L SO4	P31679 FECAL STREP #/100ML	31613 FECAL COLI #/100ML	31648 E COLI #/100ML	P00335 COD	P00310 BOD	1027 *Cd UG/L	
22-Jul-66	0.09 K		0 C		0.046	0.042	310050	22-Jul-66		4						7.1	
17-Aug-66	0.5		0 C		0.049	0.049	310050	17-Aug-66		6						3.8	
19-Jun-67			0 C		0.13	0.13	310050	19-Jun-67	1800	12						1.1	
11-Jul-67	0.09 K		0 C		0.11	0.114	310050	11-Jul-67	1245	11						2	
01-Aug-67	0.09 K		0 C		0.065	0.065	310050	01-Aug-67	1030	10						10.4	
22-Aug-67	0.09 K		0 C		0.016	0.016	310050	22-Aug-67	1100	12						5.8	
20-Nov-67	0.29		0 C		0.033	0.033	310050	20-Nov-67	1200	10						1.7	
23-Jan-68	0.09 K		0 C			0.033	310050	23-Jan-68	1130	10						2.4	
04-Jul-68	0.29		0 C		0.049		310050	04-Jul-68	1130	15						0.3	
26-Aug-68	0.11				0.101	0.085	310050	26-Aug-68	1130	11						0.8	
13-Nov-68	0.11				0.068	0.068	310050	13-Nov-68		11						1.3	
26-Aug-69	0.18				0.095	0.085	310050	26-Aug-69	1500	10						1.3	
08-Dec-69	0.09 K				0.013	0.013	310050	08-Dec-69	1700	8						1.6	
10-Aug-70	0.63				0.023	0.023	310050	10-Aug-70	1925	8						2.6	
24-May-71	0.14				0.052	0.052	310050	24-May-71	1810	2						1.3	
30-Aug-71	0.09 K				0.023	0.003	310050	30-Aug-71	1715	5						1.4	
27-Jun-72	0.09 K				0.052	0.039	310050	27-Jun-72	1715	6						1.1	
28-Nov-72	0.09 K				0.055	0.042	310050	28-Nov-72	1705	10						2.7	
24-Sep-73	0.27				0.052	0.013	310050	24-Sep-73	1720	8						1.4	
15-Oct-74	0.09 K				0.036	0.02	310050	15-Oct-74	1835	8		10 K				4	
17-Jun-75	0.09				0.088	0.06	310050	17-Jun-75	1600	7		250				2.7	
29-Sep-76	0.09 K		0.004 C		0.091	0.07	310050	29-Sep-76	1030	9						2.5	
04-Oct-77	0.09 K				0.095	0.06	310050	04-Oct-77	1115	10	200 L	14 K				1.3	
10-May-78 K	0.16		0.009 C		0.71	0.124	0.07	310050	10-May-78	1050	6	10 K				1 K	
30-Mar-79 K	0.2		0.002 C		0.76	0.127	0.09	310050	30-Mar-79	1018	8	20		19.2		1 K	
13-Nov-79 K	0.09				0.2	0.072	0.06	310050	13-Nov-79	1150	6	20		8.1			
17-Aug-82 K	0.04		0.007 C		0.25	0.09	0.08	310050	17-Aug-82	1115	3	330		12			
28-Sep-83 K	0.01		0.005 C		0.26	0.08	0.05	310050	28-Sep-83	1045	6	300		10.8			
12-Jul-88 K	0	0.1 K	0.017 C		0.45	0.06	0.03	310050	12-Jul-88	1520	8	10	10 K			17.1	
20-Jun-89 K	0.03	0.1 K	0.009 C		0.45	0.08	0.06	310050	20-Jun-89	1548	7			14.3		1 K	
20-Jun-90 K	0.05	0.1 K	0.007 C		0.45	0.09	0.06	310050	20-Jun-90	1615	4	250		20.6		1 K	
31-Jul-91 K	0.03	0.1 K	0.01 C		0.6	0.09	0.06	310050	31-Jul-91	1510	5	130		20		1 K	
08-Jul-92 K	0.02	0.1 K	0.014 C		0.48	0.06	0.04	310050	08-Jul-92	1620	9	19	50	10 K		21.4	
13-Jul-93 K	0.03	0.1 K	0.016 C		0.56	0.06	0.03	310050	13-Jul-93	1510	8	19	30	20		1.6	
09-Aug-94 K	0.03	0.1 K	0.009 C		0.63	0.04	0.02	310050	09-Aug-94	1530	0	10	50	10 K	10 K	24.1	
28-Mar-95 K	0.03	0.1 K	0.0008 C		0.45	0.09	0.04	310050	28-Mar-95	1500	4	19	10	10 K		2	
06-Jun-95 K	0.05	0.1 K	0.002 C		0.55	0.18	0.06	310050	06-Jun-95	1600	3	14	240	140	130	15	2 K
19-Sep-95 K	0.01	0.1 K	0.008 C		0.63	0.04	0.02	310050	19-Sep-95	1520	2	10	30	10 K	10 K		1 K

VISION OF																		
WATER QU																		
FACE WATE																		
AL RECORD																		
	1034	1042	1045	1051	71900	1147	1092	1002	1022	916	929	921	931	P46570				
	*Cr	*Cu	*Fe	*Pb	Hg	Se	*Zn	*As	*B	*Ca	*Na	*Mg	SAR	*HARDNESS				
DATE	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	MG/L	MG/L	MG/L		CaCO3				
														MG/L				
22-Jul-66																		
17-Aug-66																		
19-Jun-67																		
11-Jul-67																		
01-Aug-67																		
22-Aug-67																		
20-Nov-67																		
23-Jan-68																		
04-Jul-68																		
26-Aug-68																		
13-Nov-68																		
26-Aug-69																		
08-Dec-69																		
10-Aug-70																		
24-May-71																		
30-Aug-71																		
27-Jun-72																		
28-Nov-72																		
24-Sep-73																		
15-Oct-74																		
17-Jun-75																		
29-Sep-76	5 K	10 K		5 K	0.4 K			10 K										
04-Oct-77	5 K	10 K		5 K	0.4 K			10 K										
10-May-78	5 K	20		5 K	0.5 K			10										
30-Mar-79																		
13-Nov-79																		
17-Aug-82																		
28-Sep-83																		
12-Jul-88	5 K	5 K	40	5 K	0.5 K	1 K	5 K											
20-Jun-89	5 K	5 K	80	5 K	0.5 K	2	5 K	8	100									
20-Jun-90	5 K	5 K	100	5 K	0.5 K	1 K	5 K	6	50 K									
31-Jul-91	5 K	5 K	60	6	0.5 K	1 K	5 K	8	100									
08-Jul-92	5 K	5 K	30	5	0.6	1 K	5 K	8	100	36	30	14	1.1	148				
13-Jul-93	5 K	5 K	80	5 K	0.5 K	1 K	5 K	7	50 K	52	31	17	1	200				
09-Aug-94	5 K	10	60	28	0.5 K	1 K	5 K	5	50 K	15	10	7	0.5	66				
28-Mar-95	5 K	20	340	8	0.5 K	1 K	20	6	100	30	17	8	0.7	108				
06-Jun-95	5 K	20	1050	12	0.5 K	1 K	30	11	100	32	14	9	0.6	117				
19-Sep-95	5 K	5 K	100	5 K	0.5 K	1 K	10	4	100	20	12	8	0.6	83				

FIRE MANAGEMENT APPENDIX

**OWYHEE ALLOTMENT
FIRE MANAGEMENT PLAN**

Introduction -1-

Background Information -1-

 B-14 Tosawihi- Rock & Sheep Creeks, Tuscarora Mountains and I-80 -1-

 C-1 Wilderness Study Areas (WSA's)..... -2-

 C-8 Owyhee Desert -3-

Fire History -3-

 Table 1. Fire History 1980-1996 -4-

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 Map 1. Owyhee Allotment Fire Management Polygons and Fire History -5-

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Prescribed Fire and Fuels Management Objectives -9-

 Winters Creek Seeding -9-

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Monitoring and Evaluation..... -10-

 Map.2 Owyhee Allotment Fire Management Plan Wildland Fire Use, Prescribed Fire
 and Presuppression Projects. -12-

Introduction:

In 1998 the Elko Field Office prepared a new district-wide fire management plan, that encompasses all BLM administered public lands within the Elko District boundaries. This plan was prepared as per national direction and went through public review and internal review. This plan was approved at the national level in 1999. This plan defines the goals and general objectives for fire suppression, prescribed fire and fuels management for the District.

This site specific plan tiers off the Field Office plan and sets specific objectives for this area in the areas of prescribed fire fuels management. The wildland fire suppression objectives remain constant with the Field Office plan. The site specificity of this plan will assist in meeting the goals and objectives of Elko Field Office Plan.

Background Information:

The Field Office fire management plan differentiated fire management goals and objectives by area and vegetation type. These "polygons" are the basis for all fire management activity within the district. The Owyhee Allotment Fire Management Plan has three (3) of these polygons located within its scope.

These polygons (Map 1) are as follows:

B-14 Tosawihi- Rock & Sheep Creeks, Tuscarora Mountains and I-80 (Minor intrusion on southeast corner of allotment)

Current Condition - The primary vegetation type of this area is sagebrush and perennial grasses with intrusions of cheatgrass. Management objectives for these areas include the protection and maintenance of crucial big game habitat, protection of extensive cultural resources, protection of crucial watersheds, providing livestock forage and limiting cheatgrass colonization into native vegetation. Some of the higher elevation sites have the potential for high vegetative response. Because of the potential for cheatgrass encroachment, prescribed fire should be limited in this area to achieve site-specific management goals.

Future Desired Condition - Maintain sagebrush/perennial grass diversity and prevent further encroachment of annual and non-native plant species.

Constraints - The large number of cultural sites associated with Rock Creek and Tosawihi means that mechanized equipment cannot be used in those particular areas. An archaeologist must be on-site to clear any use of mechanized equipment. The Sheep Creek Mountains have limited accessibility to the higher elevations. Critical watersheds in these polygons include Red Cow, Rock, Willow, Frazer, Four Mile, upper Winters, McCann, Jakes, Sherman, and Jackstone Creeks, Big Cottonwood Canyon, Long Canyon, Coal Mine Canyon, and the upper South Fork Little Humboldt River.

Appropriate Fire Management Response - Hold unplanned ignitions to 300 acres or less at least 90 percent of the time. Use appropriate suppression techniques (MIST) in critical watersheds and high cultural resource value areas to minimize damage. Fire history for this area shows that the majority of the fires are large with most between 10,000 and 30,000 acres. This vegetation type is conducive to large rapidly-spreading, wind-driven fires. Fire history for these areas shows an average of 9.2 fires per year burning 9741 acres.

Prescribed Fire/Fuels Management Opportunities - Planned ignitions may be used in this area to accomplish specific management objectives. Curtail planned ignitions if unplanned ignitions meet management objectives. Chainings and seedings within this polygon will be maintained through the use of planned ignitions. These ignitions will not be considered part of the decadal burn targets since they are maintenance of existing developments. Prescribed fire management within this area will consider attainment of burned acreage goals to achieve specific resource objectives through unplanned ignitions.

C-1 Wilderness Study Areas (WSA's)

Current Condition - The vegetation types in these areas vary from sagebrush and perennial grasses to pinyon-juniper woodlands to mixed conifer woodlands. Primary management objectives for these areas are to maintain their natural characteristics and to comply with the Interim Management Policy for Lands under Wilderness Review.

Future Desired Condition - Maintain the natural ecology of the areas including pre-settlement fire activity. Prevent the encroachment of annual and non-native vegetation into the areas.

Constraints - No mechanized equipment usage. All vehicular traffic must be on routes identified during the initial inventory (1979-1981). Use MIST and "light hand on the land" techniques. Several critical streams and watersheds are within the WSAs' boundaries, including the South Fork Little Humboldt River and tributaries, South Fork Owyhee River, Bruneau River and Salmon Falls Creek.

Appropriate Fire Management Response - Hold unplanned ignitions to 2,000 acres or less at least 90 percent of the time. The fire histories in these areas range from low to high with most being small (0-10 acres). Occasional large (10,000+ acres) fires have occurred in some areas. Both planned and unplanned ignitions can be managed to maintain fire as part of the natural ecology, to reduce fuel loadings and to meet specific management objectives. Fire history for these areas show an average of 3.2 fires per year burning 66 acres.

Prescribed Fire/Fuels Management Opportunities - Use planned ignitions to reintroduce fire into the ecology of the areas. Develop and apply fire prescription guidelines to allow for management of unplanned ignitions through monitoring and/or minimal suppression efforts in these areas if prescription guidelines are met. Planned ignitions will be curtailed if unplanned ignitions meet management objectives. Use MIST in all suppression actions.

C-8 Owyhee Desert (Approximately 90 percent of allotment)

Current Condition - The primary vegetation in this polygon is sagebrush with perennial grasses. Due to the current ecological conditions this is a potentially high vegetative response area with most of the area receiving 10 to 14+" of precipitation per year. The management objectives are to maintain fire as part of the natural ecological process and to achieve desired plant communities for grazing and wildlife management.

Future Desired Condition - Maintain native vegetation diversity and prevent the encroachment of annual and non-native plant species.

Constraints - Some private lands, which will require different suppression strategies, are located within this large polygon. Mechanized equipment use must be evaluated against the potential for long-term resource damage. Critical watersheds within this area are upper Rock, Toe Jam, upper Kelly, Lewis and Nelson Creeks

Appropriate Fire Management Response - Hold unplanned ignitions to 2,000 acres or less 90 percent of the time. Because of its isolated location, fire history in this area is incomplete. Documented fire activity shows a low to moderate number of fires with most being from 100 to 5,000+ acres. It is probable that many of the smaller fires burn out before they are reported. Both planned and unplanned ignitions can be managed to maintain fire as part of the natural ecology and to achieve management objectives. Fire history for this area shows an average of 3.9 fires per year burning 2,711 acres.

Prescribed Fire/Fuels Management Opportunities - Make extensive use of planned ignitions to accomplish management objectives. Curtail planned ignitions if unplanned ignitions accomplish management objectives. Develop and apply fire prescription guidelines to allow for management of unplanned ignitions through monitoring and/or minimal suppression efforts in these areas if prescription guidelines are met. Chainings and seedings within this polygon will be maintained through the use of planned ignitions. These ignitions will not be considered as part of the decadal burn targets since they are maintenance of existing developments.

Fire History:

The Owyhee allotment has a moderate number of wildfires. In the period from 1980 to 1996 there were 23 documented wildland fires. There is no easily accessible data for small fires

from 1997 through 1999, but based on prior history, there were probably two to three additional fires. This allotment is located in an isolated part of the District, so there are probably additional fires that burnt small acreages and went out prior to discovery. Due to lengthy response time of fire suppression resources and the fuel types present most of the documented fires were from 10 to 50 acres. 35 percent of the fires were over 375 acres, averaging approximately 1,720 acres each.

Table 1. Fire History 1980-1996

Polygon	Number of Fires	False Alarms	Largest Fire Size and Year	Total Acres
B14 Sage/grass moderate potential	0	0	0	0
C1 Wilderness Study Areas	1	0	24.7/1996	24.7
C8 Sage/grass high potential	22	6	5612.9/ 1985	13,992.6
Totals	23	6		14,017.3

Wildland Fire Suppression Tactics:

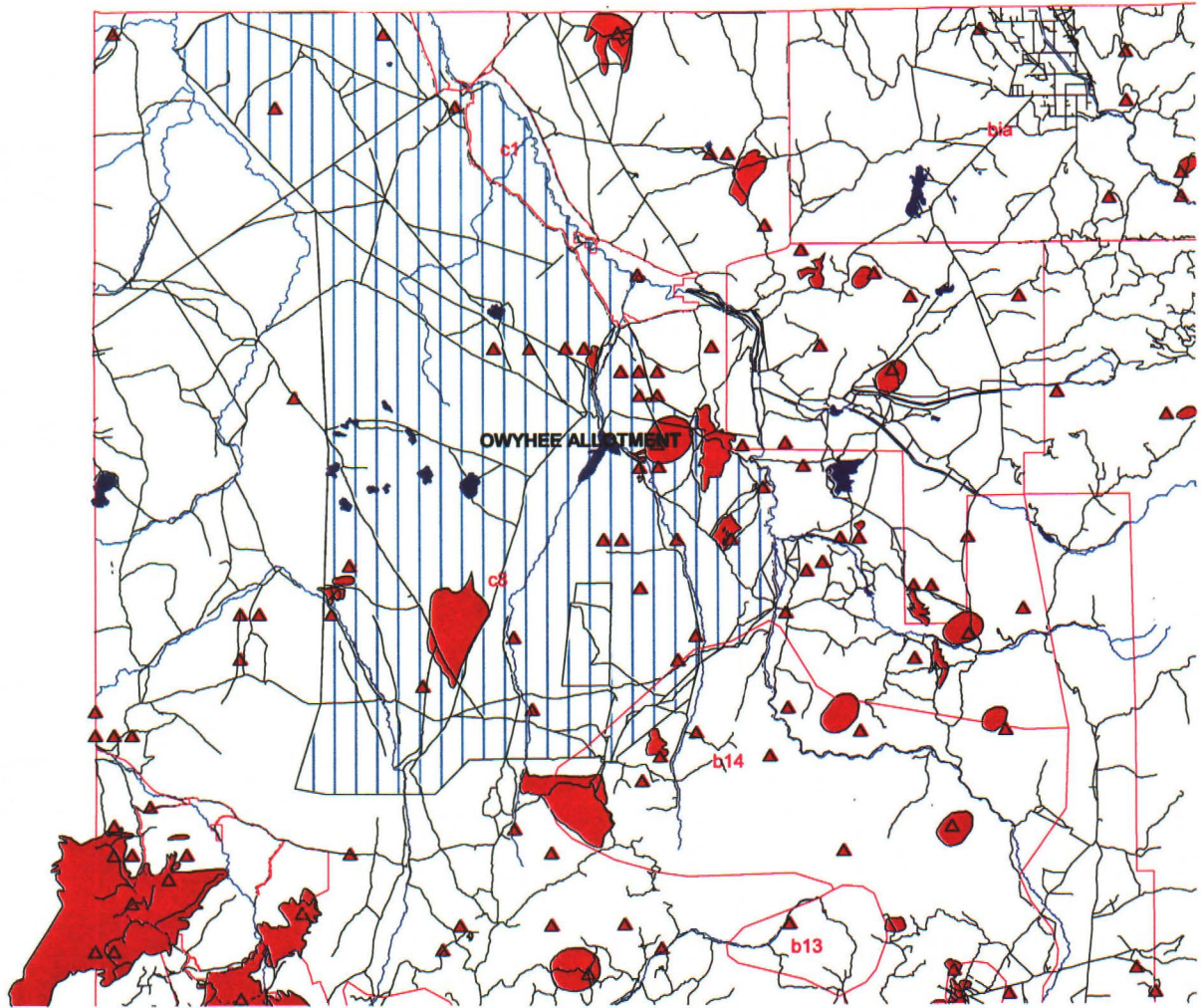
- A. **Recommendation:** Maintain the current suppression tactics as outlined in the 1998 Elko Field Office Fire Management Plan for “polygons” B14, C1 and C8.

