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

STANDARDS AND GUIDELINES FOR
RANGELAND HEALTH ASSESSMENT

Curtis Spring (04312)
Grazing Allotment

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B L M
NEVADA Elko District, Wells Field Office

PREPARING OFFICE

U.S. Department of the Interior
Bureau of Land Management
Elko District Office
3900 East Idaho Street
Elko, NV 89801
(775) 753-0200
(775) 753-0347

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Chapter 1. Introduction

The Bureau of Land Management (BLM) grazing regulations at 43 CFR 4130.3-1(c) require that grazing permits issued by the BLM contain terms and conditions that ensure conformance with BLM regulations at 43 CFR 4180, which are the regulations under which the Northeastern Great Basin Resource Advisory Council developed the *Northeastern Great Basin Standards and Guidelines for Grazing Administration* (RAC 1997). Recently, the Wells Field Office completed an assessment of the achievement of these standards on the Curtis Spring Allotment (Allotment). The results of this assessment are presented in this report, which serves to inform the BLM's determination as to whether these standards are being met, and, if they are not being met, whether existing grazing management practices contribute to their lack of attainment.

The approved standards for rangeland health are as follows:

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

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.

Standard 5. Healthy Wild Horse and Burro Populations: Wild horses and burros exhibit characteristics of a healthy, productive, and diverse population. Age structure and sex ratios are appropriate to maintain the long term viability of the population as a distinct group. Herd management areas are able to provide suitable feed, water, cover and living space for wild horses and burros and maintain historic patterns of habitat use.

This assessment will evaluate standards one, three, and four. Standard two will not be analyzed as riparian and wetland sites are not present[1]. Standard five will not be analyzed as the Allotment falls outside any established Herd Management Areas (HMAs).

[1] Curtis Spring is the name given to a water development on the northern border of the Allotment. This development consists of a pipe that surfaces within the Curtis Spring Corral and intermittently produces a very limited amount of water. Whether this pipe is associated with a horizontal/artesian well or a natural spring is unknown; in surveying this general area, no riparian facultative or obligate species were found. As the source of this water development is unknown and the development is located on the Allotment boundary it is impossible to know if the source occurs within the Curtis Spring Allotment. Indeed, the project file for the Curtis Spring Corral shows the source of the pipeline as being 0.10 miles to the north – outside the Allotment.

Chapter 2. Allotment Description

The Curtis Spring Allotment is located approximately 35 miles east of Elko, NV and 30 miles south of Wells, NV. The Allotment encompasses 37,744 acres, and is 98% public land administered by the BLM. Valley Mountain in the southeast and a range of moderate hills in the north are the primary topographic features within the Allotment, the remainder of which is generally flat. The Allotment has no natural perennial water sources. Land surface elevation averages 6,188 feet above mean sea level (AMSL) and varies from 5,985 feet in the southeast corner of the Allotment to 7,470 feet at the top of Valley Mountain. The 30-year crop-year (October-June) precipitation median for Hequy Well (found in the southeast of the Allotment at 6,052 feet AMSL, see Appendix B, Map 1) is 10.01 inches (PRISM Climate Group 2015) (Figure 1).

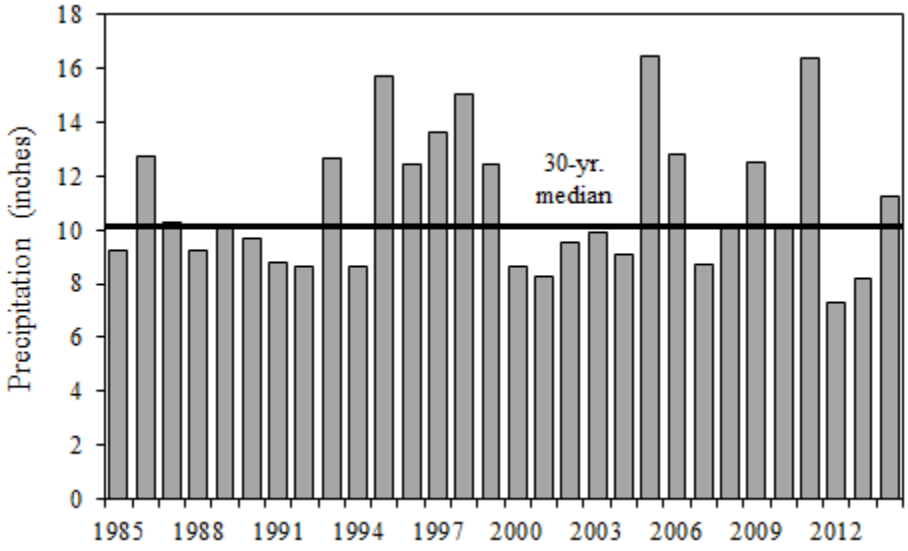


Figure 1. Crop-year median precipitation for the Curtis Spring Allotment, as calculated at Hequy Well.

The Allotment boundaries are fenced in the south and the west for a total of 19 miles; the remaining 15 miles of the Allotment boundary are unfenced and defined by topography and roads. There are no internal fences in the Curtis Spring Allotment. The BLM has authorized the installation and operation of two water developments within the Allotment: the Hequy and North-South wells (Appendix B, Map 1).

In 2013 and 2007 the North Valley and Valley Mountain fires burned 488 and 20 acres within the Curtis Spring Allotment, respectively. An unnamed fire burned an additional 8 acres sometime between 1999 and 2005 (Appendix B, Map 2). All three fires burned in juniper/sagebrush mosaic. In the fall of 2013 the majority of the North Valley Fire was drill seeded with a mix of native and introduced species; draws within the fire were broadcast seeded. The two others fires previously mentioned received no post-fire treatments.

In the past 50 years livestock grazing management in the Curtis Spring Allotment has varied dramatically. Previous to 2003, sheep were the authorized livestock class; permitted sheep use in the Allotment was very sporadic, with long (>10 years) periods of non-use. In 2003, a new Final Multiple Use Decision (FMUD) was signed for the Curtis Spring Allotment. This new

permit changed the permitted livestock class to cattle and the season of use to fall/winter (BLM 2003). The current permit is summarized in Table 1. Permitted and actual use data spanning from 2003-2014 are summarized in Appendix A, Figure 2.

Table 1. Summary of the current term grazing permit for the Curtis Spring Allotment.

Authorization Number	Livestock Number	Livestock Kind	Grazing Period Start	Grazing Period End	Percent Public Land	Type of Use	AUMs
2700063	112	Cattle	11/1	3/31	100	Active	556

The Curtis Spring Allotment is dominated by Wyoming Big Sagebrush Shrubland Alliance (40% of the Allotment), Black Sagebrush Shrubland Alliance (36%), and Great Basin Pinyon-Juniper Woodland cover types (21%), with Winterfat Shrublands playing a minor role (3%). Dominant species within these cover types are detailed in Table 2 and Appendix B, Map 3.

Table 2. Dominant species within the Curtis Spring Allotment by functional group.

Tree	**Shrub**	**Grass**
singleleaf pinyon (*Pinus monophylla*)	Black sagebrush (*Artemisia nova*)	Indian ricegrass (*Achnatherum hymenoides*)
Utah Juniper (*Juniperus osteosperma*)	Winterfat (*Krascheninnikovia lanata*)	needleandthread (*Hesperostipa comata*)
	Wyoming big sagebrush (*Artemisia tridentata* spp. *wyomingensis*)	squirreltail (*Elymus elymoides*)

Throughout much of the Intermountain West, piñon (*Pinus sp.*) and/or juniper (*Juniperus sp.*) woodlands are replacing historically-dominant semi-arid vegetation types (Miller and Rose 1995; Miller et al. 2008); however, within the Curtis Spring Allotment, piñon-juniper encroachment appears to be limited. Using high resolution aerial photography captured in 1968 and 2012, the rate of encroachment was quantified by digitizing historic and current woodland boundaries (excluding recently burned areas) (Appendix B, Map 4). Between 1968 and 2012, woodlands throughout the Allotment expanded 344 acres; 8 acres per year. In 2012, 13,482 acres (36% of the Allotment) contained areas where pinyon and/or juniper individuals were present. Across roughly half of these acres, pinyon and/or juniper individuals occupied a minor role in the overall community.

No Threatened or Endangered plant or animal species are known to occur within or near the Curtis Spring Allotment. Greater sage-grouse (*Centrocercus urophasianus*; sage-grouse), a Candidate Species for listing as Threatened or Endangered under the Endangered Species Act, is known to rely heavily on habitat within the Allotment. Ten leks (breeding grounds) are located within the Allotment and an additional 17 are located within five miles. Of these 27 leks, 6 are known active, 3 are known inactive, and the status of the remaining 18 is unknown or pending.

The United States Geological Survey (USGS) recently developed a habitat classification model for sage-grouse based in part on telemetry location data collected throughout Nevada and northeastern California from 1998 to 2013 (Coates et al., 2014). This model generated spatially explicit maps describing relative habitat suitability indices (HSI) for sage-grouse across the area. The authors then combined probabilistic breeding density with a non-linear probability of occurrence relative to distance to the nearest lek using count data to calculate a composite space use index (SUI). The SUI was then classified into two categories of use (high and low-to-no use) and intersected with the HSI categories to prioritize habitat across the range of sage-grouse within Nevada and northeastern California. Habitats were prioritized and categorized as follows (BLM Instruction Memorandum NV-2015-017):

1) Preliminary Priority Habitat (PPH): Defined as the intersection between all suitable habitat (high, moderate, and low) and the 85% SUI. This habitat management class is intended to incorporate all suitable habitats that have relatively high certainty of current sage-grouse occupancy (i.e., the "best of the best").