Rationale: The fire management plan takes into account fire occurrence and size and location of suppression resources to achieve the “Most Effective Level” of fire suppression for the district in its entirety. The effectiveness of suppression is monitored through periodic evaluations.

- B. **Recommendation:** Revise the Field Office Fire Management Plan to include construction and maintenance costs to improve the landing strip in T46N, R47E Sec 20 for use by single engine air tankers, other small fixed and rotor wing aircraft and as a staging area. Include in this revision for the construction of a pipeline and water storage facility (tank) from the existing well in T46N, R47e Sec 19 to the landing strip (approximately 1/8 mile). Pursue an agreement with the permittee to allow for the use of the private airstrip behind the ranch headquarters at T42N, R50 E Sec 6 for the same purposes.

Rationale: The isolated nature of this area makes air support difficult, especially for fixed wing aircraft. Due to the response time and the historic size of fires within this allotment, establishment of a usable landing strip on public lands and agreement for use of the private airstrip would facilitate fire suppression efforts in this area.

Owyhee Allotment
Fire Management Polygons
And Fire History



-  Fire Polygons
-  Playas
-  Rivers & Streams
-  Road System
-  Wildfires 1980-96
-  Large Fires 1980-1996
-  Owyhee Allotment



- C. **Recommendation:** Establish Wildland Fire Use Plan for natural ignitions in the C8 (Owyhee Desert) and C1(WSA) polygons based on live fuel moisture of sagebrush and seasonality of the wildfire occurrence. Initial live fuel moisture would be 150 percent for early season fires, which would encompass the time period up to approximately June 20 with Fire Intensity Level (FIL) of 4 or less. Late season fires under Wildland Fire Use Plan would occur after October 1. "Maximum Management Area" acreage for both seasons would be limited to 2,000 acres per fire (as per the Elko Fire Management Plan) and would be based on resource benefits. Fires managed under this plan would be counted towards prescribed fire acreages listed in Prescribed Fire and Fuels Management Objectives C and D below.

Wildland Fire Use Areas will follow the guidelines described in Wildland and Prescribed Fire Management Policy, Implementation Procedures Guide of August 1998 and future revisions. This includes:

1. Stage I: Initial Fire Assessment and Go-No-Go decision within two (2) hours of discovery.
2. Stage II: Short-Term Implementation Actions within 24 hours. NOTE - For this plan the Stage II Implementation Actions will occur within 12 hours because of the fuel type.
3. Stage III: Long Term Implementation Actions if periodic Fire Assessment indicates need.

Fires occurring in these areas may go through one or more of the above stages dependent on fire size, complexity and longevity. Stage 1 is the initial Go-No-Go decision. Stages II and III represent tactical implementation plans which include fire behavior, risk assessment, overall objectives and mitigation plans (holding, limited suppression actions, closures, etc.).

Prescriptive Parameters:

1. Time Frames are from October 1 to June 20.
2. Sagebrush Live Fuel Moisture from the Adobe sagebrush sampling site is 150 percent or greater prior to June 20 of the current year.
3. Sagebrush live fuel moisture of less than 150 percent is acceptable from October 1 through May 1.
4. Great Basin and/or National Preparedness Levels : 1 to 5. At levels 4 and 5 State and/or National Concurrence is needed.

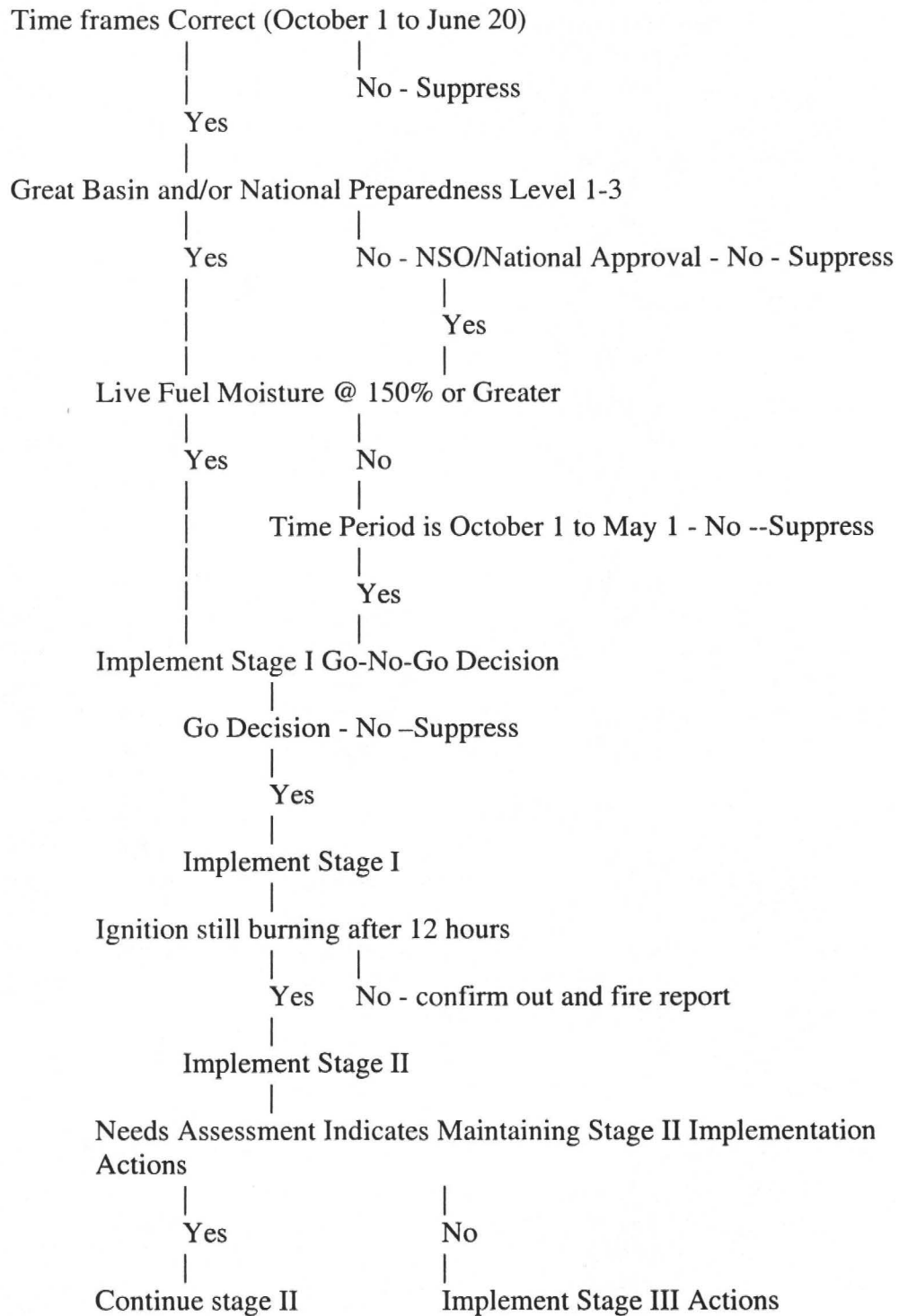
*Note A new Dispatch Run Card for this Initial Attack Response Area needs to be developed and include a Resource Advisor as being one of the first two first resources dispatched for the time period of October 1 to June 20.

Rationale: The Interim Management Policy and Guidelines for Lands Under Wilderness Review states that fire is a natural component of many wildernesses and that the natural role of fire and fire history be considered in fire management planning. The WSAs (South Fork Owyhee River and Owyhee Canyon) vegetation developed with fire as a natural part of their ecology. Wildland fire use in these areas would allow wildland fire to be reintroduced as part of the natural landscape. The wildland fire use plan will encompass the entire WSAs including the portions in the YP Allotment. The Owyhee Desert has a potentially high vegetative response to wildland fire based on the precipitation patterns and the good condition of the native vegetation. The Wyoming big sagebrush and perennial grasses developed under a natural fire return interval of from 25 to 100 years. The high vegetative productivity of this area means that the fire return intervals on the Owyhee Desert were closer to 25 years than the 100 year return interval for low productivity sites. Appropriate Management fires would be considered as part of the prescribed fire totals for this allotment.

- D. **Recommendation:** Change initial attack responsibility from Winnemucca BLM Field Office to the Elko BLM Field Office.

Rationale: The Winnemucca BLM through an agreement with the Elko BLM Field Office has assumed initial attack responsibilities in the 1980's. The Elko BLM maintains all other resource management responsibilities for this area. Appropriate Management Response wildland fires and the decision making process needs to be consolidated with the responsible Field Office. Communications and decision making going through two dispatch centers and two chains of authority have the inherent probabilities of mis-communication. Having Elko Field Office responsible for initial attack would consolidate all resource decision making into one office.

Table 2. Flow Chart for Appropriate Management Response in the Owhyee Allotment



Prescribed Fire and Fuels Management Objectives (See Map 2 for Locations)

For an in-depth discussion of fire effects on fire dependent vegetation types, see Vegetation Treatment by Fire Environmental Assessment (BLM/EK/PL-026).

This fire management plan establishes baseline/minimum prescribed fire and fuels management goals for this allotment. Other projects may be incorporated into this plan at a future date depending on additional resource needs.

A. Winters Creek Seeding

Recommendation: Use prescribed fire as necessary to maintain crested wheatgrass seeding.

Rationale: Crested wheatgrass is very tolerant of fire and has an excellent response after fire with quick recovery. Using prescribed fire to reduce the shrub component of the seeding will maximize herbaceous growth for livestock forage.

B. Star Ridge

Recommendation: Use prescribed fire to treat approximately 2,000 acres in this area to improve grass and forb diversity and to increase the age classes of the shrub component. Use mosaic patterns with no single unit exceeding 1,000 acres in size. Use wildland fires as listed in Wildland Fire Suppression Tactics C when managed under AMR as part of the prescribed fire totals for this recommendation.

Rationale: The Wyoming big sagebrush and perennial grasses in this vegetative type developed with fire as part of their natural ecology. Using prescribed fire in this area in a mosaic pattern will increase herbaceous component. It will create more ecotones to benefit wildlife, particularly antelope and sage grouse. All available research shows that both antelope and sage grouse benefit from fire. Recommendations for prescribed fire for antelope are for mosaic units of less than 1,000 acres in size and for sage grouse units of 100 acres or less.

C. Dry Lakes

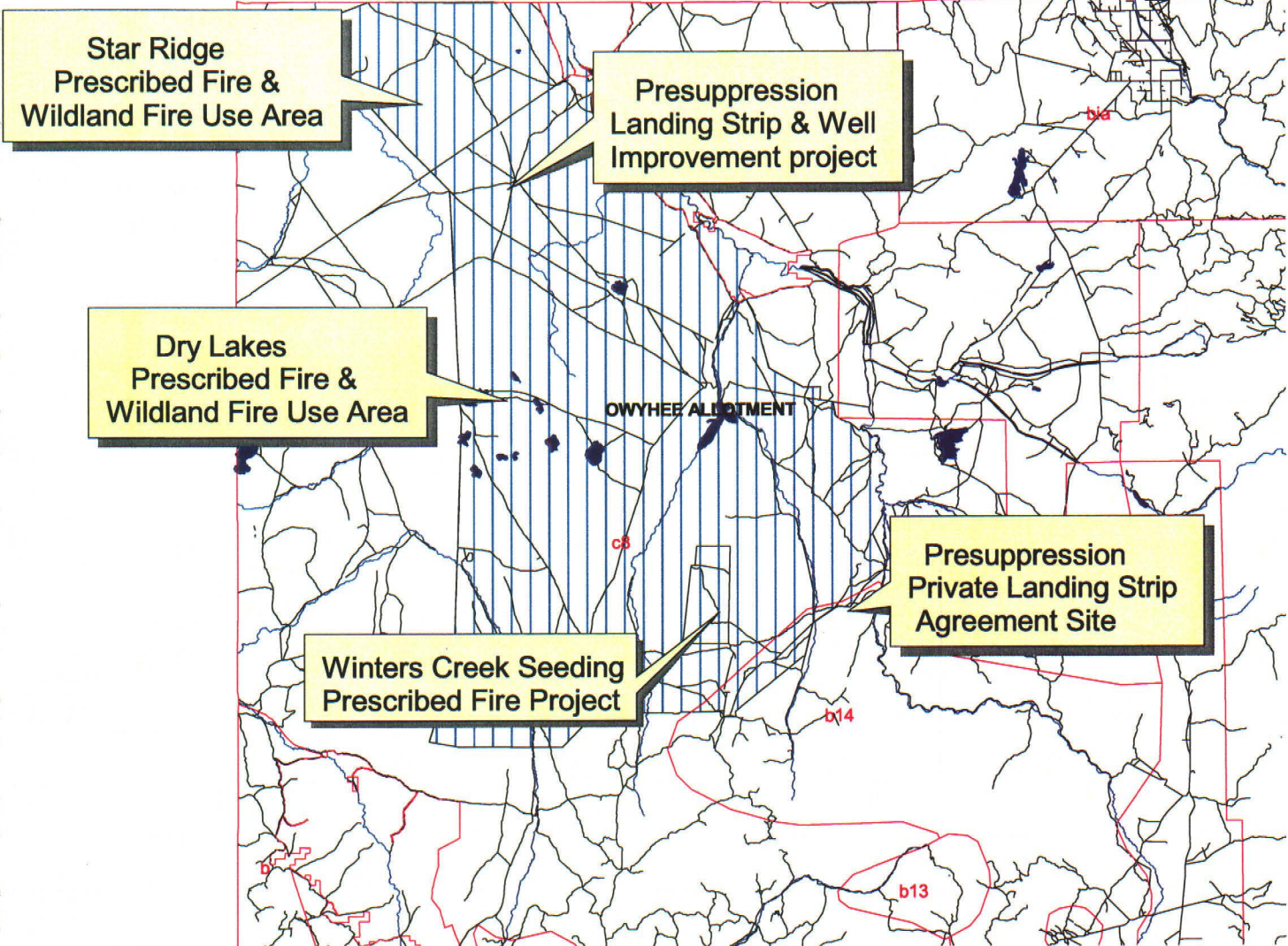
Recommendation: Use prescribed fire to treat approximately 10,000 acres in this area to improve grass and forb diversity and to increase the age classes of the shrub component. Use mosaic patterns with no single unit exceeding 1,000 acres in size. Use wildland fires as listed in Wildland Fire Suppression Tactics C when managed under AMR as part of the prescribed fire totals for this recommendation.

Rationale: The Wyoming big sagebrush and perennial grasses in this vegetative type developed with fire as part of their natural ecology. Using prescribed fire in this area in a mosaic pattern will increase herbaceous component. It will create more ecotones to benefit wildlife, particularly antelope and sage grouse. All available research shows that both antelope and sage grouse benefit from fire. Recommendations for prescribed fire for antelope are for mosaic units of less than 1,000 acres in size and for sage grouse units of 100 acres or less.

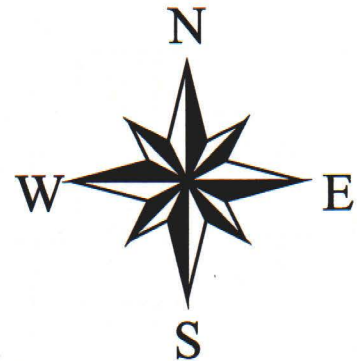
Monitoring and Evaluation

All prescribed fires and wildland fire use ignitions will be monitored. Plots will be established prior to the treatment. The plots will be read pre-treatment and post-treatment to ascertain if project objectives were met. Wildland fire suppression activity will be evaluated periodically to ensure that suppression objectives are being met. This information will be used in modifying future objectives.

Map 2.
 Owyhee Allotment Fire Management Plan
 Wildland Fire Use, Prescribed Fire and
 Presuppression Projects



-  Fire Polygons
-  Dist_lakes
-  Rivers & Streams
-  Road System
-  Owyhee Allotment



RANGE APPENDIX

DATA SUMMARY SECTION

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-01, DRY CREEK PASTURE

Key Species:	bluebunch wheatgrass (AGSP) foxtail wheatgrass (AGSA5) Thurber's needlegrass (STTH2) Great Basin wildrye (ELCI2)	bottlebrush squirreltail (SIHY) Sandberg's bluegrass (POSE)	Range Site: Loamy 8-10 (NV025XY019)
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YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)
1998	13,242 c 4,405 wh	3/1-7/15/98 c 3/1-2/28/99 wh	SIHY/ AGSA5 26%	8/19/98			13,242 c 1,905 wh	29,129
1997	1,353 c 3,509 wh	2/15-2/28/98 c 3/1-2/28/98 wh	AGSA5 19%	11/20/97			0 c 2,477 wh	6,518
1996	13,129 c 303 wh	3/1-7/15/96 c 3/1-2/28/97 wh	AGSP/ AGSA5 55% SIHY 18%	7/25/96			13,129 c 86 wh	12,014
1995	715 c 192 wh	2/15-2/28/96 c 3/1-2/28/96 wh	SIHY 3%	4/26/95			0 c 26 wh	433
1994	10,017 c 17 wh	3/1-8/15/94 c 3/1-2/28/95 wh						
1993	0 c 733 wh	Rested c 3/1-2/28/94 wh						
1992	0 c 66 wh	Rested c 3/1-2/28/93 wh						
1991	10,898 c 44 wh	3/2-10/10/91 c 3/1-2/28/92 wh			No use 33% Slight 48% Light 7% Moderate 4% Heavy 8% Severe 0%	8/22/91 9/4-5, 9/18-19/91		

OWYHEE ALLOTMENT STUDIES SUMMARY

Key Area OW-01, DRY CREEK PASTURE

Key Species: bluebunch wheatgrass (AGSP) bottlebrush squirreltail (SIHY) Range Site: Loamy 8-10 (NV025XY019)
 foxtail wheatgrass (AGSA5) Sandberg's bluegrass (POSE)
 Thurber's needlegrass (STTH2)
 Great Basin wildrye (ELCI2)

YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)
1990	0 c 36 wh	Rested c 3/1-2/28/91 wh						
1989	19,895 c ⁵ 703 wh	3/1-11/22/89 c 3/1-2/28/90 wh	SIHY 26% AGSP 41% SIHY 39%	11/13/89 7/25/89 7/25/89	No use 4% Slight 59% Light 18% Moderate 11% Heavy 8% Severe 0%	8/2, 8-10, 8/15/89	combined use with Chimney Ck Pasture	data not available
1988	696 c 599 wh	6/23-9/15 c 3/1-2/28/89 wh	No use	10/31/88			696 c 402 wh	---
1987	4,031 c 12 wh	3/2-5/31/87 c 3/1-2/28/88 wh	ORHY 17% SIHY 12%	9/3/87			4,031 c 6 wh	11,874
1986	0 c 12 wh	Rested c 3/1-2/28/87 wh						
1985	4,639 c 447 wh	3/1-10/3/85 c 3/1-2/28/86 wh						
1984	2,782 c 120 c 385 wh	3/29-6/24 c 9/1-9/16 c 3/1-2/28/85 wh	SIHY 0%	6/27/84			2,782 c 126 wh	---
1983	4,833 c 612 wh	3/2-10/11 c 3/1-2/28/84 wh	SIHY 3%	8/29/83			4,810 c 279 wh	84,817

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-01, DRY CREEK PASTURE

Key Species: bluebunch wheatgrass (AGSP) bottlebrush squirreltail (SIHY) foxtail wheatgrass (AGSA5) Sandberg's bluegrass (POSE) Thurber's needlegrass (STTH2) Great Basin wildrye (ELCI2)	Range Site: Loamy 8-10 (NV025XY019)
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YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)
1982	531 c 471 wh	10/16-11/30 c 3/1-2/28/83 wh	SIHY 51%	7/13/82			0 c 191 wh	187
1981	6,355 c no data wh #	3/5-9/14 c 3/1-2/28/82 wh						

¹ c= cattle, h= domestic horses, wh=wild horses

⁵ 1989 actual use for Dry Creek Pasture combined with actual use for Chimney Creek Pasture.

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-02, DRY CREEK PASTURE

Key Species: bluebunch wheatgrass (AGSP) bottlebrush squirreltail (SIHY) foxtail wheatgrass (AGSA5) Sandberg's bluegrass (POSE) Thurber's needlegrass (STTH2) Great Basin wildrye (ELCI2)	Range Site: Loamy 8-10 (NV025XY019)
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YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)
1998	13,242 c 4,405 wh	3/1-7/15/98 c 3/1-2/28/99 wh	SIHY 5%	8/19/98			13,242 c 1,905 wh	151,470
1997	1,353 c 3,509 wh	2/15-2/28/98 c 3/1-2/28/98 wh	SIHY 14%	11/20/97			0 c 2,477 wh	8,846
1996	13,129 c 303 wh	3/1-7/15/96 c 3/1-2/28/97 wh	AGSP/ AGSA5 8% SIHY 14%	7/25/96			13,129 c 86 wh	47,196
1995	715 c 192 wh	2/15-2/28/96 c 3/1-2/28/96 wh	SIHY 4%	4/26/95			0 c 26 wh	325
1994	10,017 c 17 wh	3/1-8/15/94 c 3/1-2/28/95 wh	AGSA5 4% POSE 14%	3/8/94			309 c 1 wh	1,107
1993	0 c 733 wh	Rested c 3/1-2/28/94 wh						
1992	0 c 66 wh	Rested c 3/1-2/28/93 wh						
1991	10,898 c 44 wh	3/2-10/10/91 c 3/1-2/28/92 wh	AGSA5 0% POSE 0%	8/23/91	No use 33% Slight 48% Light 7% Moderate 4% Heavy 8% Severe 0%	8/22/91 9/4-5, 9/18-19/91	10,856 c 19 wh	---

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-02, DRY CREEK PASTURE

<p>Key Species: bluebunch wheatgrass (AGSP) bottlebrush squirreltail (SIHY) foxtail wheatgrass (AGSA5) Sandberg's bluegrass (POSE) Thurber's needlegrass (STTH2) Great Basin wildrye (ELCI2)</p>	<p>Range Site: Loamy 8-10 (NV025XY019)</p>
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YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)
1990	0 c 36 wh	Rested c 3/1-2/28/91 wh						
1989	19,895 c ⁵ 703 wh	3/1-11/22/89 c 3/1-2/28/90 wh	AGSA5 6% SIHY 6% SIHY 20%	11/13/89 11/13/89 7/25/89	No use 4% Slight 59% Light 18% Moderate 11% Heavy 8% Severe 0%	8/2, 8-10, 8/15/89	combined use with Chimney Ck Pasture	data not available
1988	696 c 599 wh	6/23-9/15 c 3/1-2/28/89 wh	AGSA5 0%	10/31/88			696 c 402 wh	---
1987	4,031 c 12 wh	3/2-5/31/87 c 3/1-2/28/88 wh	Stipa 2% SIHY 1% POSE 2%	9/3/87			4,031 c 6 wh	100,925
1986	0 c 12 wh	Rested c 3/1-2/28/87 wh	SIHY 3%	6/17/86			0 c 4 wh	67
1985	4,639 c 447 wh	3/1-10/3/85 c 3/1-2/28/86 wh						
1984	2,902 c 385 wh	3/29-6/24 c 9/1-9/16 c 3/1-2/28/85 wh						
1983	4,833 c 604 wh	3/2-10/11 c 3/1-2/28/84 wh						

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-02, DRY CREEK PASTURE

Key Species: bluebunch wheatgrass (AGSP) bottlebrush squirreltail (SIHY) foxtail wheatgrass (AGSA5) Sandberg's bluegrass (POSE) Thurber's needlegrass (STTH2) Great Basin wildrye (ELCI2)	Range Site: Loamy 8-10 (NV025XY019)
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YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)
1982	531 c 471 wh	10/16-11/30 c 3/1-2/28/83 wh	SIHY 20% POSE 46%	7/14/82			0 c 192 wh	209
1981	6,355 c no data wh #	3/5-9/14 c 3/1-2/28/82 wh						

¹ c= cattle, h= domestic horses, wh=wild horses
⁵ 1989 actual use for Dry Creek Pasture combined with actual use for Chimney Creek Pasture.

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-03, WINTERS CREEK SEEDING PASTURE

Key Species: crested wheatgrass (AGSP)

Range Site: Seeding

YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)
1998	909 <u>1,933</u> 2,842	3/1-4/16 10/2-12/20	AGCR 19%	12/18/98			2,842	8,974
1997	1,663	9/26-12/20						
1996	0	Rested						
1995	1,508	10/15-12/31						
1994	851 <u>1,624</u> 2,475	3/2-3/25 10/15-1/6/95	AGCR 1%	4/21/94			851	51,060
1993	820	10/21-1/8/94	AGCR 0%	12/7/93			492	---
1992	629 <u>1,002</u> 1,631	3/1-4/10 10/20-12/15						
1991	20 674 <u>1,761</u> 2,455	2/29-2/29/92 3/1-3/31/91 11/16-1/15/92						
1990	1,803	3/10-6/18	AGCR 44%	6/21/90	No use 0% Slight 0% Light 15% Moderate 64% Heavy 21% Severe 0%	6/21/90	1,803	2,459
1989	1,913	11/18-1/25/90	AGCR 0%	7/11/89			0	---

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-03, WINTERS CREEK SEEDING PASTURE

Key Species: crested wheatgrass (AGSP)						Range Site: Seeding			
YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)	
1988	1,936	11/15-1/14/89							
1987	2,450	11/1-1/15/88							
1986	2,314 <u>638</u> 2,952	3/6-6/15 11/21-12/20	AGCR 48%	7/16/86			2,314	2,893	
1985	110 <u>1,597</u> 1,707	5/4-5/21 6/22-9/30							
1984	934 <u>1,790</u> 2,724	3/1-3/29 6/21-8/31							
1983	2,194	3/1-5/9	AGCR 46% only 11 hits	5/19/83			2,194	2,862	
1982	1,680	3/22-6/29	AGCR 43%	7/15/82			1,680	2,344	
1981	408 570 <u>472</u> 1,450	3/17-4/7 4/11-6/2 6/27-8/1	AGCR 45%	9/16/81			1,450	1,933	

¹ c= cattle, h= domestic horses
⁴ Pounds per acre adjusted for precipitation using the CYI.

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-04, CHIMNEY CREEK PASTURE

Key Species: bluebunch wheatgrass (AGSP) bottlebrush squirreltail (SIHY)
 Thurber's needlegrass (STTH2) Great Basin wildrye (ELCI2)
 Sandberg's bluegrass (POSE)

Range Site: Loamy 8-10 (NV025XY019)

YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)
1989	19,895 c* 0 wh	3/1-11/22 c*	AGSP 33% SIHY 33% AGSP 25%	7/19/89 7/19/89 11/13/89	No use 0% Slight 36% Light 26% Moderate 25% Heavy 13% Severe 0%	8/2, 8-10 8/15/89	*combined use with Dry Ck Pasture	data not available
1988	2,089 c 0 wh	4/30-10/20 c	AGSP 20%	10/31/88			2,089 c	5,222
1987	2,902 c 0 wh	6/7-11/30 c	AGSP 35%	9/22/87			1,773 c	2,533
1986	1,598 c <u>3,768 c</u> 5,366 c 0 wh	3/4-5/15/86 c 11/5-2/3/87 c						
1985	465 c 0 wh	8/20-10/24 c						
1984	2,433 c 0 wh	11/4-1/9/85 c						
1983	353 c <u>1,278 c</u> 1,631 c 0 wh	5/7-5/20 c 8/19-10/24 c	POSE 7%	8/29/83			533 c	3,807
1982	2,205 c 0 wh	3/8-10/16 c	AGSP 28%	7/23/82			759 c	1,355

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-04, CHIMNEY CREEK PASTURE

Key Species: bluebunch wheatgrass (AGSP) bottlebrush squirreltail (SIHY) Range Site: Loamy 8-10 (NV025XY019)
 Thurber's needlegrass (STTH2) Great Basin wildrye (ELCI2)
 Sandberg's bluegrass (POSE)

YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)
1998	5,567 c 80 wh	7/16-9/25 c 3/1-2/28/99 wh	AGSP 41%	10/9/98			5,567 c 47 wh	6,846
1997	5,567 c 68 wh	9/26-12/30 c 3/1-2/28/98 wh						
1996	6,369 c 629 wh	7/20-9/25 c 3/1-2/28/97 wh						
1995	5,092 c 516 wh	10/15-12/31 c 3/1-2/28/96 wh	STTH2 11% AGSP 10%	4/26/95			0 c 69 wh	314
1994	2,739 c 737 wh	10/16-1/8/95 c 3/1-2/28/95 wh						
1993	1,881 c 74 wh	11/3-1/7/94 c 3/1-2/28/94 wh	AGSP 0%	12/7/93			1,043 c 74 wh	---
1992	0 c 451 wh	Rested c						
1991	7,983 c 0 wh	4/12-12/5 c	AGSP 44%	10/18/91			7,949 c	9,035
1990	3,838 c 0 wh	11/2-1/11/91						

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-04, CHIMNEY CREEK PASTURE

Key Species: bluebunch wheatgrass (AGSP) bottlebrush squirreltail (SIHY) Thurber's needlegrass (STTH2) Great Basin wildrye (ELCI2) Sandberg's bluegrass (POSE)	Range Site: Loamy 8-10 (NV025XY019)
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YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)	
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* Actual use reported was combined use with Dry Creek Pasture.
¹ c= cattle, h= domestic horses, wh= wild horses

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-05, UPPER FOURMILE PASTURE

Key Species: bluebunch wheatgrass (AGSP) Bottlebrush squirreltail (SIHY) Range Site: Loamy 10-12 (NV025XY014)
Great Basin wildrye (ELCI2)

YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)
1998	1,151	9/26-12/30	AGSP 27%	12/18/98			1,007	1,865
1997	361 c 104 h 465	7/16-9/25	AGSP 44%	10/1/97			465	528
1996	7,736*	10/10-1/15/97					*combined use with Lower Fourmile	
1995	444 h	3/1-12/31 h	AGSP 36%	10/24/95			345 h	479
1994	444 h	3/1-12/31 h						
1993	258 h	3/1-12/30 h	AGSP 17%	12/7/93			248 h	729
1992	602 c&h	3/4-9/20 h	AGSP 59%	6/30/92	No use 0% Slight 46% Light 9% Moderate 37% Heavy 8% Severe 0%	6/30/92	912 c&h	773
1991	unknown	memo indicates trail thru out of Dry Ck with ~1,500 head	AGSP 37%	10/18/91			----	----
1990	no aums or #s given	Actual use reports "trail thru"						

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-05, UPPER FOURMILE PASTURE

Key Species: bluebunch wheatgrass (AGSP) Bottlebrush squirreltail (SIHY) Range Site: Loamy 10-12 (NV025XY014)
Great Basin wildrye (ELCI2)

YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)	
1989	284 c No numbers given for drift	5/16-5/28 c 9/1-11/22 c drift thru	AGSP 8% AGSP 34% 10 hits	7/19/89 11/13/89	No use 0% Slight 0% Light 35% Moderate 35% Heavy 30% Severe 0%	8/2, 8-10 8/15/89	257 c	378	
1988	66 h 50 c 171 c 287	4/8-11/15 h 6/8-6/11 c 9/4-11/25 c							
1987	268 c	5/1-5/31 c							
1986	150 h	3/14-10/20 h	AGSP 10% SIHY 5%	6/17/86			65 h	325	
1985	517 c 113 h 630	3/2-10/6 c 3/5-11/10 h							
1984	417 c 53 c 74 c 544 c	3/4-4/12 c 8/30-9/1 c 9/13-9/23 c	AGSP 6%	6/26/84			417 c	3,475	
1983	0 c	No use reported	AGSP 5%	8/25/83					
1982	242 c	8/28-9/9 c	AGSP 10%	7/21/82			0 c	----	

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-05, UPPER FOURMILE PASTURE

Key Species: bluebunch wheatgrass (AGSP) Bottlebrush squirreltail (SIHY) Range Site: Loamy 10-12 (NV025XY014)
 Great Basin wildrye (ELCI2)

YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)	
1981	2,818 c*	4/8-10/7*					*combined use with Lower Fourmile		

* Actual use in 1981 and 1996 were combined for Upper and Lower Fourmile.
¹ c= cattle, h= domestic horses

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-06, LOWER FOURMILE PASTURE

Key Species: bluebunch wheatgrass (AGSP) Thurber's needlegrass (STTH2) Range Site: Loamy 8-10 (NV025XY019)
 Sandberg's bluegrass (POSE) Nevada bluegrass (PONE)

YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)
1998	3,953 c	9/26-12/30 c	AGSP 22%	12/18/98			3,459	7,861
1997	5,207 c	7/16-9/25 c	AGSP 42%	10/1/97			5,207	6,199
1996	7,736 c*	10/10-1/15/97*					*combined use with Upper Fourmile	
1995	5,993 c	7/16-9/15 c	AGSP 26% STTH2 32%	10/24/95			5,993 c	9,364
1994	1,998 c	3/4-10/15 c						
1993	2,384 c	7/20-10/1 c	AGSP 47%	12/22/93			2,384 c	2,536
1992	7,522 c	3/1-11/28 c	AGSP 60% STTH2 70%	6/30/92	No use 0% Slight 24% Light 2% Moderate 14% Heavy 60% Severe 0%	6/30/92	7,450 c	5,321
1991	3,484 c <u>371 h</u> 3,855	3/1-12/28 3/1-12/28 h	no use	6/25/91	No use 84% Slight 16% Light 0% Moderate 0% Heavy 0% Severe 0%	6/25/91	3,420 c <u>125 h</u> 3,545	--
1990	2,982 c <u>431 h</u> 3,413	7/20-12/9 c 3/1-12/22 h						

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-06, LOWER FOURMILE PASTURE

Key Species: bluebunch wheatgrass (AGSP) Thurber's needlegrass (STTH2) Range Site: Loamy 8-10 (NV025XY019)
Sandberg's bluegrass (POSE) Nevada bluegrass (PONE)

YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)	
1989	2,746 c 375 h	3/1-5/22 c 3/8-12/31 h	AGSP 32% SIHY 20% AGSP 18% STTH2 26% SIHY 4%	7/25/89 7/25/89 5/31/89 5/31/89 5/31/89	No use 0% Slight 92% Light 2% Moderate 2% Heavy 4% Severe 0%	8/2, 8-10, 8/15/89	2,985	4,664	
1988	35 c <u>326 h</u> 361	2/28-2/28/89 c 3/3-12/28/88 h							
1987	1,608 c	3/4-6/9 c	AGSP 12% POSE 33%	6/8/87	No use 0% Slight 19% Light 67% Moderate 14% Heavy 0% Severe 0%	6/8/87	1,608 c	6,700	
1986	1,175 c <u>156 h</u> 1,331	3/5-6/10 c 3/2-12/28 h							
1985	3,945 c 302 h	3/3-11/25 c 3/5-12/31 h							
1984	1,797 c	7/24-10/24 c	PONE 4% SIHY 0% AGSP 7% POSE 4% SIHY 1%	8/8/84 8/8/84 6/26/84 6/26/84 6/26/84			109 c -- 8/8	1,362	

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-06, LOWER FOURMILE PASTURE

Key Species: bluebunch wheatgrass (AGSP) Thurber's needlegrass (STTH2) Range Site: Loamy 8-10 (NV025XY019)
 Sandberg's bluegrass (POSE) Nevada bluegrass (PONE)

YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)	
1983	1,913 c <u>604 c</u> 2,517	3/4-6/30 c 11/15-12/26 c	AGSP 4% POSE 4% ELC12 3%	8/30/83			1,913 c	23,912	
1982	2,070 c	3/1-10/17 c	AGSP 12% POSE 6%	9/9/82			2,059 c	8,579	
1981	303 c 2,819 c *	2/20-28/82 c 4/8-10/7 c *					*combined use with Upper Fourmile		

* Actual use in 1981 and 1996 were combined for Upper and Lower Fourmile.
¹ c= cattle, h= domestic horses