2) Preliminary General Habitat (PGH): Defined as all high quality habitat falling outside the 85% SUI and all non-habitat falling within the 85% SUI. This was a two-part process. High quality habitat falling outside the 85% SUI was erased by the 85% SUI, and non-habitat was clipped by the SUI. This habitat management class encompasses: (1) high-quality habitats based on environmental covariates with a lower potential for occupancy given the current distribution of sage-grouse and (2) sage-grouse incursion into areas of low-quality habitat that is potentially important for local populations (for example, corridors of non-habitat connecting higher quality habitat).

3) Mapped Habitat: Defined as moderate- and low-quality habitat falling outside the 85% SUI. This class represents areas with appropriate environmental conditions for sage-grouse, but that are less frequently used.

4) Non-habitat. Defined as non-suitable habitat that is present within the low-to-no use SUI. This scenario represents habitat of marginal value to sage-grouse populations.

The Curtis Spring Allotment contains 30,189 acres of PPH and 7,555 acres of PGH, comprising 80% and 20% of the Allotment, respectively (Appendix B, Map 2).

There are several historic ferruginous hawk[2] nest sites located in the pinyon/juniper communities within the Curtis Spring Allotment. Active hawk nests have been observed on a number of occasions in the course of recent field tours of the Allotment. Ferruginous hawks use the Allotment primarily for breeding and nesting habitat. Additional raptor species that may use habitat within the Allotment during at least some portion of the year include bald eagle, peregrine falcon[2], American kestrel, Swainson's hawk[2], rough-legged hawk, red-tailed hawk, sharp-shinned hawk, Cooper's hawk, northern goshawk[2], short-eared owl, burrowing owl[2], great horned owl, barn owl, northern harrier, and turkey vulture. While some of these species may use the Allotment for breeding, the primary uses are likely as foraging habitat during annual migration or as winter habitat.

[2] BLM Sensitive Species

The Allotment provides important year-round habitat for pronghorn antelope (*Antilocapra americana*), including kidding areas; year-round and winter habitat for elk (*Cervus elaphus*); and transitional and winter habitat for mule deer (*Odocoileus hemionus*). Numerous other wildlife species may use this Allotment during all or portions of the year, including migratory birds, raptors, small mammals, reptiles, amphibians, and bats. Some of these may be BLM Sensitive Species (Appendix C).

In total, four key areas have been established in the Curtis Spring Allotment. Two permanent rangeland monitoring sites were established in 1991 – CS-01 and CS-02; two Assessment Inventory and Monitoring (AIM) sites were established in 2013 – CS-03 and CS-04 (Appendix A, Table 4; Appendix B, Map 3). Key areas aid in evaluating rangeland health and in determining wildlife habitat suitability. Permanent rangeland monitoring sites were selected based on general use by livestock, vegetation, ecological site, and accessibility. The AIM sites were selected using a protocol that randomly selects sites within an Allotment after applying several stratifying parameters (e.g. ecological site, sage-grouse habitat classification, etc.).

Chapter 3. Draft Determinations

This section makes draft determinations regarding:
1. Progress towards or achievement of the standards for rangeland health,
2. The contributing role of livestock in cases where the standards are not achieved, and
3. The conformance of management practices with established guidelines.

Draft determinations for the Curtis Spring Allotment are summarized in Table 3.

Table 3. Draft determinations for the Curtis Spring Allotment. As all key areas had similar draft determinations within a standard, this table summarizes determinations at the allotment scale.

Standard	Determination	Contributing Factors	Guidelines Conformance
Upland Sites	Achieving the Standard	N/A	In Conformance
Habitat	Not Meeting the Standard	Potentially Historic Livestock Grazing	In Conformance
Cultural Resources	Achieving the Standard	N/A	In Conformance

Part I. Standard Achievement Review

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

As indicated by:

- Indicators are canopy and ground cover, including litter, live vegetation and rock, appropriate to potential of the site.

Conclusion: Achieving the Standard

The point cover method was used to collect cover data at key areas CS-01 and CS-02 in June 2011; the line point intercept method was used to collect cover data at key areas CS-03 and CS-4 in June 2013. These cover data were compared to reference rangeland ecological site description (ESD) data available at each key area to determine whether or not the standard was being met. Production and frequency data were collected using the double weight sampling and nested frequency methods, respectively (Nevada Range Studies Task Group 1984) at key areas CS-01 and CS-02 to further inform this discussion. Production data were collected in 1993 and 2014; frequency data were collected in 1993 and 2011.

Rangeland monitoring data and professional observation support the assertion that ecological sites throughout the Curtis Spring Allotment have been largely stable over the last 20 years (Appendix A, Tables 5 and 6, Figure 3, and Figures 5-7). Current levels of canopy and ground cover support infiltration and permeability rates that are appropriate to the site (Appendix A, Table 7 and Figure 13).

Key areas CS-01 and CS-02 occur within Silty 6-8" PZ (028BY013NV) ecological sites, based on soil surveys and ecological site descriptions developed by the Natural Resource Conservation Service (NRCS) (NRCS 2002). This ecological site occurs on mountain valley fans, inset fans and mid- to upper piedmont slopes at elevations of 5500 to 6700 feet and slopes of 0 to 15 percent. The soils in this site are deep to very deep and well drained with moderate to rapid infiltration rates. Potential for sheet and rill erosion is slight; however, this soil has a potential for formation of gullies, especially in areas near shallow drainages. The plant community is dominated by winterfat and Indian ricegrass. Squirreltail and bud sagebrush are other important species associated with the site. Live vegetation cover (basal and crown) at this site is expected to range from 10-20% (NRCS 2006).

Key area CS-03 occurs within the Shallow Calcareous Loam 8-10" PZ (028BY011NV) ecological site, based on soil surveys and ecological site descriptions developed by the NRCS (NRCS 2002). This ecological site occurs on summits and side slopes of lower piedmont slopes at elevations of 5000-6500 feet and slopes of 2-50 percent. The soils in this site are typically shallow and well drained with low water holding capacity. The plant community is dominated by black sagebrush, Indian ricegrass, and needleandthread. Live vegetation cover (basal and crown) at this site is expected to range from 15-20% (NRCS 2006).

Key area CS-04 occurs within the Loamy 8-10” PZ (028BY010NV) ecological site, based on soil surveys and ecological site descriptions developed by the NRCS (NRCS 2002). This ecological site occurs on fan piedmonts, rock pediments and low rolling hills at elevations of 5000-6500 feet and slopes of 2-50 percent. The soils in this site are moderately deep to deep and well drained. The potential for sheet and rill erosion is moderate to high depending on slope. The plant community is dominated by Wyoming big sagebrush, Indian ricegrass, and needleandthread. Live vegetation cover (basal and crown) at this site is expected to range from 10-20% (NRCS 2006).

At key area CS-01, vegetation cover was 22% in 2011; litter, embedded litter, and rocks provided an additional 7% ground cover. At key area CS-02, vegetation cover was 24% in 2011; litter, embedded litter, and rocks provided an additional 5% ground cover. At key area CS-03, foliar vegetation cover was 25% in 2013; litter, moss, and rocks/gravel provided an additional 28% ground cover. At key area CS-04, foliar vegetation cover was 33% in 2013; litter, moss, lichen, cyanobacteria, and rocks/gravel provided an additional 49% ground cover.

All live vegetation cover values collected at the four key areas were above the maximum value estimated for each of these sites (Appendix A, Table 7 and Figure 13). When this is considered in conjunction with the erosive potential of this site, these data support the assertion that Standard 1 is being met in all key areas. In addition, although final monitoring data are not yet available, rehabilitation efforts on the North Valley fire appear to be successful; two years after the fire, perennial bunchgrasses are found in sufficient density to limit erosion and invasive species are largely absent (see Figures 11 and 12). Additional indicators of infiltration and permeability rates (e.g. rills, gullies, water flow patterns, pedestals, wind scouring, blowouts, depositional features, microbiotic crust presence, etc.) are appropriate to soil type, climate, and land form based on professional observation.

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.

As indicated by:

- Vegetation composition (relative abundance of species);
- Vegetation structure (life forms, cover, height, or age class);
- Vegetation distribution (patchiness, corridors);
- Vegetation productivity; and
- Vegetation nutritional value.

Conclusion: Not achieving the Standard and data is inconclusive in determining if significant progress toward the Standard is being made.

Overall Wildlife

Data collected at key areas CS-01 and CS-02 indicate that winterfat and associated communities in the Allotment are lacking in grasses and forbs, key structural components for wildlife. These communities are comprised of large expanses of low shrub species set in a mosaic with taller shrub species. The ESD for these sites describe potential grass, forb, and shrub composition as 30%, 5%, and 65% by weight, respectively (Appendix A, Table 5). In 2014, community composition data show that forbs were completely lacking at both CS-01 and CS-02; grasses composed 18% of the community at CS-01, but were completely lacking at CS-02. Across both sites, shrubs dominate to the exclusion of all other functional groups; i.e. plant communities do not resemble the Potential Natural Community (PNC) described in the ESD (Appendix A, Table 5, Figures 4, 5, and 6). Although vegetation composition is not optimal, vegetation cover data indicate that these sites are not lacking cover. As per the ESD, vegetation cover at CS-01 and CS-02 should range from 10-20%; vegetative cover exceeded these levels in 2011 at both sites (Appendix A, Figure 13).