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-07, STAR RIDGE PASTURE

Key Species: Thurber's needlegrass (STTH2)
Indian ricegrass (ORHY)
Bottlebrush squirreltail (SIHY)

Range Site: Loamy 8-10 (NV025XY019)

YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATE S READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE	CARRYING CAPACITY (AUMS)			
1998	0 c 2,738 wh	Rested c 3/1-2/28/99 wh									
1997	13,165 c 2,178 wh	3/1-7/15 c 3/1-2/28/98 wh	SIHY 30% ORHY 47% STTH2 40%	7/29/97			13,165 c 807 wh	14,864			
1996	677 c 2,539 wh	2/15-2/28/97 c 3/1-2/28/97 wh									
1995	15,040 c 2,046 wh	3/1-7/15 c 3/1-2/28/96 wh	SIHY 6% ORHY 9%	8/9/95			15,040 c 825 wh	88,139			
1994	1,302 c 1,105 wh	2/1-2/28/95 c 3/1-2/28/95 wh	SIHY 3% POSE 8%	7/11/94			0 c 490 wh	3,062			
1993	9,441 c 1,163 wh	3/5-7/20 c 3/1-2/28/94 wh									
1992	0 c 1,320 wh	Rested c 3/1-2/28/93 wh									
1991	0 c 1,051 wh	Rested c 3/1-2/28/92 wh									
1990	11,255 c 897 wh	3/12-10/29 c 3/1-2/28/91 wh	SIHY 38% POSE 32%	8/15/90			11,098 c 414 wh	15,128			
1989	0 c 348 wh	Rested c 3/1-2/28/90 wh	no use	8/17/89							

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-07, STAR RIDGE PASTURE

Key Species: Thurber's needlegrass (STTH2)
Indian ricegrass (ORHY)
Bottlebrush squirreltail (SIHY)

Range Site: Loamy 8-10 (NV025XY019)

YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATE S READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE	CARRYING CAPACITY (AUMS)			
1988	2,517 c 300 wh	3/1-6/28 c 3/1-2/28/89 wh	POSE 8% SIHY 3%	8/9/88			2,517 c 134 wh	26,510			
1987	136 c 872 wh	2/23-2/28/88 c 3/1-2/28/88 wh									
1986	6,513 c 744 wh	3/1-10/30 c 3/1-2/28/87 wh	SIHY 5% POSE 11%	6/12/86			3,927 c 212 wh	17,246			
1985	780 c 344 wh	2/7-2/28/86 c 3/1-2/28/86 wh									
1984	6,376 c 288 wh	3/1-10/24 c 3/1-2/28/85 wh	POSE 2% SIHY 1%	8/7/84			6,320 c 127 wh	322,350			
1983	0 c 168 wh	Rested c 3/1-2/28/84 wh	POSE 6% SIHY 3%	9/15/83			0 c 86 wh	1,433			
1982	4,165 c 131 wh	3/4-7/17 c 3/1-2/28/83 wh	SIHY 24% POSE 37%	7/22/82			4,165 c 57 wh	8,796			
1981	5,716 c No data on wh #s	3/1-10/16 c 3/1-2/28/82 wh									

¹ c= cattle, h= domestic horses, wh= wild horses

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-08, STAR RIDGE PASTURE

Key Species: Indian ricegrass (ORHY)
Bottlebrush squirreltail (SIHY)

Range Site: Loamy 10-12 (NV025XY014)

YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)
1998	0 c 2,738 wh	Rested 3/1-2/28/99 wh						
1997	13,165 c 2,178 wh	3/1-7/15 c 3/1-2/28/98 wh	ORHY 24% SIHY 24%	7/29/97			13,165 c 807 wh	29,108
1996	677 c 2,539 wh	2/15-2/28/97 c 3/1-2/28/97 wh						
1995	15,040 c 2,046 wh	3/1-7/15 c 3/1-2/28/96 wh	ORHY 10% SIHY 9%	8/9/95			15,040 c 825 wh	79,325
1994	1,302 c 1,105 wh	2/1-2/28/95 c 3/1-2/28/95 wh	SIHY 3% POSE 8%	7/11/94			0 c 490 wh	3,062
1993	9,441 c 1,163 wh	3/5-7/20 c 3/1-2/28/94 wh						
1992	0 c 1,320 wh	Rested c 3/1-2/28/93 wh						
1991	0 c 1,051 wh	Rested c 3/1-2/28/92 wh						
1990	11,255 c 897 wh	3/12-10/29 c 3/1-2/28/91 wh	ORHY 9%	8/15/90			11,098 c 414 wh	63,872
1989	0 c 348 wh	Rested c 3/1-2/28/90 wh	no use	8/17/89				
1988	2,517 c 300 wh	3/1-6/28 c 3/1-2/28/89 wh	no use	8/9/88			2,517 c 134 wh	---

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-08, STAR RIDGE PASTURE

Key Species: Indian ricegrass (ORHY)
Bottlebrush squirreltail (SIHY)

Range Site: Loamy 10-12 (NV025XY014)

YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)
1987	136 c 872 wh	2/23-2/28/88 c 3/1-2/28/88 wh						
1986	6,513 c 744 wh	3/1-10/30 c 3/1-2/28/87 wh	SIHY 3% ORHY 4%	6/12/86			3,927 c 212 wh	51,738
1985	780 c 344 wh	2/7-2/28 c 3/1-2/28/86 wh						
1984	6,376 c 288 wh	3/1-10/24 c 3/1-2/28/85 wh	SIHY 3%	8/7/84			6,320 c 127 wh	10,745
1983	0 c 168 wh	Rested c 3/1-2/28/84 wh	ORHY 20% SIHY 10%	8/15/83			0 c 86 wh	178
1982	4,165 c 131 wh	3/4-7/17 c 3/1-2/28/83 wh						
1981	5,716 c No data on wh #s	3/1-10/16 c 3/1-2/28/82 wh						

¹ c= cattle, h= domestic horses

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-09, DRY CREEK PASTURE

Key Species: foxtail wheatgrass (AGSA5) bottlebrush squirreltail (SIHY) Range Site: Loamy 8-10 (NV025XY019)
 Sandberg's bluegrass (POSE)

YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)			
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¹ c= cattle, h= domestic horses, wh=wild horses
⁵ 1989 actual use for Dry Creek Pasture combined with actual use for Chimney Creek Pasture.

OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-10, DRY CREEK PASTURE

Key Species: foxtail wheatgrass (AGSA5) bottlebrush squirreltail (SIHY) Range Site: Loamy 8-10 (NV025XY019)
 Webber's ricegrass (STWE) Sandberg's bluegrass (POSE)

YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)
1998	13,242 c 4,176 wh	3/1-7/15/98 c 3/1-2/28/99 wh	SIHY 32%	8/19/98			13,242 c 1,905 wh	23,667
1997	1,353 c 3,540 wh	2/15-2/28/98 c 3/1-2/28/98 wh	SIHY 2% STWE 0%	11/20/97			0 2,477 wh	61,925
1996	13,129 c 308 wh	3/1-7/15/96 c 3/1-2/28/97 wh	SIHY 55%	7/25/96			13,129 c 86 wh	12,014
1995	715 c 204 wh	2/15-2/28/96 c 3/1-2/28/96 wh						
1994	10,017 c 17 wh	3/1-8/15/94 c 3/1-2/28/95 wh	POSE 9% SIHY 4% AGSA5 6%	3/8/94			309 c 1 wh	2,583
1993	0 c 733 wh	Rested c 3/1-2/28/94 wh	SIHY 9% POSE 30%	12/22/93			0 c 678 wh	3,767
1992	0 c 66 wh	Rested c 3/1-2/28/93 wh						
1991	10,898 c 42 wh	3/2-10/10/91 c 3/1-2/28/92 wh	AGSA5 62% POSE 64%	8/22/91			10,829 c 19 wh	8,770
1990	0 c 36 wh	Rested c 3/1-2/28/91 wh						
1989	19,895 c ⁵ 708 wh	3/1-11/22/89 c 3/1-2/28/90 wh	AGSA5 43% POSE 37% AGSA5 59% SIHY 57%	11/13/89 11/13/89 7/19/89 7/19/89			combined use with Chimney Ck Pasture	data not available

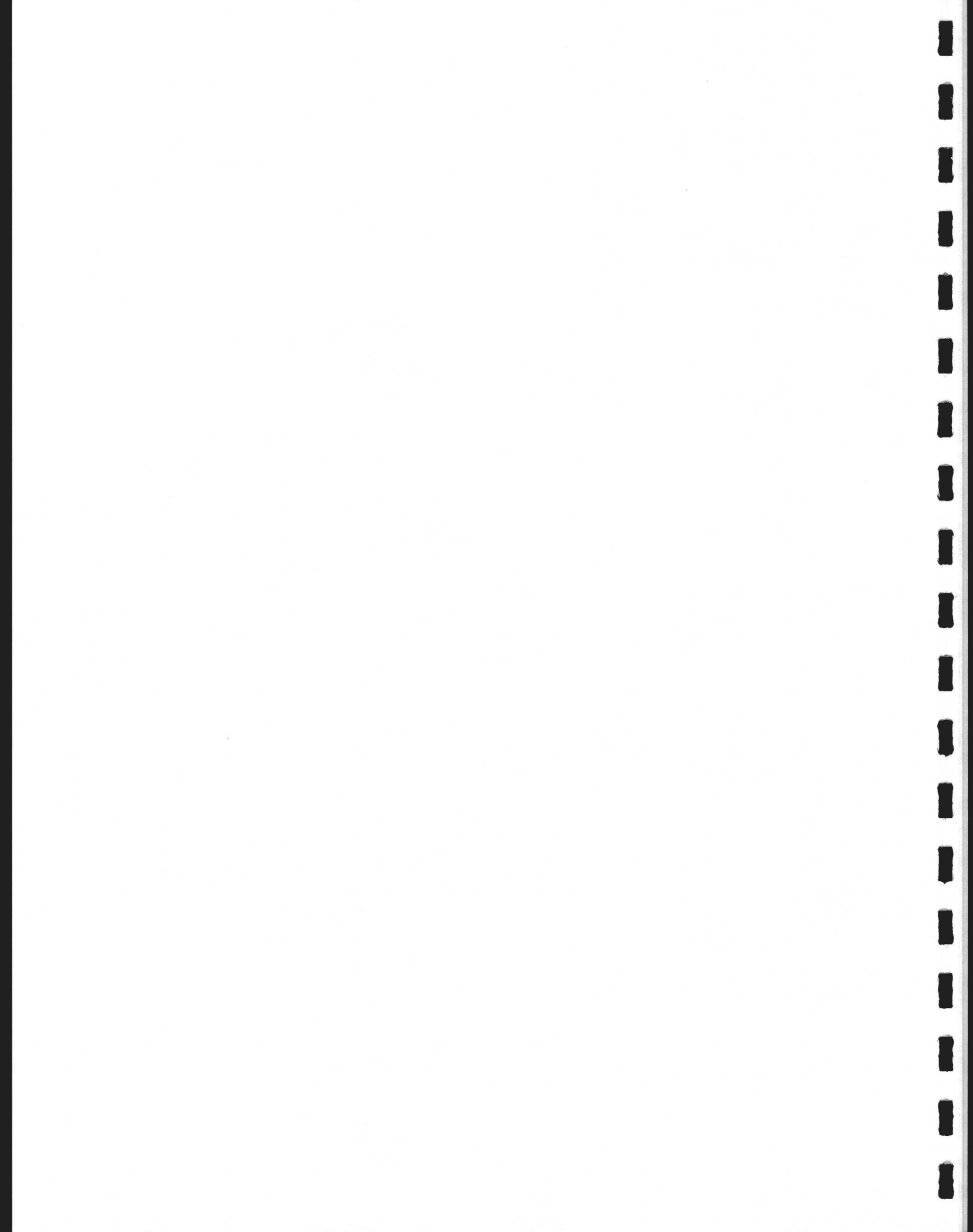
OWYHEE ALLOTMENT STUDIES SUMMARY
Key Area OW-10, DRY CREEK PASTURE

Key Species: foxtail wheatgrass (AGSA5) bottlebrush squirreltail (SIHY) Range Site: Loamy 8-10 (NV025XY019)
 Webber's ricegrass (STWE) Sandberg's bluegrass (POSE)

YEAR	ACTUAL USE AUMS ¹	PERIODS OF USE ¹	KA UTIL. PERCENT	DATES READ	UPM RESULTS	DATES MAPPED	ACTUAL USE TO MONITORING DATE (AUMS)	CARRYING CAPACITY (AUMS)
1988	696 c 600 wh	6/23-9/15 c 3/1-2/28/89 wh	SIHY 30%	10/31/88			696 c 402 wh	1,830
1987	4,031 c 14 wh	3/2-5/31/87 c 3/1-2/28/88 wh						
1986	0 c 12 wh	Rested c 3/1-2/28/87 wh						
1985	4,639 c 453 wh	3/1-10/3/85 c 3/1-2/28/86 wh						
1984	2,902 c 385 wh	3/29-6/24 c 9/1-9/16 c 3/1-2/28/85 wh						
1983	4,833 c 612 wh	3/2-10/11 c 3/1-2/28/84 wh	SIHY 6% POSE 3%	8/29/83			4,850 c 279 wh	42,742
1982	531 c 471 wh	10/16-11/30 c 3/1-2/28/83 wh						
1981	6,355 c no data wh #	3/5-9/14 c 3/1-2/28/82 wh						

¹ c= cattle, h= domestic horses, wh=wild horses
⁵ 1989 actual use for Dry Creek Pasture combined with actual use for Chimney Creek Pasture.

CARRYING CAPACITY SECTION



CARRYING CAPACITY CALCULATIONS BY PASTURE FOR THE OWYHEE ALLOTMENT

1. Dry Creek Pasture

Year	Actual ¹ use AUMs	% of Allotment Mapped in Each Utilization Category				Weighted Average Utilization ⁿ	Carrying Capacity ²
		Light (21-40%)	Moderate (41-60%)	Heavy (61-80%)	Severe (81-100%)		
Undated	Unknown	73%	23%	3%	1%	36.4%	N/A
1991	10,954	39%	20%	41%	0%	50.4%	10,954
1989	19,956 ³	49%	29%	22%	0%	44.6%	N/A
Carrying Capacity							10,954

1 Actual use is livestock and wild horses combined.

2 The shaded cells were used in calculating carrying capacity.

3 Actual use in 1989 was combined for Dry Creek and Chimney Creek Pastures with no specific information of how many aums of use were made in the Dry Creek Pasture by livestock and wildhorses.

2. Star Ridge Pasture

Year	Actual use from 3/1 to the monitoring date		Monitoring Date	Utilization	Carrying ¹ Capacity
	Cattle	Wild Horses			
1997	13,165	807	7/29	ORHY 47%	14,864
1995	15,040	825	8/9	ORHY 9%	88,139
1994	Rest	490	7/11	SIHY 3%	8,167
1990	11,098	414	8/15	ORHY 65%	8,855
1988	2,517	134	8/9	ORHY 5%	26,510
1986	3,927	212	6/12	ORHY 12%	17,246
1984	6,320	127	8/7	SIHY 1%	322,350
1983	Non-use	86	9/15	SIHY 3%	1,433
1982	4,165	57	7/22	SIHY 24%	8,796
Key Area 8					
1997	13,165	807	7/29	ORHY 24%	29,108
1995	15,040	825	8/9	ORHY 10%	79,325
1990	11,098	414	8/15	ORHY 9%	63,955
1986	3,927	212	6/12	ORHY 4%	51,738
1984	6,320	127	8/7	ORHY 30%	10,745
1983	Non-use	86	8/15	ORHY 20%	215
Average Caring Capacity					11,445

¹ The figures in bold were used in calculating the average carring capacity.

3. Chimney Creek

Year	Actual use from 3/1 to the monitoring date		Monitoring Date	Utilization	Carrying ¹ Capacity
	Cattle	Wild Horses			
1998	5,567	47	10/9	AGSP 41%	6,846
1995	Non-use	69	4/26	AGSP 10%	345
1993	1,043	74	12/7	No use	N/A
1991	7,949	0	10/18	AGSP 44%	9,035
Average Carrying Capacity					7,940

¹ The figures in bold were used in calculating the average carrying capacity.

4. Lower 4-mile

Year	Actual use from 3/1 to the monitoring date		Monitoring Date	Utilization	Carrying ¹ Capacity
	Cattle				
1998	3,459		12/18	AGSP 22%	7,861
1997	5,207		10/24	AGSP 42%	6,199
1995	5,993		10/24	STTH2 32%	9,364
1993	2,384		12/22	AGSP 47%	2,536
1992	7,450		6/30	STTH2 70%	5,321
1989	2,985		7/25	AGSP 32%	4,664
1987	1,608		6/8	AGSP 12%	6,700
1983	1,913		8/30	AGSP 4%	23,913
1982	2,059		9/9	AGSP 12%	8,579
Average Carrying Capacity					6,403

¹ The figures in bold were used in calculating the average carrying capacity.

5. Upper 4-mile

Year	Actual use from 3/1 to the monitoring date	Monitoring Date	Utilization	Carrying ¹ Capacity
Key Area 5	Cattle & Domestic Horses			
1998	1,007	12/18	AGSP 27%	1,865
1997	465	10/1	AGSP 44%	528
1995	345	10/24	AGSP 36%	479
1993	248	12/7	AGSP 17%	729
1992	912	6/30	AGSP 59%	773
1989	257	11/13	AGSP 34%	378
1986	65	6/17	AGSP 10%	325
1984	417	6/26	AGSP 6%	3,475
1982	Trailing	7/21	AGSP 10%	N/A
Average Carrying Capacity				1,069

¹ The figures in bold were used in calculating the average carrying capacity.

6. Winters Creek Seeding

Year	Actual use from 3/1 to the monitoring date	Monitoring Date	Utilization	Carrying ¹ Capacity
Key Area 3	Cattle			
1998	2,842	12/18	AGCR 19%	8,974
1994	851	4/21	AGCR 1%	51,060
1990	1,803	6/21	AGCR 44%	2,459
1986	2,314	7/16	AGCR 48%	2,893
1983	2,194	5/19	AGCR 46%	2,862
1982	1,680	7/15	AGCR 43%	2,344
1981	1,450	9/16	AGCR 45%	1,933
1979	2,115	2/9	AGCR 30%	4,230
Average Carrying Capacity				2,787

¹ The figures in bold were used in calculating the average carrying capacity.

WILD HORSE APPENDIX

Table 1. Census Data for the Owyhee Herd Area, 1978 - Fall 1999.