Nested frequency data and community composition similarity indices indicate that the present state of shrub dominance found in winterfat communities in the Allotment has not been brought about recently. Frequency data at CS-01 show that the dominant species – winterfat, yellow rabbitbrush, Indian ricegrass, and squirreltail – did not change significantly between 1993 and 2011 (Appendix A, Table 6A). At CS-02, the dominant species – winterfat – changed by less than four percent over this same time period (Appendix A, Table 6B). Community composition similarity indices for CS-01 and CS-02 mirror this result (Appendix A, Figure 4), i.e. winterfat and other associated communities in the Allotment have remained largely unchanged in the last 21 years (Appendix A, Figures 5 and 6).

Foliar cover, ground cover, and plant height data were collected at CS-03 and CS-04 in 2013. The overall habitat at CS-03 and CS-04 is comprised of intermixed tall and short shrub species with a short herbaceous understory and large expanses of bare ground (Appendix A, Table 7 and Figures 8 and 9). Both CS-03 and CS-04 are heavily shrub dominated with no recorded forb

species and few to no grass species. The ESDs for these sites describes the PNC as being composed of 50% grasses, 5% forbs, and 45% shrubs. Although cover data doesn't directly correlate to the production-derived community composition data in these ESDs, it is noteworthy that herbaceous cover was completely lacking at CS-03 and comprised only 2% of the total foliar cover at CS-04. When these data are considered in conjunction with the photographs taken at these sites it is clear that the present vegetation communities are significantly different from the PNC. As at CS-01 and CS-02, overall vegetation cover values at CS-03 and CS-04 exceed ESD estimates (Appendix A, Table 7). Observations of the greater area around CS-03 and CS-04 show that these ecological sites are generally dominated by tall, decadent, columnar sagebrush and short, spreading sagebrush; large areas of low sagebrush are found in a mosaic throughout. Grasses are limited to Indian ricegrass and Sandberg bluegrass; forb species found in the original PNC are completely lacking.

Professional observations at all four key areas support the collected quantitative data: grasses and forbs are lacking in the Curtis Spring Allotment, while sagebrush and other shrub species dominate. The limited presence of native grass and forb species indicate that wildlife habitat quality has declined significantly from historic levels; this is especially the case for species that benefit from structurally diverse vegetative communities (e.g. pronghorn antelope, small mammals, migratory birds).

Raptors

As predators, raptors are dependent upon a sufficiently abundant and diverse prey base to sustain their populations. Raptor prey includes small mammals (e.g., rabbits, rodents), birds, reptiles, amphibians and invertebrates. Many of these prey species are vegetarians, feeding on seeds or herbaceous material. These species require healthy grass and forb components. The limited cover of grasses and forbs measured at the monitoring sites and observed professionally indicates that habitat quality for many small mammals and other raptor prey species is likely lacking in these areas. This condition could lead to reduced prey populations (Reynolds and Trost, 1980), resulting in a concomitant reduction in the potential of the ecosystem to sustain raptor populations.

Special Status Species: Greater Sage-Grouse

As a sagebrush-obligate, landscape-scale species and current Candidate for listing under the Endangered Species Act, sage-grouse is an appropriate "umbrella" species to represent the habitat needs of a suite of sagebrush-obligate and near-obligate species, including but not limited to, sage thrasher (*Oreoscoptes montanus*) [3], pygmy rabbit (*Brachylagus idahoensis*) [3], Brewer's sparrow (*Spizella breweri*) [3], sagebrush sparrow (*Artemisiospiza nevadensis*), and sagebrush vole (*Lemmiscus curtatus*). Managing for habitat characteristics that benefit sage-grouse will also generally benefit other species that fall under the sage-grouse "umbrella" (Rowland et al., 2006; Hanser and Knick, 2011).

The fact that the Curtis Spring Allotment is comprised of 80% PPH (30,189 acres) and 20% PGH (7,555 acres) emphasizes its importance for sage-grouse. Five active, two inactive, two

[3] BLM Sensitive Species

unknown, and one pending status lek occur within the Allotment. Of the 30,189 acres of PPH found within the Allotment, 6,496 acres are found within piñon and/or juniper woodlands, i.e. 23,693 acres are juniper-free (Appendix B, Map 4). Almost the entire PGH habitat in the Allotment falls within the piñon/juniper woodlands. The extent of these woodlands has changed little in the last five decades (Appendix B, Map 4). Doherty et al. (2010) found that nesting sage-grouse strongly avoid areas within 100 meters (approximately 328 feet) of piñon and/or juniper individuals. When this 100 meter buffer is accounted for, nesting habitat within PPH drops to 21,712 acres (57% of the Allotment).

Monitoring data were collected within the Allotment in June, 2013, using protocol similar to that established by Stiver et al. (2010) for assessing seasonal sage-grouse habitat quality. Breeding habitat (pre-laying, nesting, early brood-rearing) indicators are as follows: (1) sagebrush canopy cover, (2) woody height (all shrubs), (3) sagebrush growth form for nesting, (4) herbaceous height, (5) perennial grass canopy cover, (6) cheatgrass cover, (7) forb canopy cover, and (8) preferred food forb diversity. For each of these ratings a key area can be rated as suitable, marginal, or unsuitable. Of these eight indicators, half were rated as unsuitable at both CS-03 and CS-04; with the ratings of the remainder being split between marginal and suitable (Appendix A, Table 8).

The quality and extent of late brood-rearing habitats have also been suggested as factors limiting sage-grouse chick survival and subsequent recruitment and population growth rates (Aldridge and Brigham 2001, Connelly *et al*. 2004, Crawford *et al*. 2004, Gregg 2006, Atamian *et al*. 2010). Late brood-rearing habitat indicators (upland) are as follows: (1) sagebrush canopy cover, (2) woody height (all shrubs), (3) perennial grass and forb canopy cover, and (4) preferred food forb diversity. Similar to the results for the breeding habitat indicators, of these four indicators, half were rated as unsuitable at both CS-03 and CS-04; with the ratings of the remainder being split between marginal and suitable (Appendix A, Table 9).

An additional component of late brood-rearing habitat includes riparian/mesic areas such as springs and wet meadows. Such sites are an essential component of grouse habitat in many areas because they provide the best sources of succulent forbs and insects important in the diet of young sage-grouse. However, these sites are often extremely limited in extent in cold desert ecosystems (late brood-rearing habitats where broods were successfully reared represented 2.8% of the total landscape area in east-central Nevada; Atamian *et al*. 2010). As stated in the Introduction, this Allotment lacks riparian and wetland sites. Given the critical importance of these limited areas to sage-grouse, this component of late brood-rearing habitat is not met within the Allotment.

Sagebrush is essential to sage-grouse as both food and cover during winter. Sage-grouse forage exclusively on the leaves of sagebrush during winter; therefore these plants must be accessible above the snow to permit utilization (Connelly *et al*. 2000). Thus, winter habitat indicators are as follows: (1) sagebrush canopy cover and (2) sagebrush height. According to data available from the Western Regional Climate Center (2015), snow depths at the nearest monitoring station (located 9 miles northwest of the northern allotment boundary) peak in the month of February. Snow depth recorded from 1910 to 2014 yields an average peak depth (seven day running average) of 11 inches (27.94 cm). Professional observation of the sagebrush in the general CS-03 and CS-04 area found that the majority of the tall, columnar sagebrush that would be exposed

above snowpack are lacking foliage. At CS-04, one indicator was rated as suitable and one was rated as marginal (Appendix A, Table 10). At CS-03, both of the aforementioned indicators were rated as suitable; however, while the "sagebrush height" indicator for CS-03 shows the habitat as suitable, when the decadent nature of the columnar sagebrush in the area is factored in, this rating may in reality fit better in the "marginal" category.

In summary, seasonal habitat suitability indicators for sage-grouse were found to be primarily in the 'marginal' or 'unsuitable' categories, with a smaller proportion in the 'suitable' category. Overall, monitoring data and professional observations indicate that habitat within the Allotment is not meeting the needs of sage-grouse during at least three critical life stages or the needs of other species that fall under the sage-grouse "umbrella".

Conclusion

The aggregate evaluation of vegetation composition, structure, and productivity indicate that the Allotment is not meeting the Habitat Standard. Shrub species dominate vegetation communities to the exclusion of herbaceous species, limiting habitat quality for big game, raptors, and other wildlife species. Sage-grouse habitat in particular is limited by the current composition of vegetation communities in the Allotment; breeding, late brood-rearing and wintering habitat quality are below their potential.

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

Conclusion: Achieving Standard

In order to comply with the National Historic Preservation Act (NHPA) of 1966, as amended, the BLM in consultation with the State Historic Preservation Office (SHPO) of Nevada must consider the effects on historic properties for all federal undertakings requiring permits, including grazing renewal permits.

Rangeland management plans, including grazing permit renewals will consider listings of sites that are potentially eligible for listing on the National Register of Historic Places (NRHP) or considered to be of cultural significance as well as new NRHP eligible sites as they become known. Based on the evaluation of existing information pertaining to range improvements and grazing, cultural resources are being recognized within the context of multiple-use management in the Curtis Spring Allotment.

There have been three (3) block Class III cultural resource surveys (BLM 1-1410, BLM 1-1257, and BLM 1-3052) and three (3) linear cultural surveys (for seismic) within the Curtis Springs allotment. Approximately 1323 acres have been inventoried for cultural resources. The survey results indicated seven (7) prehistoric sites of which only four (4) are eligible for the National Register. Approximately 40 isolated artifacts (historic and prehistoric) were documented in both the linear and block cultural surveys.