Date of Census	Star Ridge/# of horses	Dry Creek/# of horses	Chimney Creek/# of horses	Total
1/27/82	12	43	0	55
6/20/84	24	32	0	56
7/25/86	62	1	0	63
6/28/88	25	50	0	75
8/22/90	75	3	0	78
6/9/92	110	0	0	110
9/1/92	122	0	87	209
2/3/93	45	80	10	135
5/18/93	142	96	13	251
9/9/93	90	34	0	124
2/9/94	112	2	0	114
8/22/94	70	0	124	214
2/16/95	146	14	37	197
2/19/97	155	250	5	410
11/8/99	381	276	109	766

Table 2. Actual Use by Wild Horses				
Year	Star Ridge AUMs	Dry Creek AUMs	Chimney Creek AUMs	Total AUMs
1982	131	471	0	602
1983 (no census)	168	604	0	772
1984	288	385	0	673
1985 (no census)	334	447	0	781
1986	744	12	0	756
1987 (no census)	872	12	0	884
1988	300	599	0	899
1989 (no census)	348	703	0	1051
1990	897	36	0	933
1991 (no census)	1051	44	0	1095
1992	1320	66	451	1837
1993	1163	733	74	1970
1994	1105	17	737	1859
1995 (no census)	2046	192	516	2754
1996	2539	303	629	3471
1997 (no census)	2178	3509	68	5755
1998 (no census)	2738	4405	80	7223
1999	3708	4713	463	8884
Average	1218	958	168	2344

STREAM SURVEY APPENDIX

Table 1. Characteristics of stream reaches identified for public land portions of the South Fork of the Owyhee River in the Star Ridge Pasture of the Owyhee Allotment.

Reach	Length (miles)	Entrenchment Ratio ¹	Gradient (%)	Sinuosity	Floodplain Width (ft)	Bankful Width/Depth Ratio	Channel Type ²
1	5.6	1.2	0.3	low	140	56	F5
3	9.8	1.1	0.2	low	80	21	F4
4	5.6	1.1	0.4	low	92	24	F5

¹ Ratios of 1.4 or less are considered to represent entrenched systems (Rosgen 1994).

² From Rosgen (1994).

Table 2. Comparison of changes in habitat parameters between 1977 and 1995 for Reach 1 of the South Fork of the Owyhee River within the Star Ridge Pasture of the Owyhee Allotment.¹

HABITAT PARAMETER	YEAR OF SURVEY	
	1977	1995
Stream Width in Pools (%)	19	11
Quality Pools (%) ²	0	19
Desirable Streambottom Substrates (%) ³	54	55
Bank Cover (% of optimum) ⁴	25	42
Bank Stability (% of optimum) ⁵	57.5	49
Stream Width to Depth Ratio	53	31
Ave. Bank Angle (°)	No data	158
Ave. Bank Undercut (in)	No data	0.0
Ave. Woody Vegetation Overhang (in)	No data	0.0
Ave. Shorewater Depth (in)	No data	0.4
Ave. Type A Shoreline Riparian Zone Width (ft) ⁶	No data	0.9
Ave. Type B Shoreline Riparian Zone Width (ft) ⁷	No data	3.5

¹ Based on data from stations S-17,S-18,S-19,S-20,and S-21 in both 1977 and 1995.

² Quality pools are deep, long or wide, and have intermediate to abundant cover.

³ Desirable substrates include gravels and rubbles.

⁴ Optimum is considered to represent tall, dense trees or shrubs.

⁵ Optimum is considered to represent totally stable streambanks.

⁶ Type A=Canopy cover of shrubs and basal cover of herbaceous vegetation is less than 50%.

⁷ Type B=Canopy cover of shrubs and basal cover of herbaceous vegetation is greater than 50%.

Table 3. Comparison of changes in habitat parameters between 1977 and 1995 for Reach 3 of the South Fork of the Owyhee River within the Star Ridge Pasture of the Owyhee Allotment.¹

HABITAT PARAMETER	YEAR OF SURVEY	
	1977	1995
Stream Width in Pools (%)	35	12
Quality Pools (%) ²	0	20
Desirable Streambottom Substrates (%) ³	51	54
Bank Cover (% of optimum) ⁴	25	45
Bank Stability (% of optimum) ⁵	72	69
Stream Width to Depth Ratio	43	25??
Ave. Bank Angle (°)	No data	150
Ave. Bank Undercut (in)	No data	0.2
Ave. Woody Vegetation Overhang (in)	No data	0.0
Ave. Shorewater Depth (in)	No data	0.7
Ave. Type A Shoreline Riparian Zone Width (ft) ⁶	No data	1.2
Ave. Type B Shoreline Riparian Zone Width (ft) ⁷	No data	3.0

¹ Based on data from stations S-6 through S-10 and S-12 through S-14 in 1977 and from stations S-6 through S-14 in 1995.

² Quality pools are deep, long or wide, and have intermediate to abundant cover.

³ Desirable substrates include gravels and rubbles.

⁴ Optimum is considered to represent tall, dense trees or shrubs.

⁵ Optimum is considered to represent totally stable streambanks.

⁶ Type A=Canopy cover of shrubs and basal cover of herbaceous vegetation is less than 50%.

⁷ Type B=Canopy cover of shrubs and basal cover of herbaceous vegetation is greater than 50%.

Table 4. Comparison of changes in habitat parameters between 1977 and 1995 for Reach 4 of the South Fork of the Owyhee River within the Star Ridge Pasture of the Owyhee Allotment.¹

HABITAT PARAMETER	YEAR OF SURVEY	
	1977	1995
Stream Width in Pools (%)	59	9
Quality Pools (%) ²	6	75
Desirable Streambottom Substrates (%) ³	44	46
Bank Cover (% of optimum) ⁴	25	47
Bank Stability (% of optimum) ⁵	71	71
Stream Width to Depth Ratio	47	28
Ave. Bank Angle (°)	No data	150
Ave. Bank Undercut (in)	No data	0.4
Ave. Woody Vegetation Overhang (in)	No data	0.5
Ave. Shorewater Depth (in)	No data	1.1
Ave. Type A Shoreline Riparian Zone Width (ft) ⁶	No data	2.2
Ave. Type B Shoreline Riparian Zone Width (ft) ⁷	No data	1.6

¹ Based on data from stations S-1 through S-5.

² Quality pools are deep, long or wide, and have intermediate to abundant cover.

³ Desirable substrates include gravels and rubbles.

⁴ Optimum is considered to represent tall, dense trees or shrubs.

⁵ Optimum is considered to represent totally stable streambanks.

⁶ Type A=Canopy cover of shrubs and basal cover of herbaceous vegetation is less than 50%.

⁷ Type B=Canopy cover of shrubs and basal cover of herbaceous vegetation is greater than 50%.

OWYHEE ALLOTMENT OBJECTIVES APPENDIX

I. STANDARDS AND GUIDELINES FOR RANGELAND HEALTH

Standard 1. Upland Sites: Upland Soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form.

Standard 2. Riparian and Wetland Sites: Riparian and wetland areas exhibit a properly functioning condition and achieve state water quality criteria.

Standard 3. Habitat: Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet life cycle requirements of threatened and endangered species.

Standard 4. Cultural Resources: Land use plans will recognize cultural resources within the context of multiple use.

II. LAND USE PLAN (ELKO RMP/ROD) OBJECTIVES

1. Maintain or improve the condition of public rangelands to enhance productivity for all rangeland values.
2. Conserve and enhance terrestrial, riparian, and aquatic wildlife habitat.
3. Manage wild horse populations and habitat in the established herd areas consistent with other resource uses.
4. Manage as wilderness those portions of the Wilderness Study Areas that are manageable as wilderness and where wilderness values are capable of balancing other resource values and uses which would be forgone.

III. OWYHEE ALLOTMENT SPECIFIC OBJECTIVES

a. Short Term Objectives

1. Maximum combined utilization by both livestock and wild horses will not exceed 50% of current year's growth on key herbaceous species for those pastures within the HMA.
2. Maximum utilization of 50% of current years growth on key herbaceous species by the end of the grazing season within both the Lower and Upper 4-mile Pastures.
3. Maximum utilization of 60% of current years growth on crested wheatgrass within the

Winters Creek Seeding Pasture by the end of the grazing season.

b. Longterm objectives as measured at the following key areas:

OW-01

1. Improve or maintain allowable percentages of perennial native grass composition, by weight, to at least 10-20% to provide forage and cover for wildlife and forage for livestock and wild horses.
2. Improve or maintain allowable percentages of perennial native forb composition, by weight, to at least 5-10% of potential native vegetation to provide forage and cover for wildlife.
3. Improve to or maintain 15% or less absolute shrub canopy foliar cover.
4. Improve to or maintain satisfactory Wyoming big sagebrush form and age class condition as measured by Cole Browse Method.
5. Improve to or maintain at least 9-10% basal cover of residual perennial native grasses.

OW-02/AY-1-01

1. Improve or maintain allowable percentages of perennial native grass composition, by weight, to at least 10-20% to provide forage and cover for wildlife and forage for livestock and wild horses.
2. Improve or maintain allowable percentages of perennial native forb composition, by weight, to at least 5-10% of potential native vegetation to provide forage and cover for wildlife.
3. Maintain 15% or less absolute shrub canopy foliar cover.
4. Maintain satisfactory Wyoming big sagebrush form and age class condition as measured by Cole Browse Method.
5. Improve to at least 10% basal cover of residual perennial native grasses.

OW-03

1. Maintain or enhance the current livestock forage value of the Winters Creek Seeding.
2. Maintain 15% or less absolute shrub canopy foliar cover.

OW-04/AS-T-87-30

1. Maintain or exceed current late seral stage of ecological condition.
2. Maintain 15% or less absolute shrub canopy foliar cover.
3. Maintain satisfactory Wyoming big sagebrush form and age class condition as measured by Cole Browse Method.
4. Improve to, or maintain at least 18% basal cover of residual perennial native grass.

OW-05/DY-T-87-29

1. Improve ecological condition from mid-seral to at least late-seral condition.
2. Maintain 15% or less absolute shrub canopy foliar cover.
3. Maintain satisfactory Wyoming big sagebrush form and age class condition as measured by Cole Browse Method.
4. Improve to at least 12% basal cover of residual perennial native grasses.

OW-06/DY-T-87-28

1. Improve or maintain allowable percentages of perennial native grass composition, by weight, to at least 10-20% to provide forage and cover for wildlife and forage for livestock.
2. Improve or maintain allowable percentages of perennial native forb composition, by weight, to at least 5-10% of potential native vegetation to provide forage and cover for wildlife.
3. Maintain 15% or less absolute shrub canopy foliar cover.
4. Maintain satisfactory Wyoming big sagebrush form and age class condition as measured by Cole Browse Method.
5. Improve to at least 13% basal cover of residual perennial native grasses.

OW-07/DY-T-87-31

1. Improve or maintain allowable percentages of perennial native grass composition, by weight, to at least 10-20% to provide forage and cover for wildlife and forage for

livestock and wild horses.

2. Improve or maintain allowable percentages of perennial native forb composition, by weight, to at least 5-10% of potential native vegetation to provide forage and cover for wildlife.
3. Maintain 15% or less absolute shrub canopy foliar cover.
4. Maintain satisfactory Wyoming big sagebrush form and age class condition as measured by Cole Browse Method.
5. Improve to at least 11-12% basal cover of residual perennial native grasses.

OW-08

1. Improve to or maintain allowable percentages of perennial native grass composition, by weight, to at least 5-10% to provide forage and cover for wildlife and forage for livestock and wild horses.
2. Improve to or maintain allowable percentages of perennial native forb composition, by weight, to at least 3-5% of potential native vegetation to provide forage and cover for wildlife.

AY-1-02

1. Improve or maintain perennial native grass composition, by weight, to at least 80-95% to provide forage and cover for wildlife and forage for livestock and wild horses.
2. Improve or maintain perennial native forb composition, by weight, to at least 10-15% of potential native vegetation, including a maximum of five percent composition of povertyweed, to provide forage and cover for wildlife.
3. Maintain satisfactory Bolander silver sagebrush form and age class condition as measured by Cole Browse Method.
4. Improve to, or maintain Bolander silver sagebrush composition, by weight, to at least 80-95% to provide forage and cover for wildlife and forage for livestock and wild horses.

AY-1-03

1. Allowable percentages of perennial grasses and forbs to be determined after baseline data are collected.

3. Maintain 15% or less absolute shrub canopy foliar cover.
4. Maintain satisfactory Wyoming big sagebrush form and age class condition as measured by Cole Browse Method.
5. Improve to at least 9-10% basal cover of residual perennial native grasses.

AY-T-87-40

1. Allowable percentages of perennial grasses and forbs to be determined after baseline data are collected.
2. Maintain 15% or less absolute shrub canopy foliar cover.
4. Maintain satisfactory Wyoming big sagebrush form and age class condition as measured by Cole Browse Method.
5. Improve to, or maintain at least 12% basal cover of residual perennial native grasses.

c. Wild Horse Objectives

1. Manage wild horses within the Owyhee HMA at the appropriate management level and maintain a thriving, natural ecological balance consistent with other resource needs.
2. Maintain a healthy, viable population of wild horses within the Owyhee HMA.
3. Manage wild horses within the Owyhee HMA in a manner that maintains their wild free-roaming characteristics.

d. Wildlife

1. Manage Rangeland habitat and forage condition to support 242 AUMs for reasonable numbers of mule deer, 485 AUMs for reasonable numbers of pronghorn antelope and 24 AUMs for reasonable numbers of California bighorn sheep.
2. Maintain or improve to at least good condition all crucial mule deer, California bighorn sheep and pronghorn habitat.
3. Manage rangeland to protect or enhance crucial sage grouse strutting, nesting, brood-rearing and winter habitat.
4. Improve and maintain meadow and riparian areas for mule deer, pronghorn antelope

and sage grouse.

5. Utilization levels will not exceed 50 percent on meadow and riparian areas.

e. Fisheries/Aquatic and Riparian Habitats

Manage grazing on the Owyhee Allotment Ridge Pasture to achieve the following short and long-term stream/riparian habitat objectives:

South Fork Owyhee River - Star Ridge Pasture

HABITAT PARAMETERS	1995	SHORT-TERM OBJECTIVE (5 YEARS) ¹	LONG-TERM OBJECTIVE (20yrs) ²
<i>Reach 1 (stream survey stations 17-21)</i>			
Riparian Condition Class (% optimum) ³	45.5	59.2	60.0+ ⁴
Average Woody Vegetation Overhang (in)	0	1.0 ⁵	Maintain or improve
Average Shorewater Depth (in)	0.4	0.5	Maintain or improve
Average Type B Shoreline Riparian Zone (ft) ⁶	3.5	4.6	Maintain or improve
<i>Reach 3 (stream survey stations 6-14)</i>			
Riparian Condition Class (% optimum)	52	60.0+	Maintain or improve
Average Woody Vegetation Overhang (in)	0	1	Maintain or improve
Average Shorewater Depth (in)	0.7	0.9	Maintain or improve
Average Type B Shoreline Riparian Zone (ft) ⁵	3	3.9	Maintain or improve
<i>Reach 4 (stream survey stations 1-5)</i>			
Riparian Condition Class (% optimum)	59	60.0+	Maintain or improve

Average Woody Vegetation Overhang (in)	0.5	0.7	Maintain or improve
Average Shorewater Depth (in)	1.1	1.4	Maintain or improve
Average Type B Shoreline Riparian Zone (ft)	1.6	2.1	Maintain or improve
Proper Functioning Condition (PFC) ⁷		Show progress toward meeting	Achieve

¹ Five years after changes in livestock management are initiated. Short-term objectives are for 30% improvement or to a rating of good as specified in the Land Use Plan.

² Long-term objectives are for attainment of good condition as specified in the Land Use Plan.

³ Average of bank cover and bank stability. Optimum is assumed to be 100%.

⁴ A rating of 60%+ is considered to represent good conditions.

⁵ Although no baseline figures are available, 1.0 inch of overhanging bank vegetation is felt to represent an attainable minimum.

South Fork Owyhee River - Fourmile Pasture

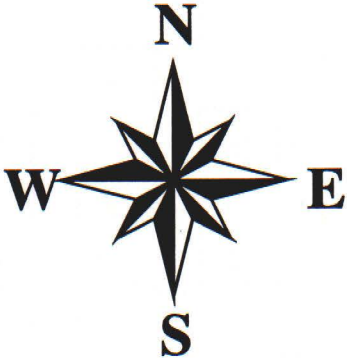
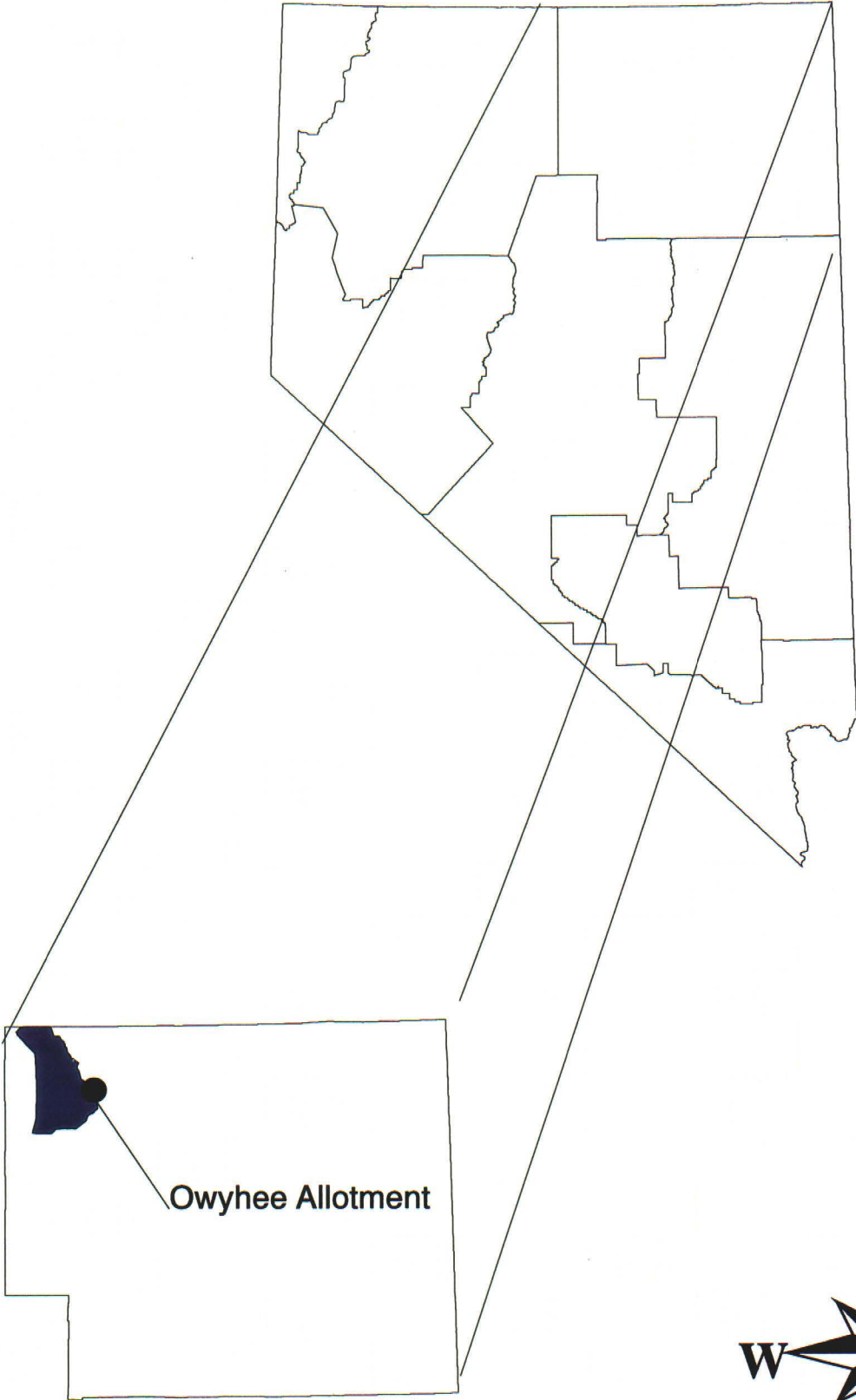
Within five years show progress towards meeting Proper Functioning Condition (PFC). Over the long-term (20 years), achieve PFC.