A segment of the Hasting Cutoff of the California National Historic Trail (CNHT) bisects the northern portion of the allotment. The Hastings Cutoff of the CNHT is also federally protected under the National Trails System Act (NTSA) of 1968 (as amended). This segment of the trail is eligible for the National Register under Criterion A.

The BLM has implemented Manual 6280, "Management of National Scenic and Historic Trails and Trails Under Study or Recommended as Suitable for Congressional Designation (Public)," to direct the implementation of the NTSA on BLM managed lands. Under Manual 6280, the purpose of a National Historic Trail is the identification and protection of the historic route and the historic remnants and artifacts for public use and enjoyment. A National Historic Trail is managed to recognize the nationally significant resources, qualities, values, and associated settings of the areas through which such trails may pass, including the primary use or uses of the trail. Federal Protection Components associated with the National Historic Trail, including high potential historic sites, high potential route segments, and auto tour routes are identified by the National Trail administering agency through the trail-wide Comprehensive Plan. Properties eligible for the NRHP, which may also be Federal Protection Components, may be identified along the National Historic Trail, including segments of the National Historic Trail.

The National Park Service (NPS) has completed a Comprehensive Management and Use Plan (CMP) which details the purpose and significance of the trail along with issues and concerns related to management, use, protection, and recreation. The purposes of the CNHT as identified in the CMP are to "*enable all people to envision and experience, in a coherent and convenient*

way, the heritage and impacts of the western overland migration and encourage preservation of its history and physical remains" (NPS, 1999:25). The segment of the CNHT which is located within the project area has been identified under this CMP as the "Granite Pass to Humboldt River segment of the CNHT (No. 14)" and is categorized as a "high potential segment" (NPS 1999:11). The definition of a "high potential segment" is provided in the glossary of terms of Manuel 6280 (G-3:H), "*segments of a trail which would afford a high-quality recreation experience in a portion of the route having greater than average scenic values or affording an opportunity to vicariously share the experience of the original users of a historic route. National Historic Trail high potential route segments are assumed to contain remnants, artifacts, and other properties eligible for the National Register of Historic Places, pending evaluation. Under the National Trails System Act, high potential route segments located on federally owned land are referred to as Federal Protection Components*."

Part II. Livestock as a Contributing Factor in not Meeting the Standards

According to the Standards and guidelines for Nevada's Northeastern Great Basin Area, it must be determined if livestock grazing is a contributing factor in the non-attainment of the Standards and Guidelines (RAC 1997).

Standard 1. Upland Sites

This standard is being achieved in the Curtis Spring Allotment.

Standard 3. Habitat

Actual use data over the past 11 years show that the Allotment has been grazed almost every year from November to the end of March (Appendix A, Figure 2). However, not all of the permitted AUMs have been used due to various business decisions of the permittees and annual forage availability. In 2003, livestock use for the Allotment was converted from sheep to cattle and the season of permitted use was set to fall/winter. Use exceeded the 50% utilization objective three out of the four years measured since 2003 for Indian ricegrass and one out of the five years measured for winterfat (Appendix A, Figure 14). It is difficult to get an accurate picture of the relationship between actual use and utilization over this period. For example, in 2007 the permittee used 432 AUMs, precipitation in the applicable crop year was above normal and utilization on winterfat was 73% and 59% at CS-01 and CS-02, respectively. Whereas in 2014 the permittee used exactly the same number of AUMs (434), precipitation was below normal and utilization on winterfat was 38% and 36% at CS-01 and CS-02, respectively.

These inconsistencies make it difficult to draw meaningful conclusions from these data with regard to winterfat; however, it is clear that utilization on Indian ricegrass is consistently exceeding objectives. What is unclear is the effect this overutilization is having on the plant communities. Professional observation and repeat photography indicate that plant communities most strongly affected by livestock within the Allotment are largely stable (Appendix A, Figures 5, 6, and 7, Tables 5 and 6), and in some cases herbaceous species have increased marginally in the last 21 years (see Appendix A, Tables 5 and 6). In addition, the areas around CS-03 and CS-04 are almost never used by livestock (professional observation). Accordingly, it is unlikely that current grazing management is a causal factor in the failure to meet this standard. It is most likely that historic overgrazing by livestock shifted plant community composition from the PNC to the current shrub-dominated stable state.

Standard 4. Cultural Resources

This standard is being achieved in the Curtis Spring Allotment.

Part III. Guideline Conformance

Standard 1. Upland Sites

Current livestock grazing management is in conformance with Guidelines.

Standard 3. Habitat

Current livestock grazing management is in conformance with Guidelines.

Standard 4. Cultural Resources

Current livestock grazing management is in conformance with Guidelines.

Part IV. Management Recommendations to Achieve Standards and Conform with Guidelines

As detailed in Part III, Standard 3 is not being met; however current livestock grazing is in conformance with the respective guidelines. As plant communities in the Allotment are largely stable in their current shrub-dominated state, Standard 3 will not likely be met in the future without the input of energy, i.e. active vegetation manipulation. Some minor changes to livestock grazing could potentially be implemented to support any active restoration efforts.

Chapter 4. Signature Page

_____ _____

Melanie A. Peterson
Field Manager, Wells Field Office

Date

Appendix A. Data Summary

A.1. Livestock Actual Use

Livestock actual use data for the Curtis Spring Allotment is available between 1986 and 2014; however, between 1986 and 2002 use was sporadic and always fell well below (>50%) permitted levels. Accordingly, only data from 2003-2014 are reported below. Annual variation in livestock use has occurred for several reasons including various business decisions of the permittees and annual forage availability.

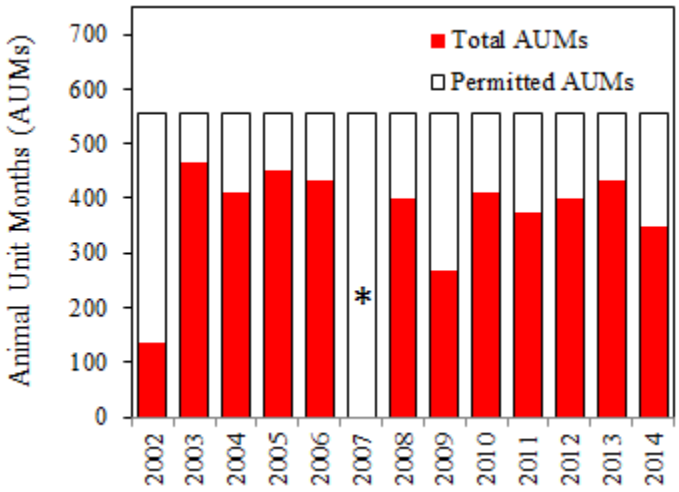


Figure 2. Permitted and actual use data for the Curtis Spring Allotment. Asterisks indicate years where data are missing.

A.2. Key Areas and Ecological Sites

A key area is a relatively small portion of an allotment selected to monitor vegetation, soil and/or the impacts of management. It is assumed that properly located key areas will reflect the current management over similar areas at larger scales (Swanson et al. 2006). Table 3 depicts the location, ecological site, dominant species, and soil mapping unit of each key area within the Curtis Spring Allotment.

An ecological site is defined as a distinctive kind of land with specific soil and physical characteristics that differ from other kinds of land in its ability to produce a distinctive kind and amount of vegetation and its ability to respond similarly to management actions and natural disturbances (Holechek et al. 2010). An Ecological Site Description (ESD) is used to provide reference in the inventory, evaluation, and management of specific ecological sites. The ecological site of a key area is determined based on several factors including soils, topography, and the plant community.

Table 4. Curtis Spring Allotment key areas.

Key Area	Ecological Site	Dominant Species (from ESD)	Soil Mapping Unit
CS-01	Silty 8-10" PZ (028BY013NV)	Winterfat, Indian ricegrass	857 - Palinor-Shabliss-Linoyer association
CS-02	Silty 8-10" PZ (028BY013NV)	Winterfat, Indian ricegrass	1411 - Threesee-Linoyer-Okan association
CS-03	Shallow Calcareous Loam 8-10" PZ (028BY011NV)	Black sagebrush, indian ricegrass, needleandthread	857 - Palinor-Shabliss-Linoyer association
CS-04	Loamy 8-10" PZ (028BY010NV)	Wyoming big sagebrush, Indian ricegrass, needleandthread	480 - Shabliss-Palinor association

A.3. Community Composition

Community composition was measured by collecting production data in 1993 and 2014 at key areas CS-01 and CS-02 using the double weight sampling method. These data are summarized in Table 5. Production data were also collected in 2011; however, as production data are greatly influenced by precipitation and 2011 was the fourth wettest crop year in the historical record (1896-2014) (PRISM Climate Group 2015), we do not feel these data to be representative of conditions in the Allotment as a whole. Accordingly, they are not reported in this assessment. Production is defined as the amount of aboveground air-dry biomass produced annually at a site. The double weight sampling method is a commonly used method for estimating production (BLM 1999a; Nevada Range Studies Task Group 1984).

Table 5. Community composition data collected at key areas CS-01 and CS-02 in 1993 and 2014. Data are displayed as percentages. Potential Natural Community (PNC) data were extracted from ecological site descriptions available at each key area.

Class	**Key Area**	***PNC***	**1993**	**2014**
Grass	CS-01	*30*	5	18
	CS-02		2	0
Forb	CS-01	*5*	4	0
	CS-02		--	--
Shrub	CS-01	*65*	91	82
	CS-02		98	100

Changes in community composition were interpreted by tracking shifts in key functional groups or species (i.e. perennial grasses and winterfat) (Table 5 and Figure 3) and similarity indices (Figure 4) over time, for applicable key areas.

A similarity index is a measure of how current community composition compares to the estimated potential natural community (PNC). Figure 4 summarizes similarity index data for the Allotment. It is important to note that the PNC is not always the most desirable plant community

to manage for. Thus, a low similarity index is not always indicative of poor management practices (e.g. seedings).

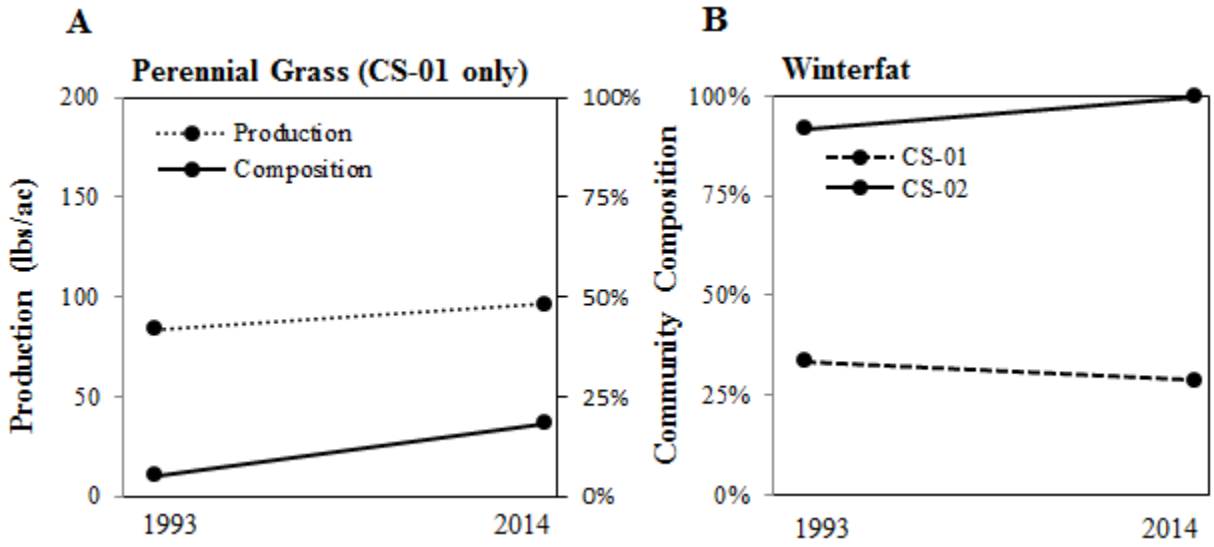


Figure 3. A) Production and community composition of perennial grasses at CS-01; and **B)** community composition of winterfat (*Krascheninnikovia lanata*) at CS-01 and CS-02. All data were collected mid-summer in 1993 and 2014.

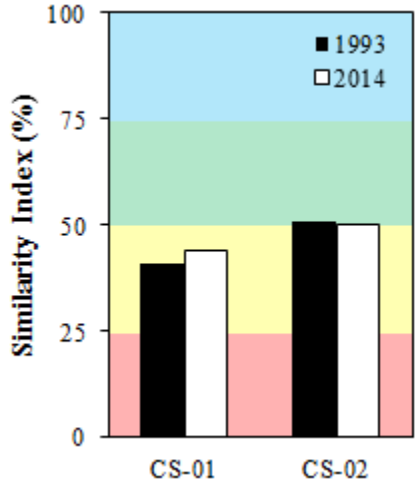


Figure 4. Similarity index data, measured in 1993 and 2014 at key areas CS-01 and CS-02. Similarity indices ranging from 0-25%, 25-50%, 50-75%, and 75-100% are designated as early-seral (red background), mid-seral (yellow background), late-seral (green background), and potential natural community (blue background), respectively.

A.4. Frequency

Frequency is the number of times a plant species is present in a given area. The concept of frequency refers to the uniformity of a species in its distribution over an area. Frequency data were collected in 1993 and 2011 at key areas CS-01 and CS-02 using the nested frequency method (Nevada Range Studies Task Group 1984). Table X summarizes these data.

Table 6. Percent frequency of dominant species at key areas **A)** CS-01 and **B)** CS-02. Significant differences between years are indicated by differing lowercase letters (Tukey's HSD, $P < 0.05$). Species abbreviations are as follows: winterfat (*Krascheninnikovia lanata*; KRLA), yellow rabbitbrush (*Chrysothamnus viscidiflorus*; CHVI), Indian ricegrass (*Achnatherum hymenoides*; ACHY), squirreltail (*Elymus elymoides*; ELEL), and Sandburg bluegrass (*Poa secunda*; POSE).

A

Year	KRLA	CHVI	ACHY	ELEL	POSE
1993	48.00[a]	29.50[a]	26.00[a]	65.00[a]	**1.50[a]**
2011	47.50[a]	30.50[a]	21.50[a]	67.50[a]	**14.00[b]**

B

Year	KRLA
1993	66.50[a]
2011	63.00[a]

A.5. Photographic Data

Repeat photographs within the Curtis Spring Allotment were taken of the frequency transects at key areas CS-01 and CS-02 (Figures 5 and 6, respectively), and of the 37R frequency frame at CS-01 (Figure 7). At both key areas the dominant palatable species is winterfat (aquamarine in color). Yellow rabbitbrush (bright green in color) is also present at CS-01. Repeat photography at these key areas show no clear shift in plant community composition; these results are in step with monitoring data collected at these sites (see Appendix A, Tables 5 and 6, and Figures 3 and 4). Also included are photos of the AIM key areas in 2013 (Figures 8 and 9) and the production sampling locations in 2014 (Figure 10).

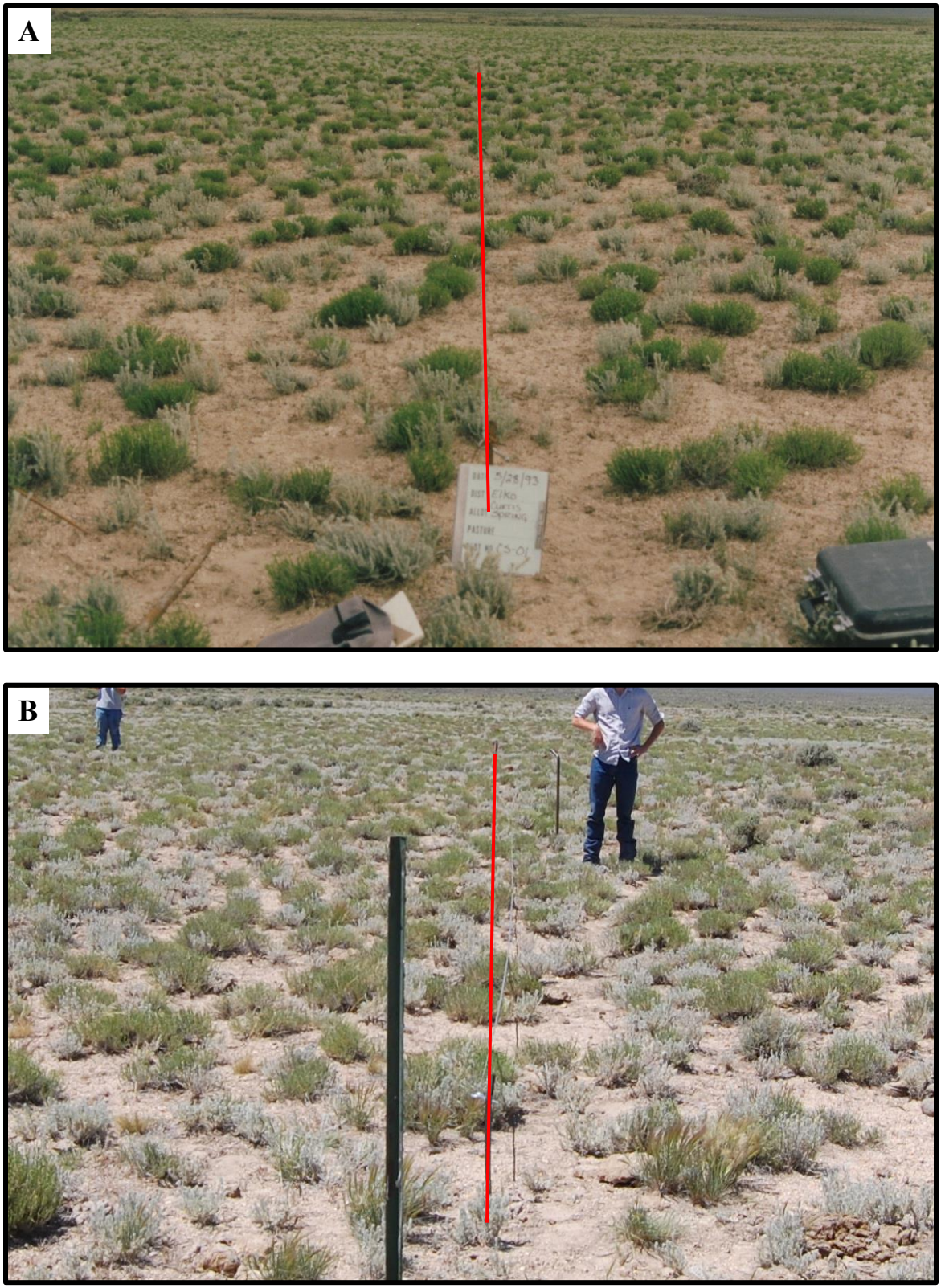


Figure 5. Repeat photography at key area CS-01. Photo dates are A) 28 May 1993 and B) 24 June 2011. The red line highlights the frequency transect in each photo.