Bookkeeper Spring

Within five years show progress towards meeting Proper Functioning Condition (PFC). Over the long-term (20 years), achieve PFC.

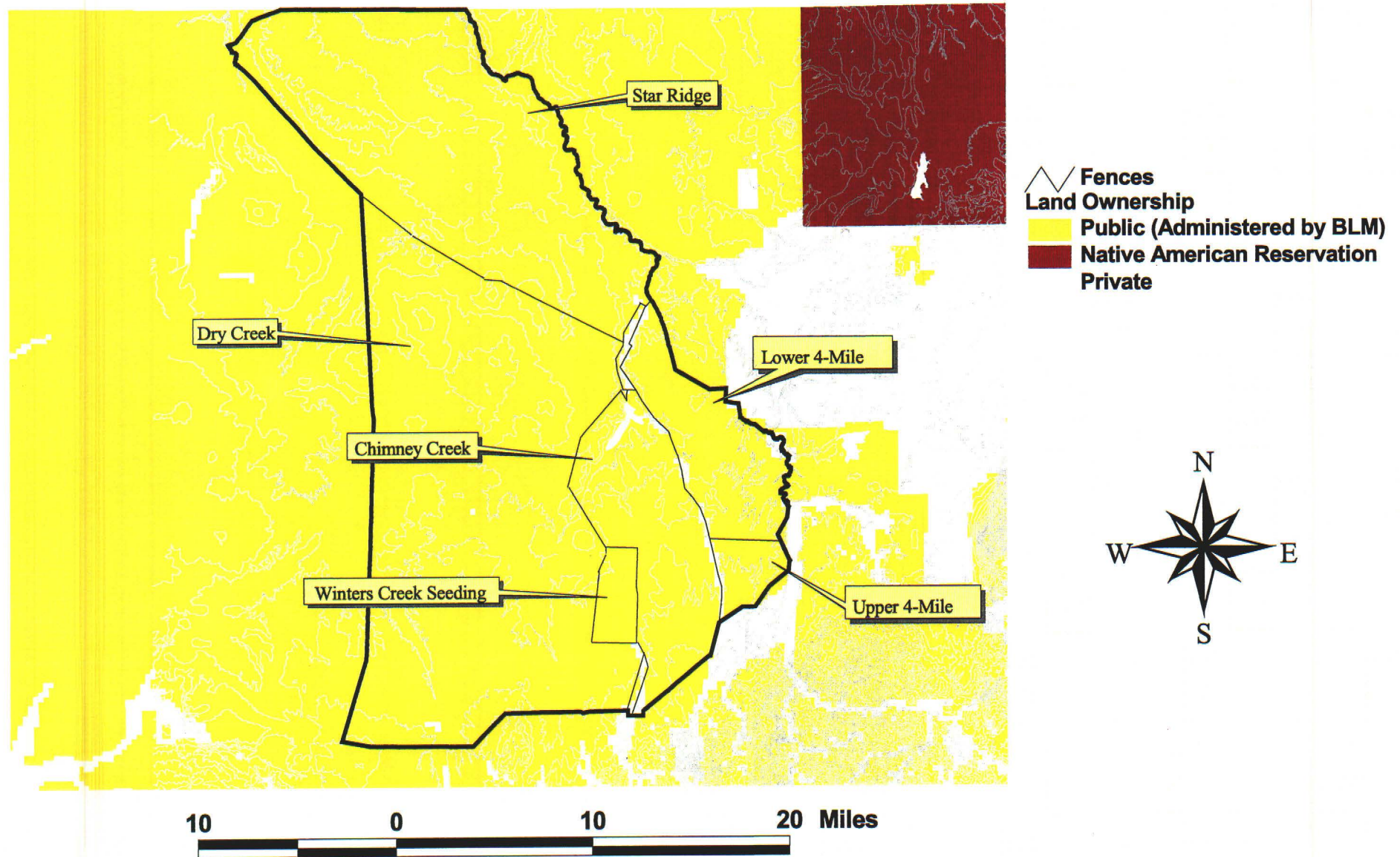
MAP 1

Owyhee Allotment
Vicinity Map



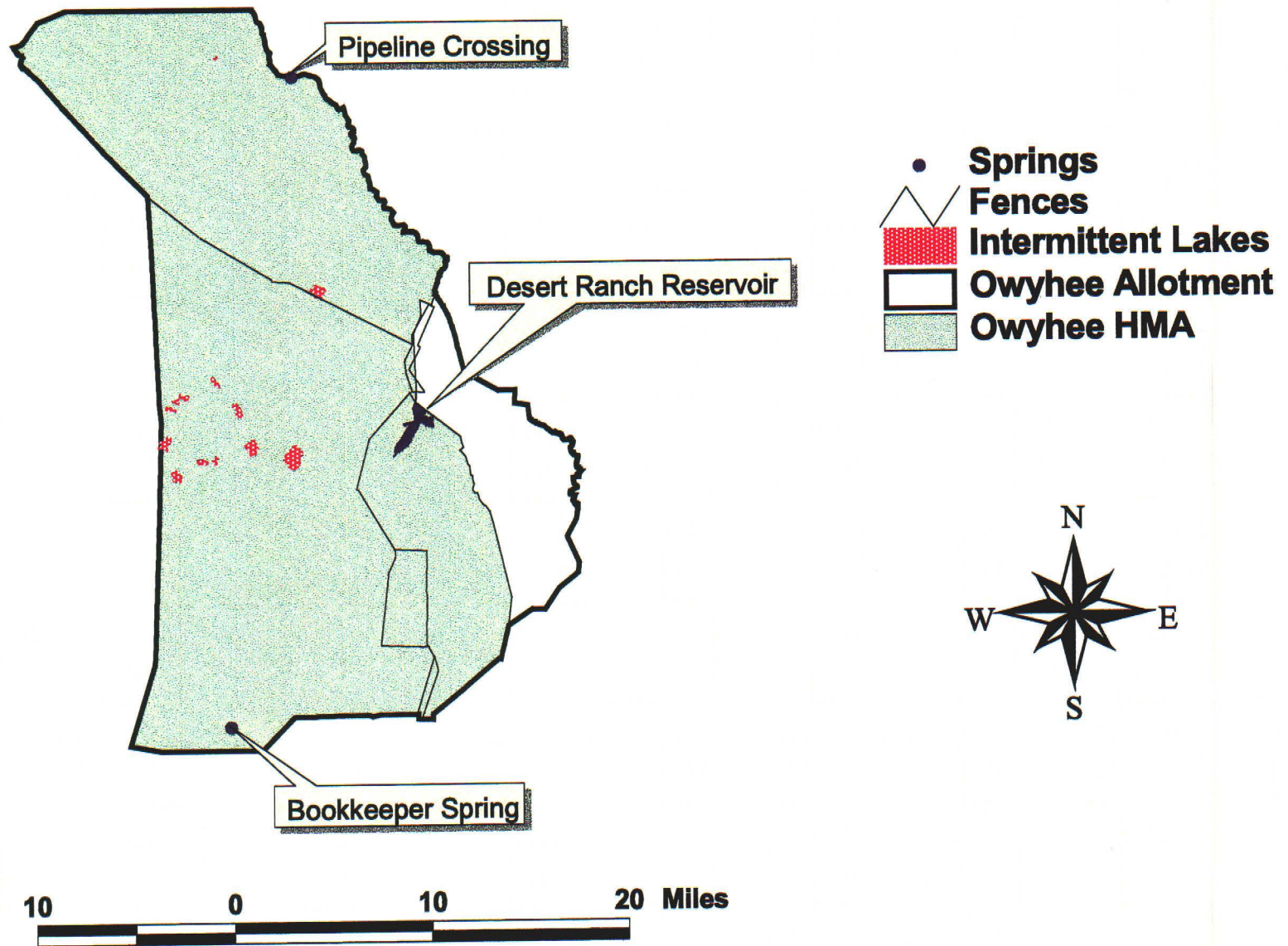
MAP 2

Owyhee Allotment and Land Ownership



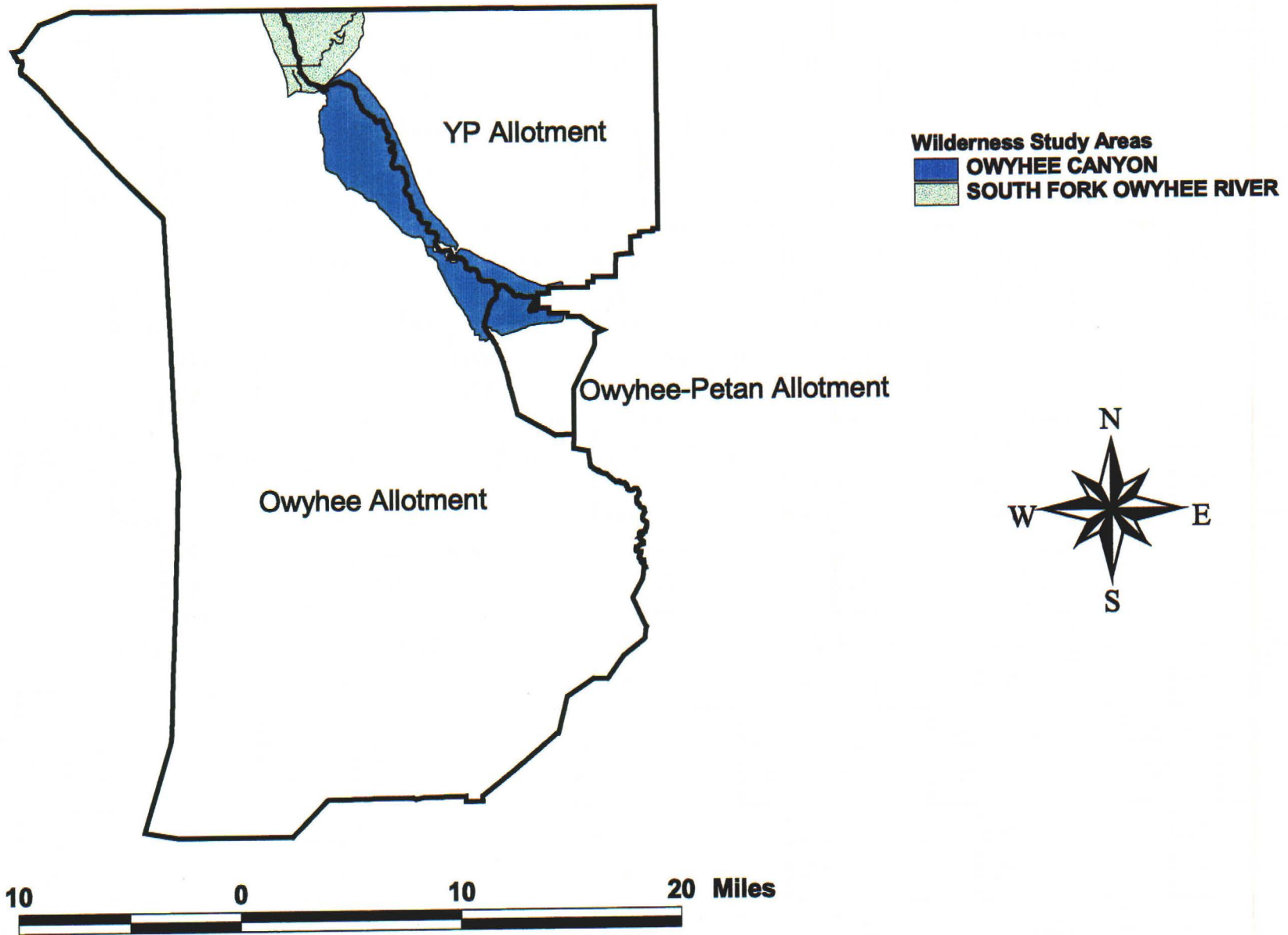
MAP 3

Owyhee Herd Management Area and Perennial Water Sources



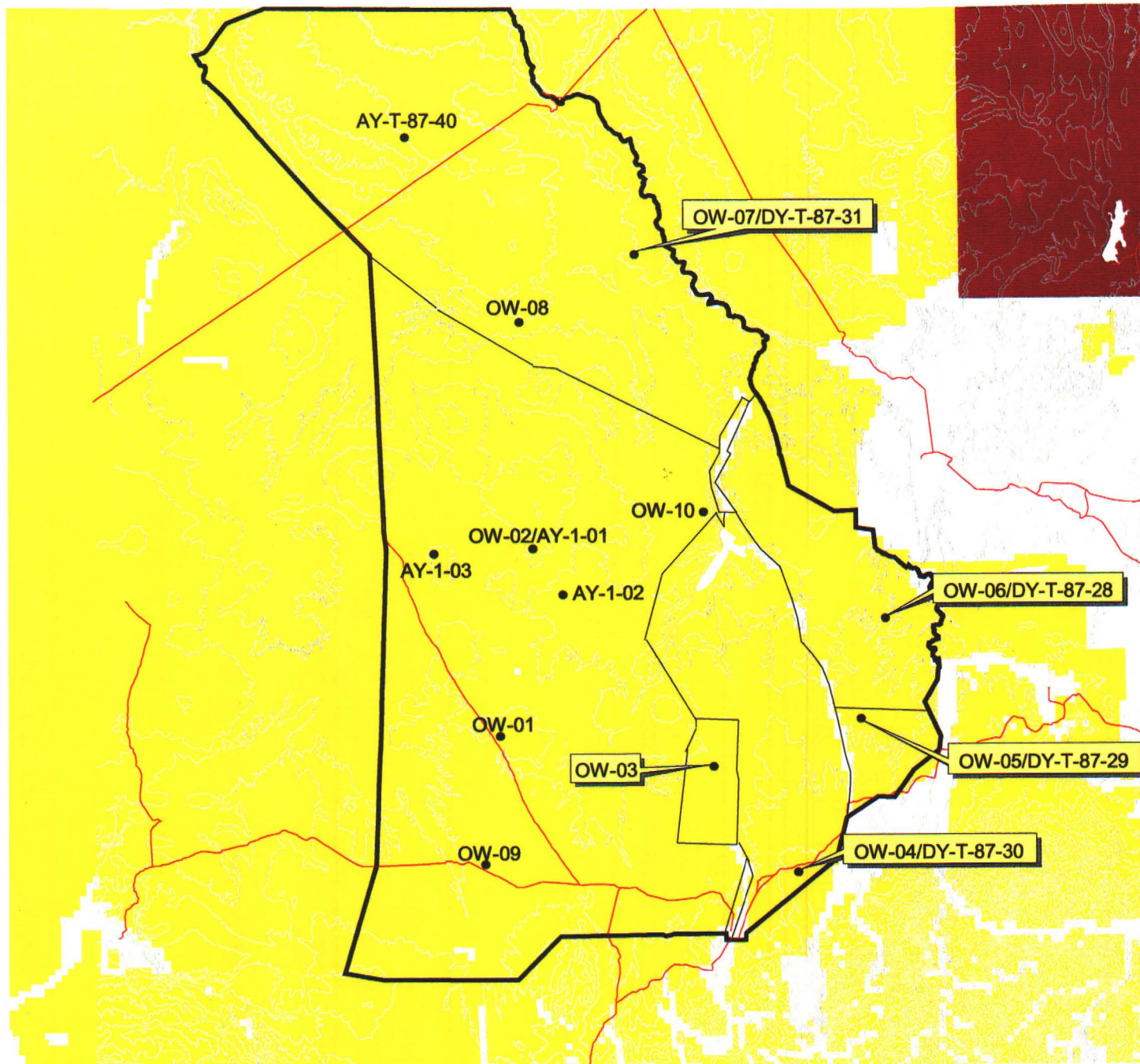
MAP 4

Wilderness Study Areas



MAP 5

Owyhee Key Areas



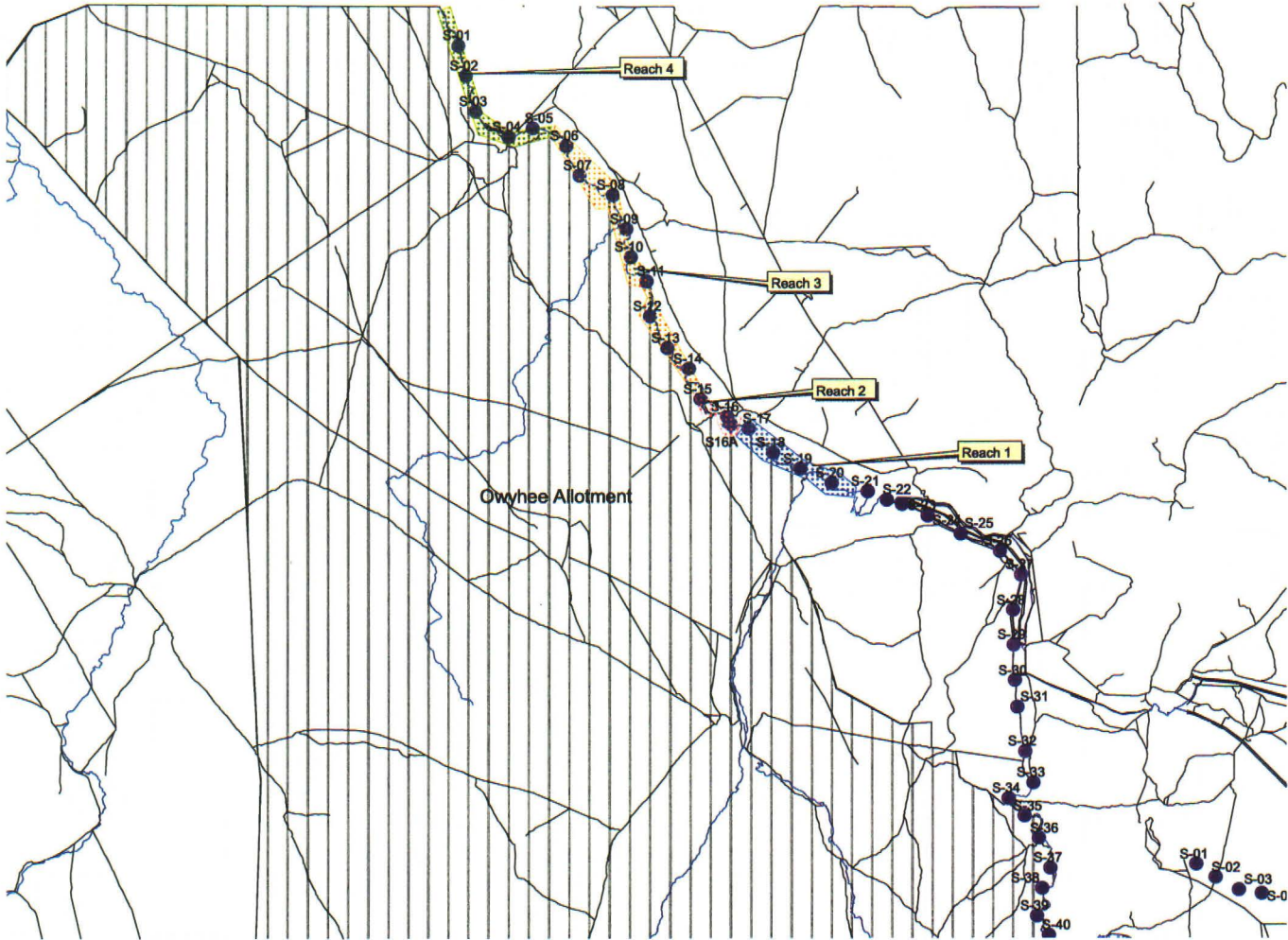
8 0 8 16 Miles

- Key Areas
- ∧ Fences
- Land Ownership