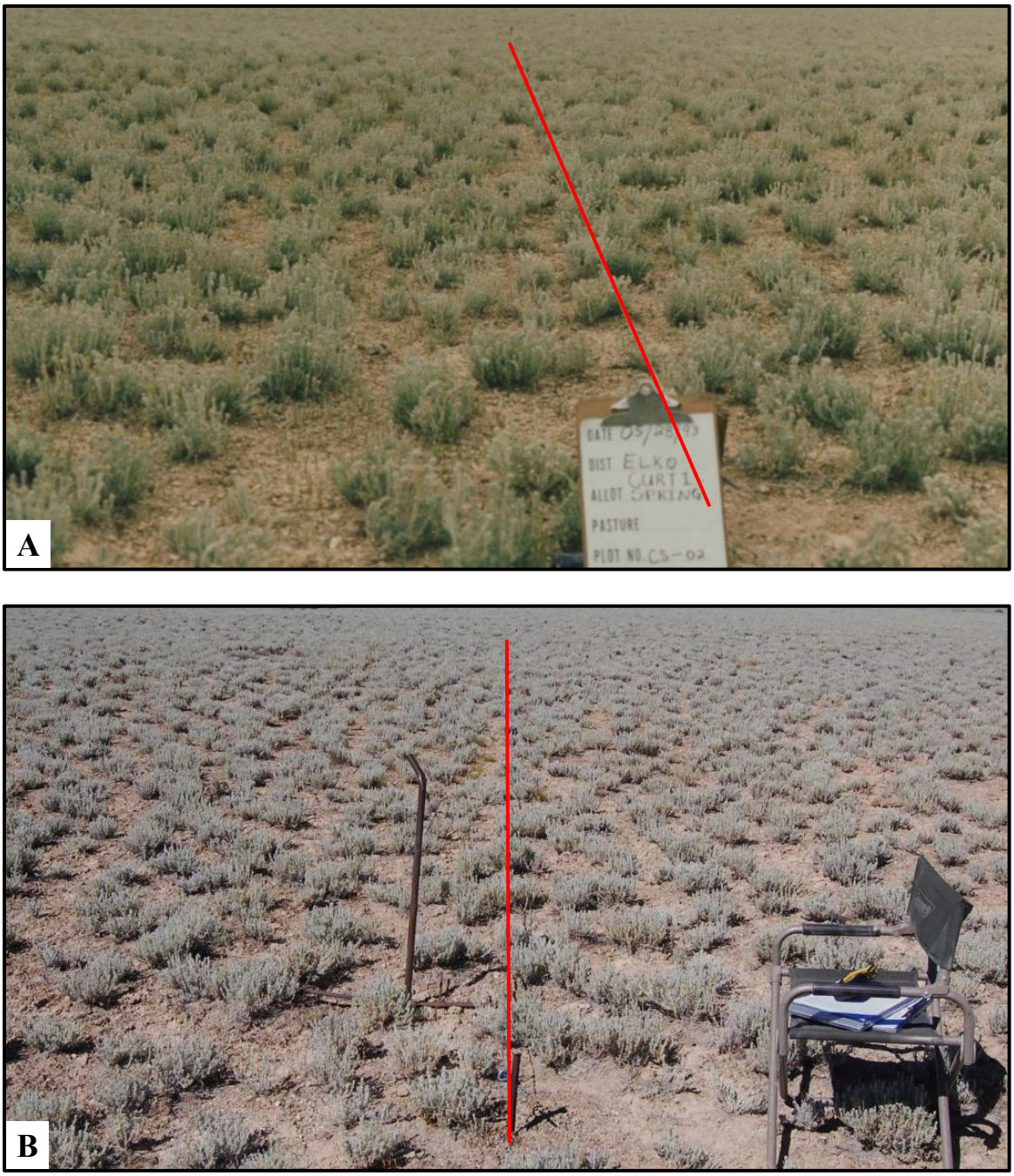


Figure 6. Repeat photography at key area CS-02. Photo dates are A) 28 May 1993 and B) 24 June 2011. The red line highlights the frequency transect in each photo.

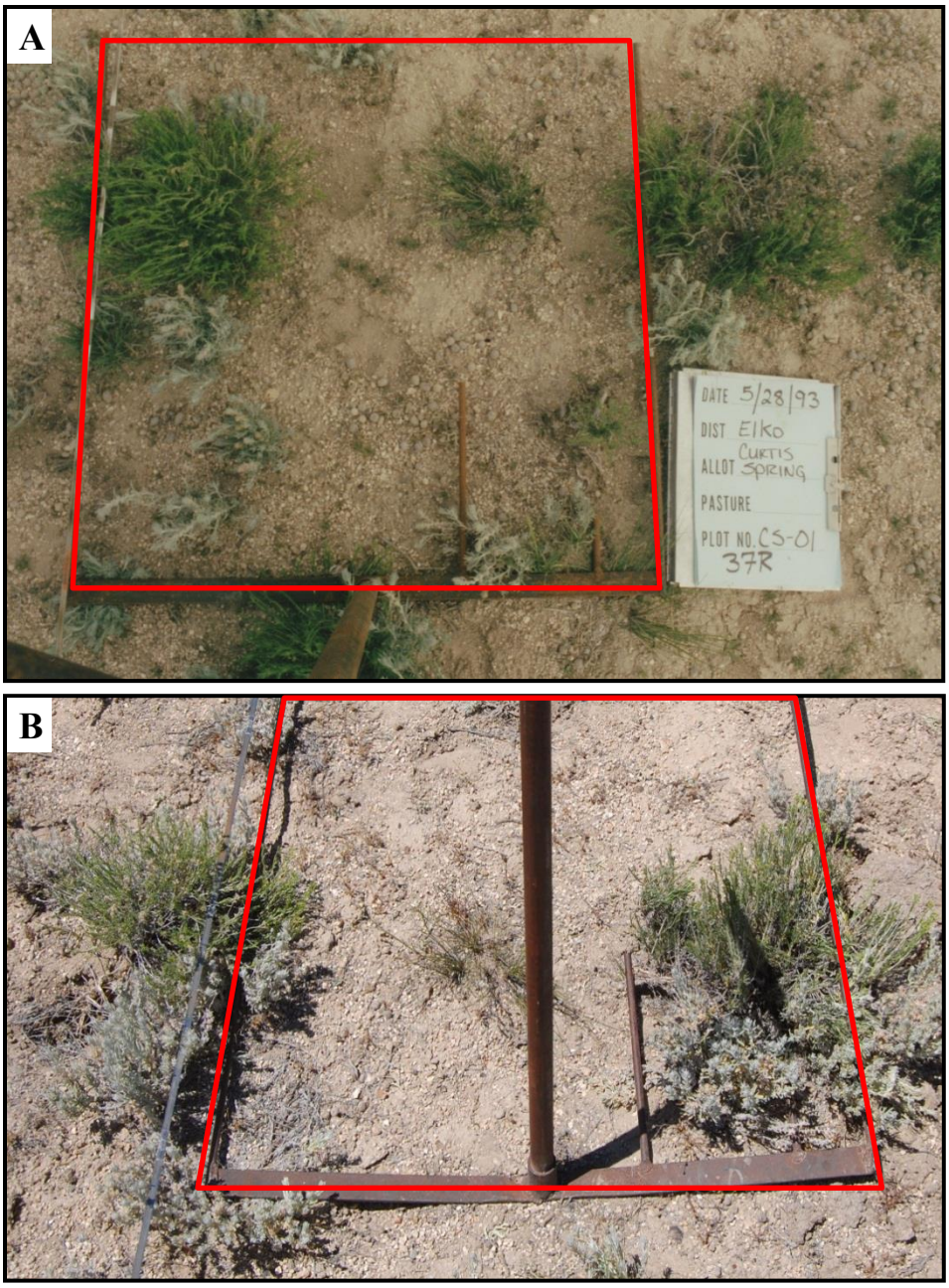


Figure 7. Repeat photography at key area CS-01. Photo dates are A) 28 May 1993 and B) 24 June 2011. The red trapezoids show the equivalent area in both photos.