 - Public (Administered by BLM)
 - Native American Reservation
 - Private

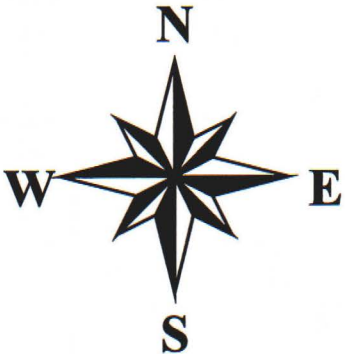


MAP 6

South Fork of the Owyhee River
Reach Locations &
Stream Survey Stations

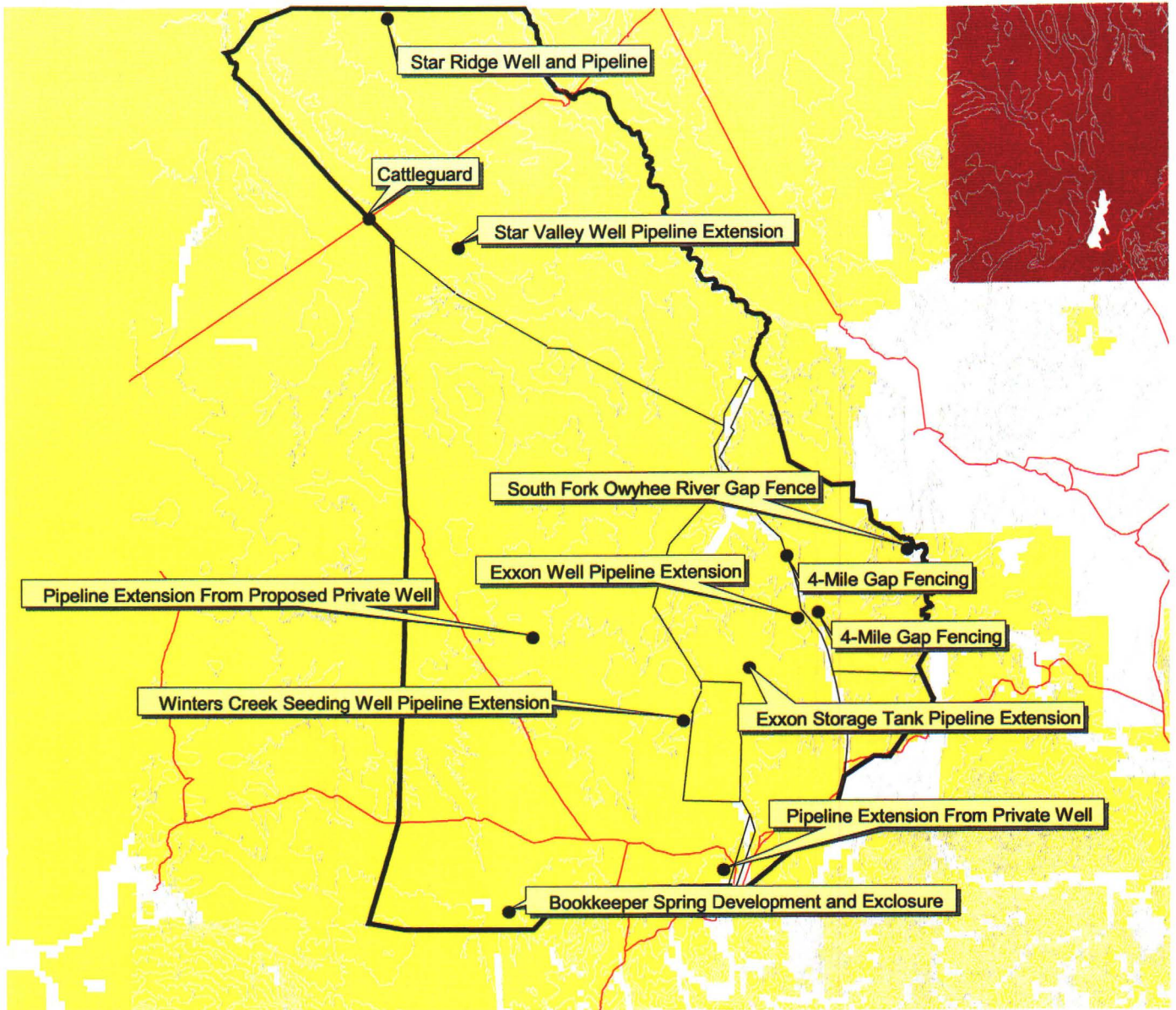


- Stream Survey Stations
- ~ Rivers & Streams
- ~ Road System
- ▨ Owyhee Allotment

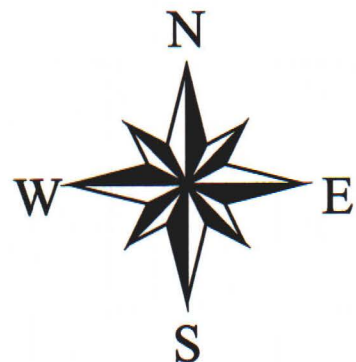


MAP 7

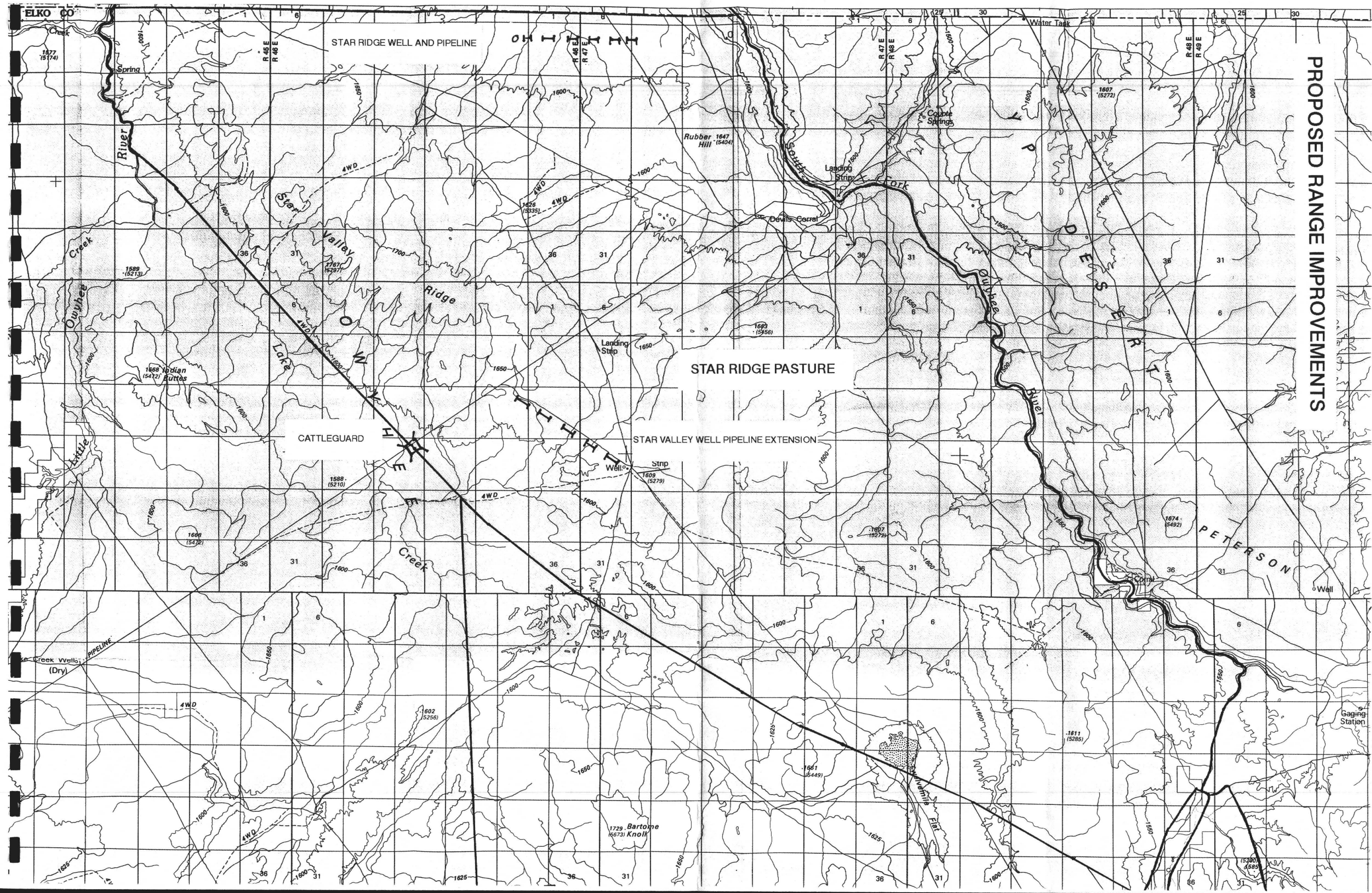
Owyhee Proposed Range Improvements



- Proposed Range Improvements
- ⚡ Fences
- 🛣 Major Roads
- Land Ownership
- 🟡 Public (Administered by BLM)
- 🔴 Native American Reservation
- ⬜ Private