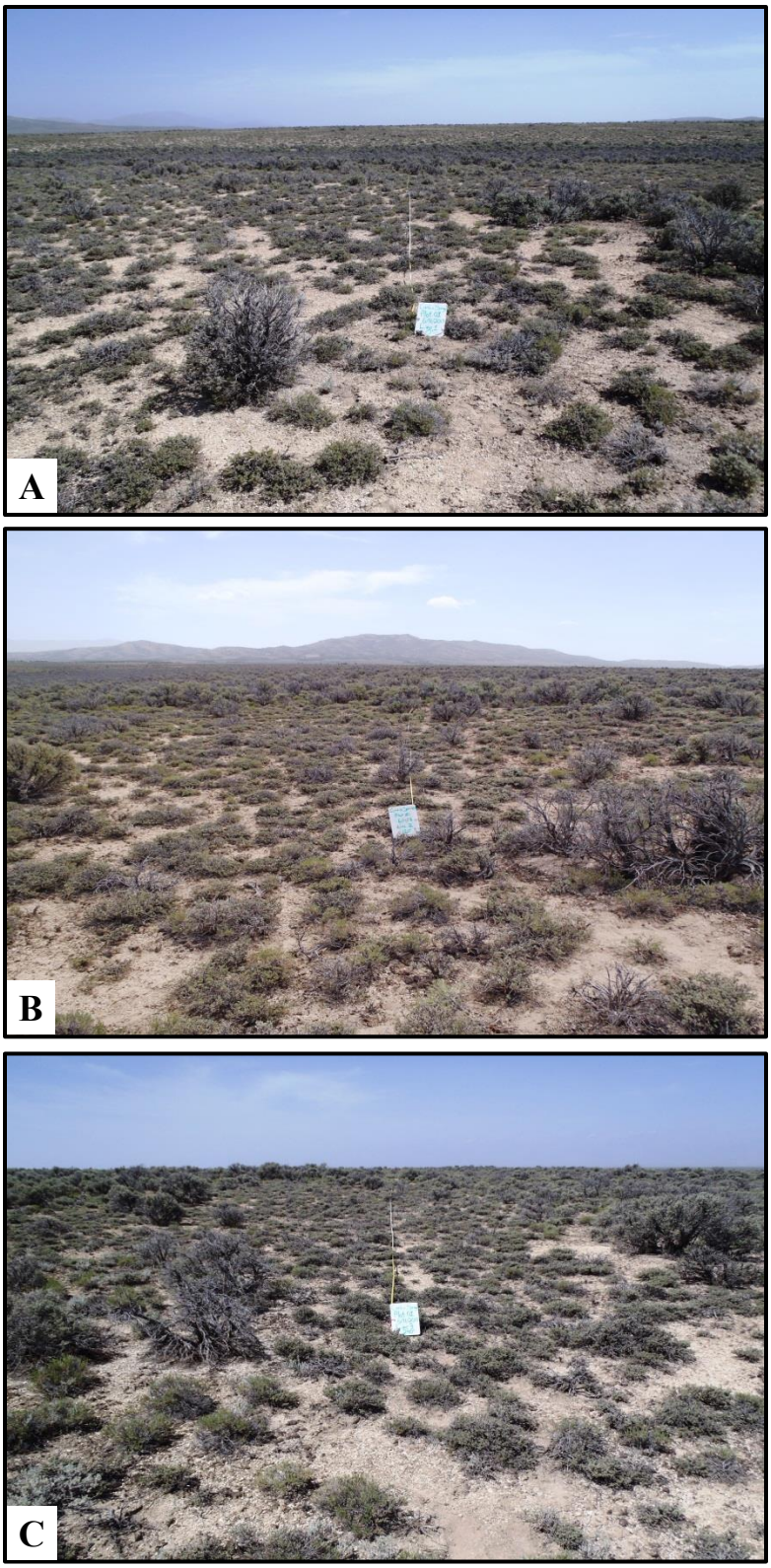


Figure 8. Assessment, Inventory, and Monitoring (AIM) site CS-03, transects A) 1, B) 2, and C) 3. Photos were taken on 11 June 2013.

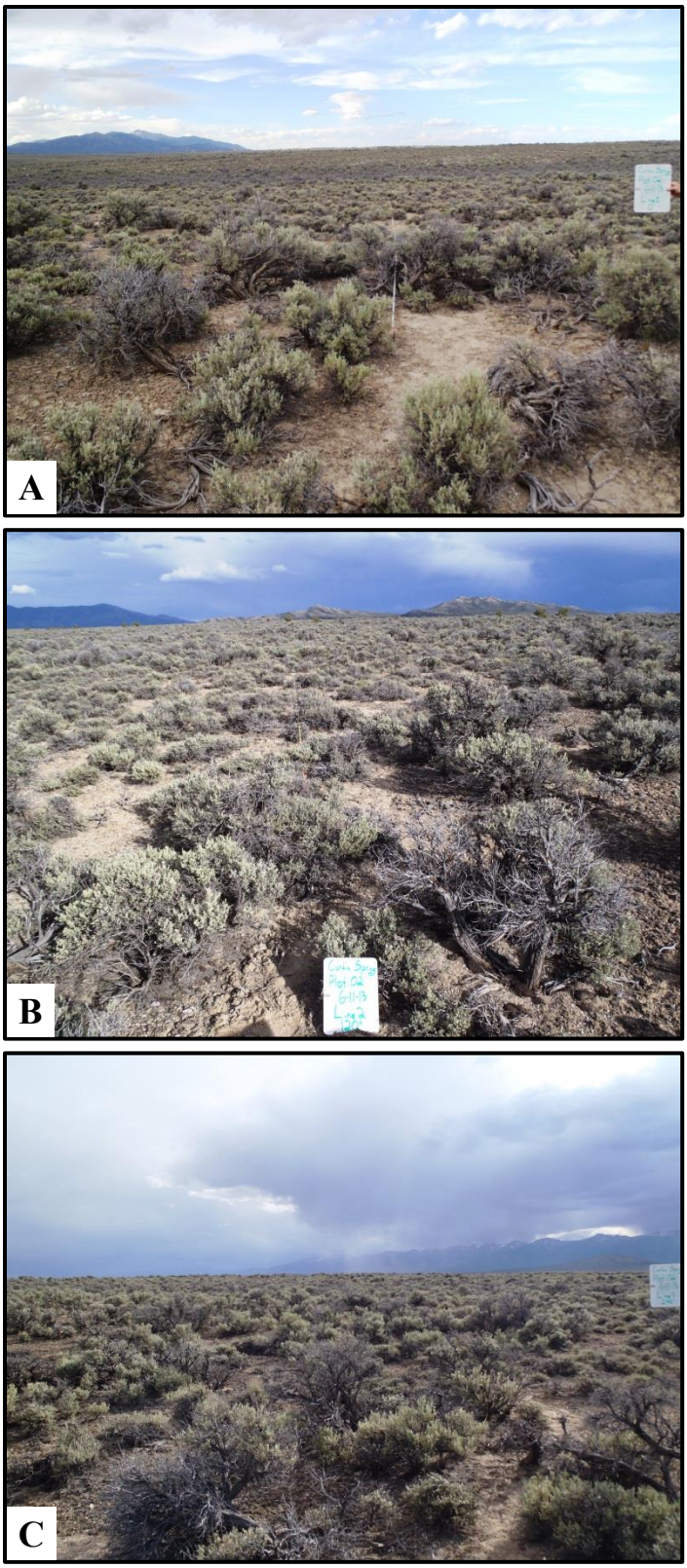


Figure 9. Assessment, Inventory, and Monitoring (AIM) site CS-04, transects A) 1, B) 2, and C) 3. Photos were taken on 11 June 2013.

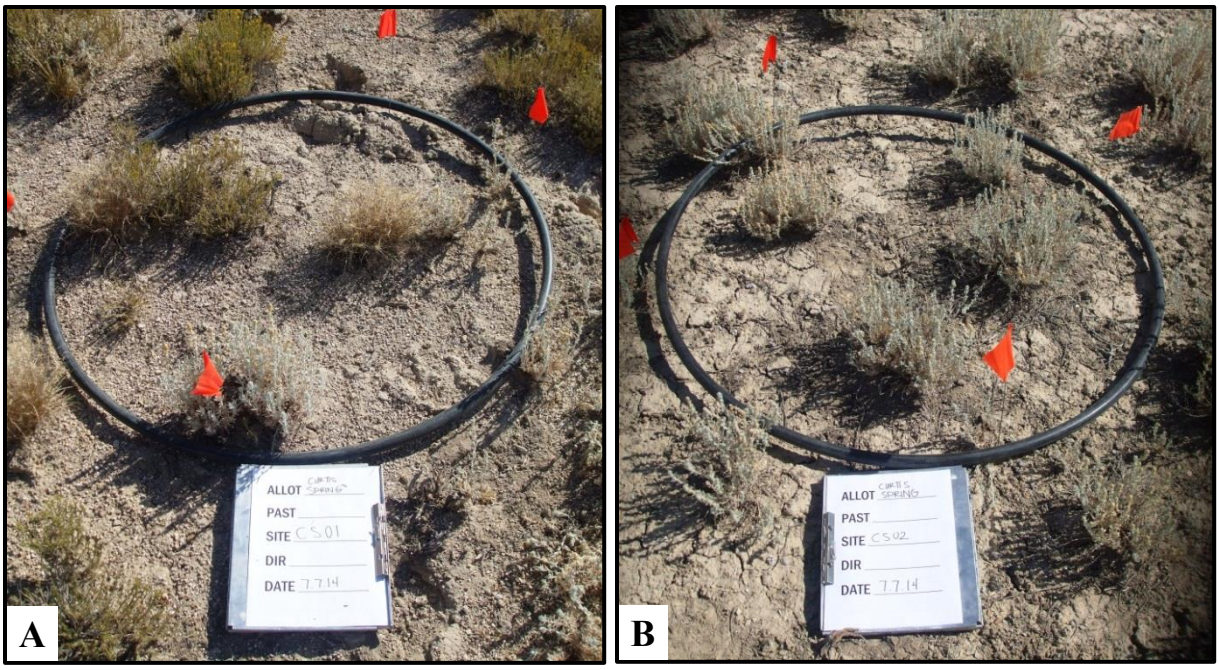


Figure 10. Production photographs at key areas A) CS-01 and B) CS-02. Both photos were taken on 03 July 2014 at the first production sampling location.

Figure 11. Photograph of the drill seeding area in the North Valley Fire, taken on June 04, 2015.

Figure 12. Photograph of the drill seeding area in the North Valley Fire, taken on June 04, 2015.