PROPOSED RANGE IMPROVEMENTS



ELKO CO

STAR RIDGE WELL AND PIPELINE

STAR RIDGE PASTURE

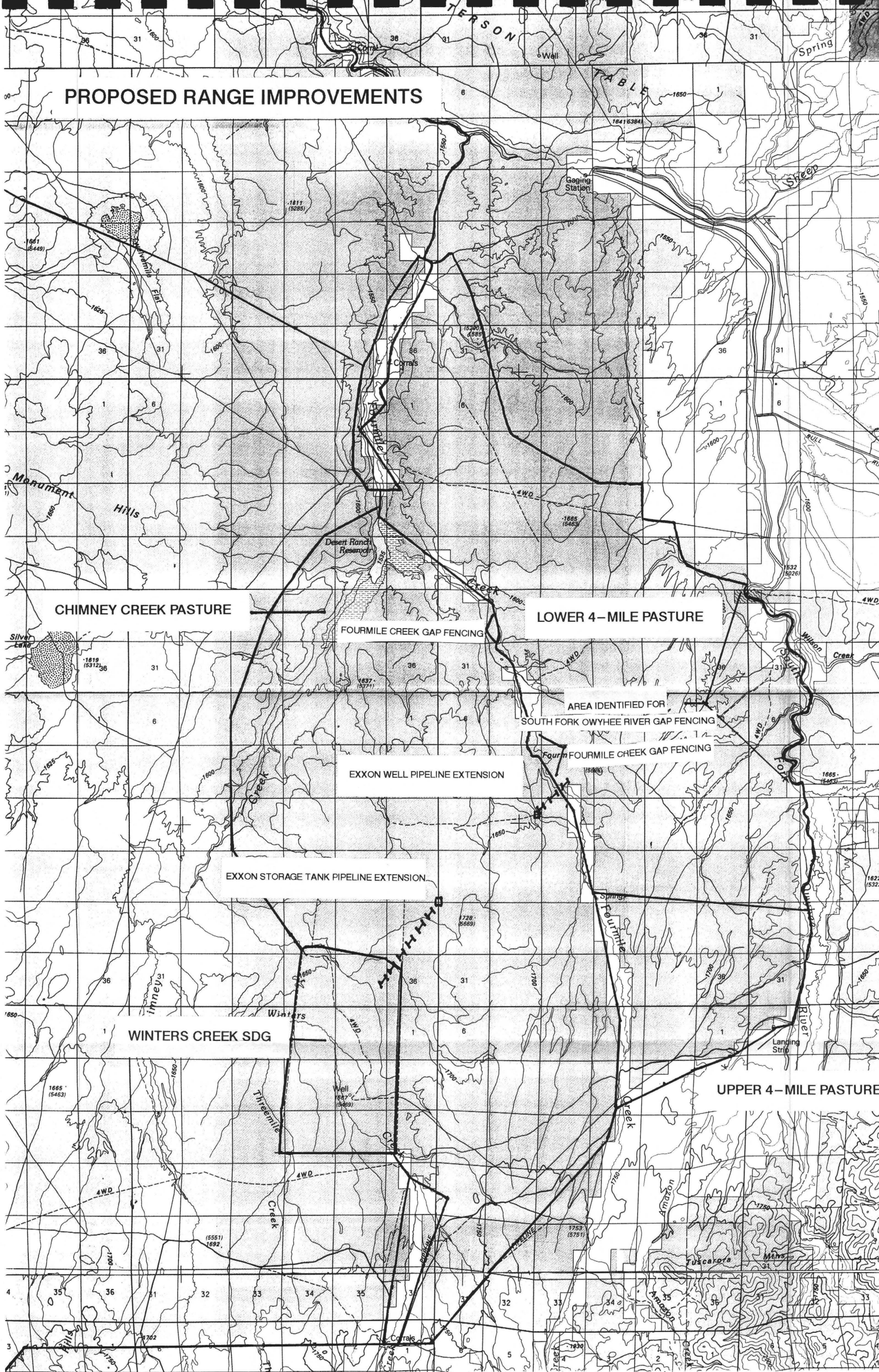
CATTLEGUARD

STAR VALLEY WELL PIPELINE EXTENSION

PETERSON

Gaging Station

PROPOSED RANGE IMPROVEMENTS



PROPOSED RANGE IMPROVEMENTS

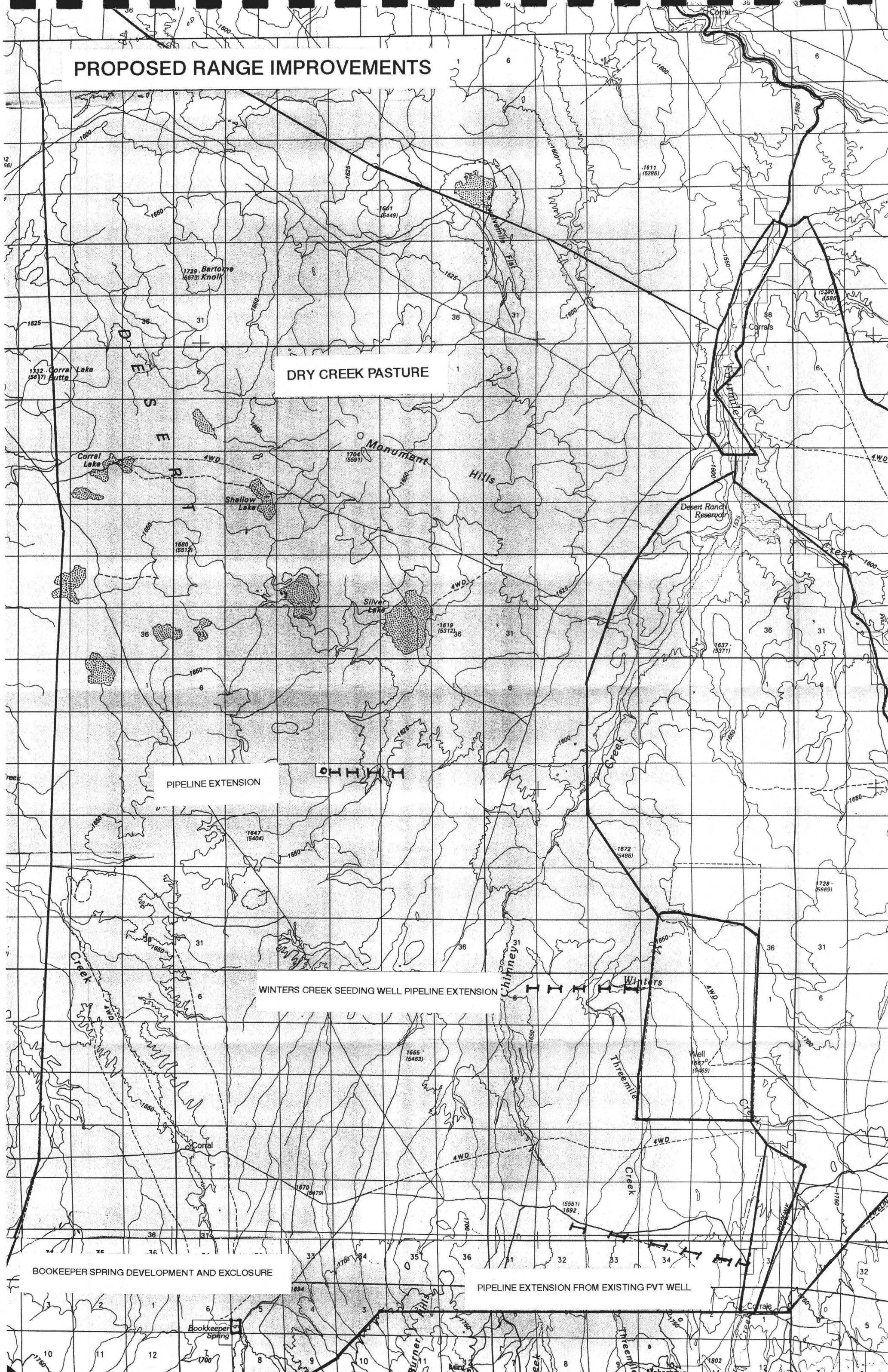
DRY CREEK PASTURE

PIPELINE EXTENSION

WINTERS CREEK SEEDING WELL PIPELINE EXTENSION

BOOKKEEPER SPRING DEVELOPMENT AND EXCLOSURE











PIPELINE EXTENSION FROM EXISTING PVT WELL



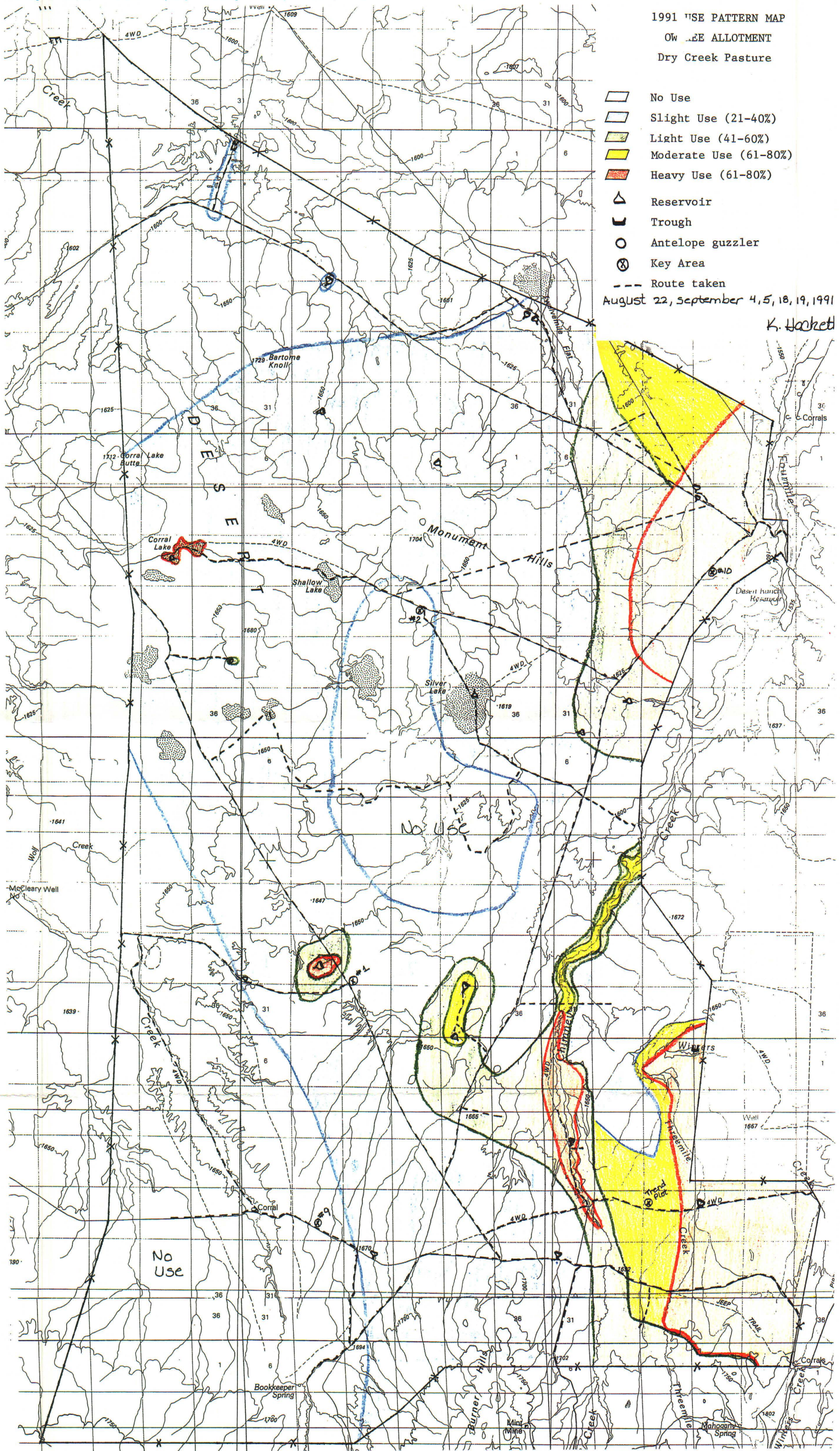
OWYHEE ALLOTMENT EVALUATION

USE PATTERN MAP SECTION

1991 USE PATTERN MAP
 OW LEE ALLOTMENT
 Dry Creek Pasture

-  No Use
-  Slight Use (21-40%)
-  Light Use (41-60%)
-  Moderate Use (61-80%)
-  Heavy Use (61-80%)
-  Reservoir
-  Trough
-  Antelope guzzler
-  Key Area
-  Route taken

August 22, September 4, 5, 18, 19, 1991
 K. Hackett



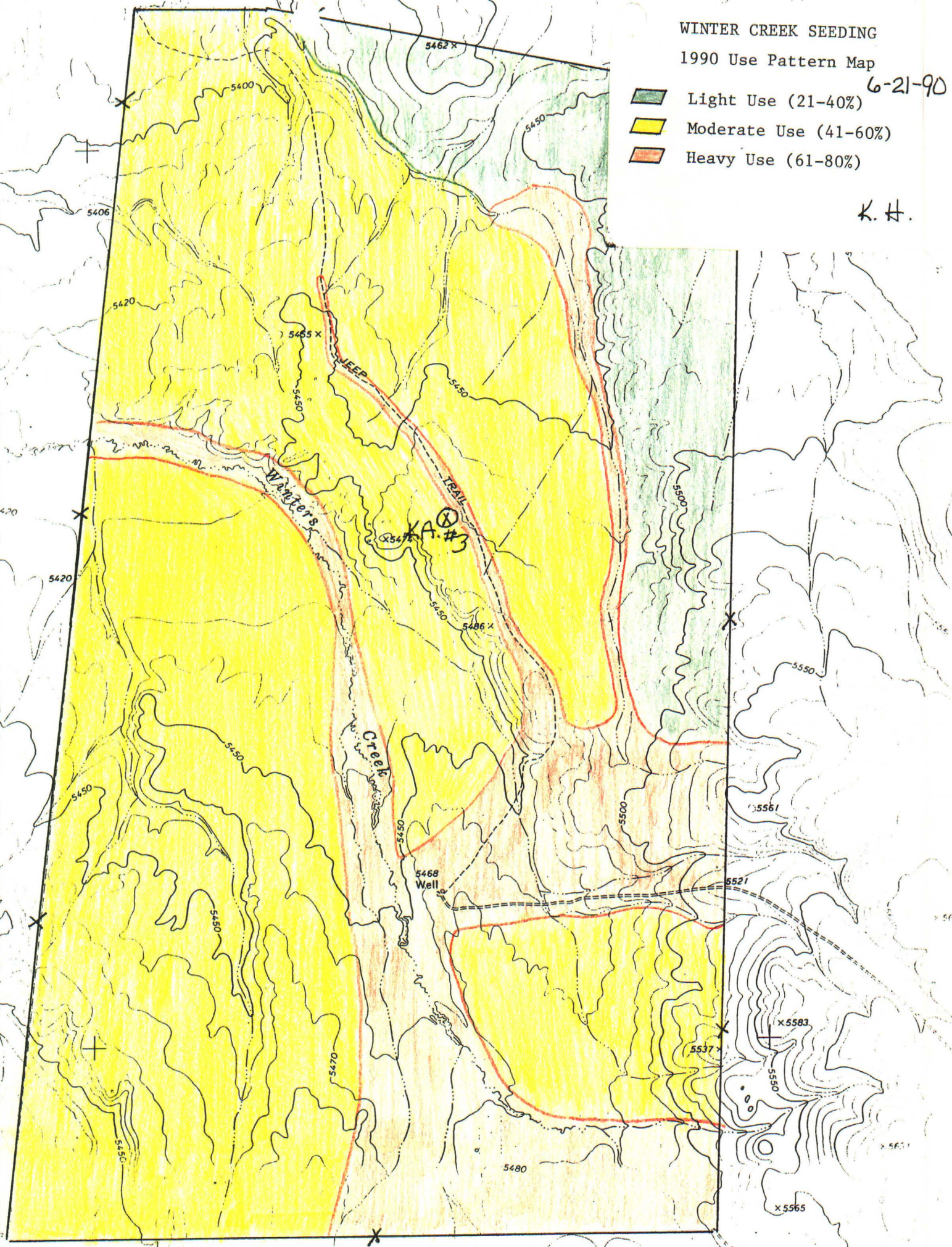
WINTER CREEK SEEDING

1990 Use Pattern Map

6-21-90

- Light Use (21-40%)
- Moderate Use (41-60%)
- Heavy Use (61-80%)

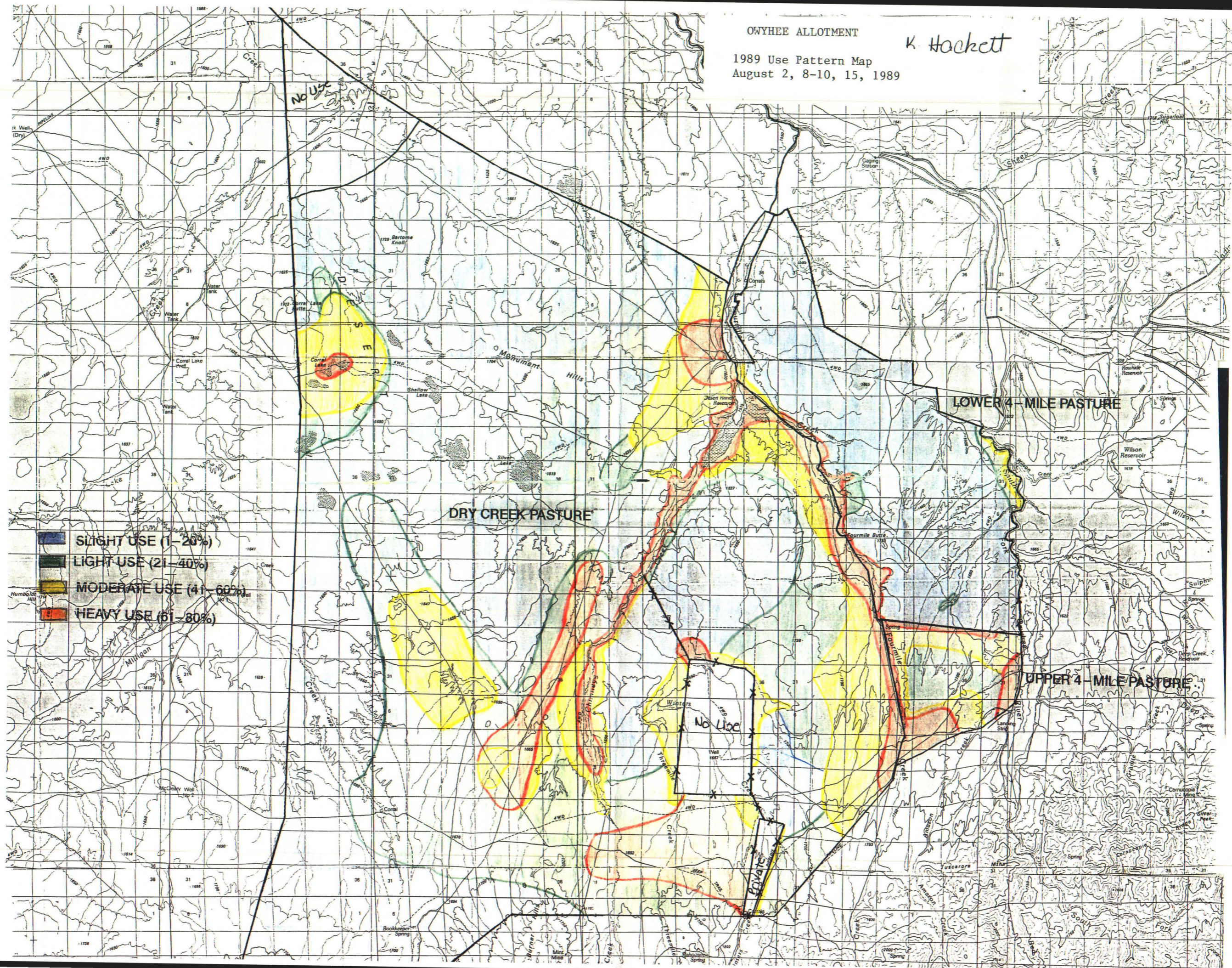
K. #.



OWYHEE ALLOTMENT

K. Hockett

1989 Use Pattern Map
August 2, 8-10, 15, 1989



- SLIGHT USE (1-20%)
- LIGHT USE (21-40%)
- MODERATE USE (41-60%)
- HEAVY USE (61-80%)

DRY CREEK PASTURE




LOWER 4-MILE PASTURE

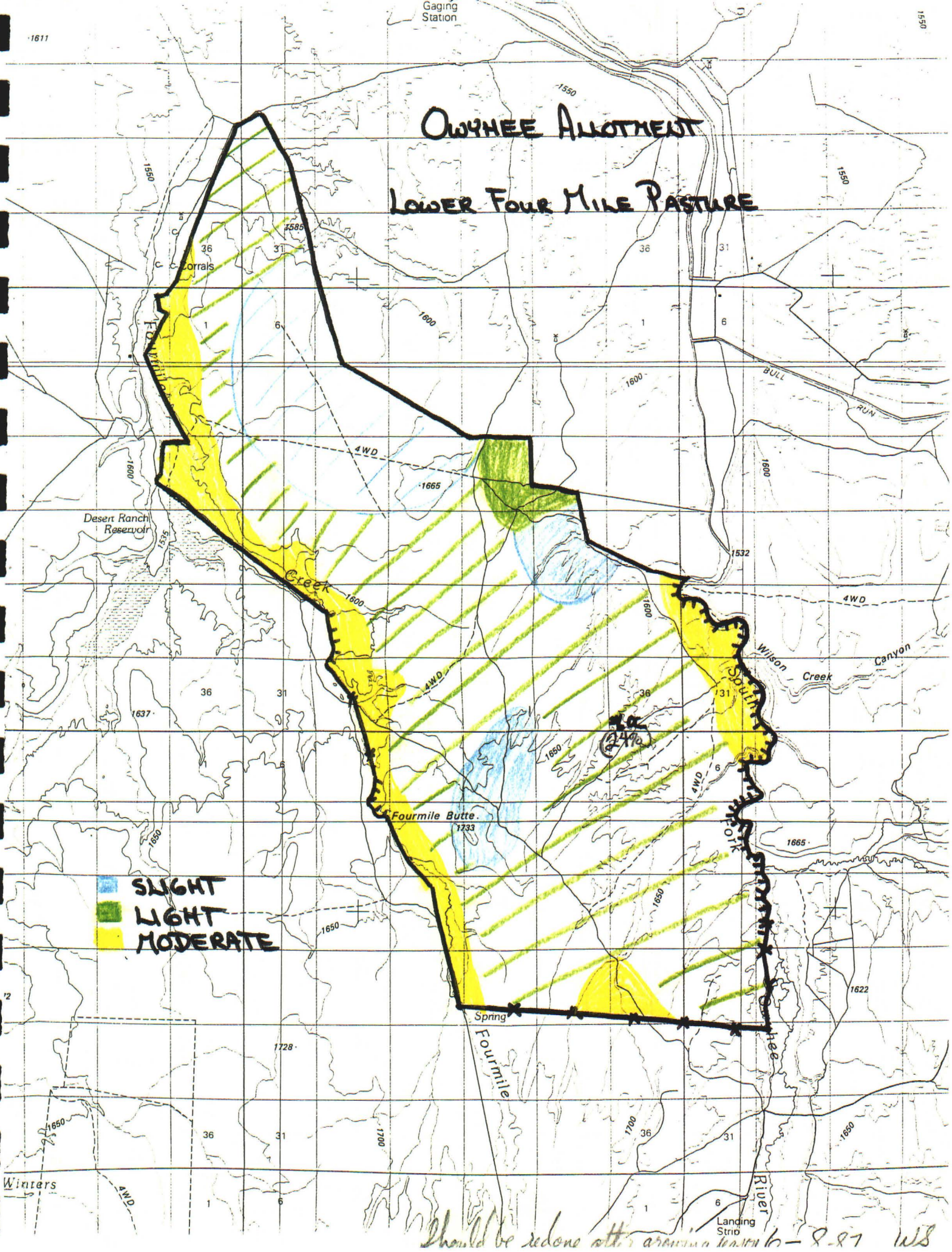
UPPER 4-MILE PASTURE

No Use

Private

Owyhee Allotment Lower Four Mile Pasture

 SLIGHT
 LIGHT
 MODERATE



Should be redone after arroyo wash 6-8-87 WS

Winters

Landing Strip

Owyhee River

Wilson Creek Canyon

Fourmile Butte
1733

Spring
Fourmile

Desert Ranch Reservoir

Corrals

NO USE
SLIGHT
LIGHT
MODERATE
HEAVY
SEVERE