A.6. Cover and Height

Foliar and ground cover were measured at CS-01 and CS-02 using the point cover method (Swanson et al. 2006). Foliar cover by species, ground cover, and plant height data were collected at key areas CS-03 and CS-04 using the line point intercept method established by Canfield (1941) and modified by the AIM protocol (Toevs et al. 2011). The variables collected by these methods can be related to wind and water erosion, and soil infiltration and percolation, plant community composition, wildlife habitat suitability, and can be used to determine the ability of the site to resist and recover from degradation (Herrick et al. 2005). Cover data at each key area was interpreted within a general rangeland health framework and then compared to ESD data. These results are summarized in Figure 13 and Table 7.

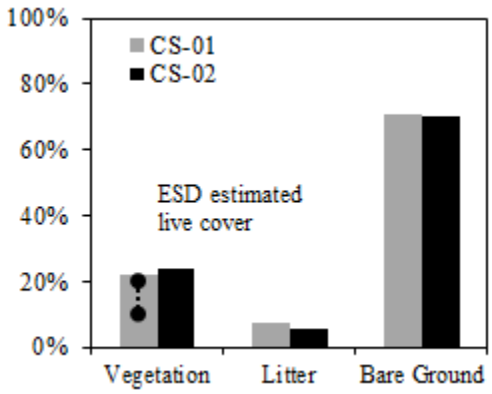


Figure 13. Cover values for CS-01 and CS-02. The dashed line represents the range in live cover estimated in the Ecological Site Description (ESD) common to both key areas. Data were collect in June 2011.

Table 7. Foliar cover (%), ground cover (%), and plant height (cm) at key areas CS-03 and CS-04. The "ESD Estimated" category shows the range in live cover values estimated in the Ecological Site Description (ESD) of each key area. Foliar cover values are independent of ground cover values (i.e. total foliar cover does not always equal 100%; total ground cover always equals 100%). Species abbreviations are as follows: black sagebrush (*Artemisia nova*; ARNO), Wyoming big sagebrush (*Artemisia tridentata* spp. *wyomingensis*; ARTRW), yellow rabbitbrush (*Chrysothamnus viscidiflorus*; CHVI), winterfat (*Krascheninnikovia lanata*; KRLA), and Sandburg bluegrass (*Poa secunda*; POSE). Data were collected in June 2013.

Category		**CS-03**	**CS-04**
Foliar Cover	ARNO	14.0	18.0
	ARTRW	8.0	14.0
	CHVI	2.0	--
	KRLA	0.7	--
	POSE	--	0.7
	Total	**24.7**	**32.7**
	ESD Estimated	**10-20**	**15-20**
Ground Cover	Cyanobacteria	--	28.6
	Gravel	15.3	10.7
	Lichen	--	4.7
	Moss	12.7	5.3
	Soil	70.7	50.0
	Basal Vegetation	1.3	0.7
Plant Height	Shrub	25.5	22.1
	Herb	2.5	1.6

A.8. Utilization

Utilization is an estimation of the proportion of annual production consumed or destroyed by livestock or wildlife (BLM 1999b; Swanson et al. 2006). The key species method (BLM 1999b) was used to collect utilization data on the Curtis Spring Allotment.

Utilization objectives in the Curtis Spring Allotment are centered on limiting annual use of winterfat and Indian ricegrass to 50% (BLM 2003). Utilization was sampled five times between 2003 and 2014 at key areas CS-01 and CS-02 and exceeded the 50% standard in 2003, 2007, and

2015 for Indian ricegrass and in 2007 for winterfat (Figure 14). Across all four years utilization averaged 59% and 34% for Indian ricegrass and winterfat, respectively.

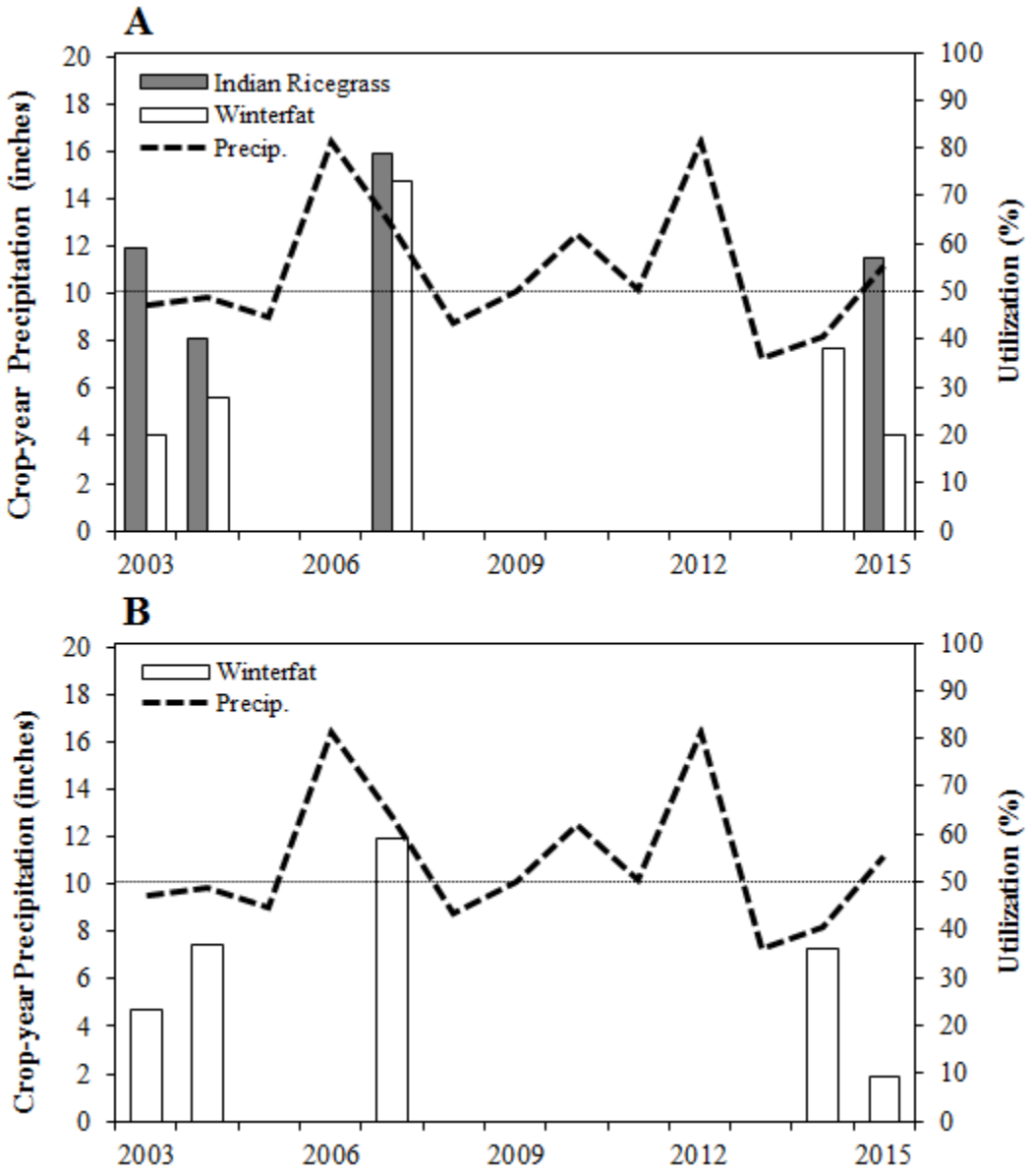


Figure 14. Utilization and crop-year precipitation data by for the Curtis Spring Allotment. The center dotted line indicates both 50% utilization and average 1985-2014 crop-year precipitation. Precipitation data was acquired from the PRISM Climate Group, and reflects precipitation received at Hequy Well (found in the southeast of the Allotment, see Appendix B, Map 1) in the year previous to when utilization was gathered. Precipitation from the previous year was used as use on the Curtis Spring Allotment occurs in the dormant season; cattle utilize forage that has grown in the previous year.

A.9. Sage-Grouse Habitat Ratings

Table 8. Habitat Ratings for Greater Sage-Grouse Breeding Habitat, Curtis Spring Allotment, June, 2013. Note, under habitat suitability, 1 = CS-03, 2 = CS-04.

Breeding Habitat Indicators	Habitat Suitability		
	Suitable	Marginal	Unsuitable
Average Sagebrush Canopy Cover (%) (Suitable=15-25%, Marginal=5 to <15% or >25%, Unsuitable= <5%)	1	2	
Woody Height (cm) – Arid Site (Suitable=30 to 80, Marginal=20 to <30 or >80, Unsuitable= <20)		1, 2	
Sagebrush Growth Form (Suitable=Spreading, Marginal= mix of Spreading and Columnar, Unsuitable=Columnar)		1, 2	
Average Herbaceous Height (cm) (Suitable= ≥18, Marginal= 10-18, Unsuitable= <10)			1, 2
Average Perennial Grass Canopy Cover (%) – Arid Site (Suitable= ≥10, Marginal= 5 to <10, Unsuitable= <5)			1, 2
Average Perennial Forb Canopy Cover (%) – Arid Site (Suitable= ≥5, Marginal= 3 to <5, Unsuitable= <3)			1, 2
Average cheatgrass cover (%) (Suitable = ≤5%, Unsuitable = >5%)	1, 2		
Preferred Forb Availability (total species) (Suitable= preferred forbs are common with several species present, Marginal= preferred forbs are common but only a few species present, Unsuitable= Preferred forbs are rare)			1, 2

Table 9. Habitat Ratings for Greater Sage-Grouse Late Brood-Rearing Habitat, Curtis Spring Allotment, June, 2013. Note, under habitat suitability, 1 = CS-03, 2 = CS-04.

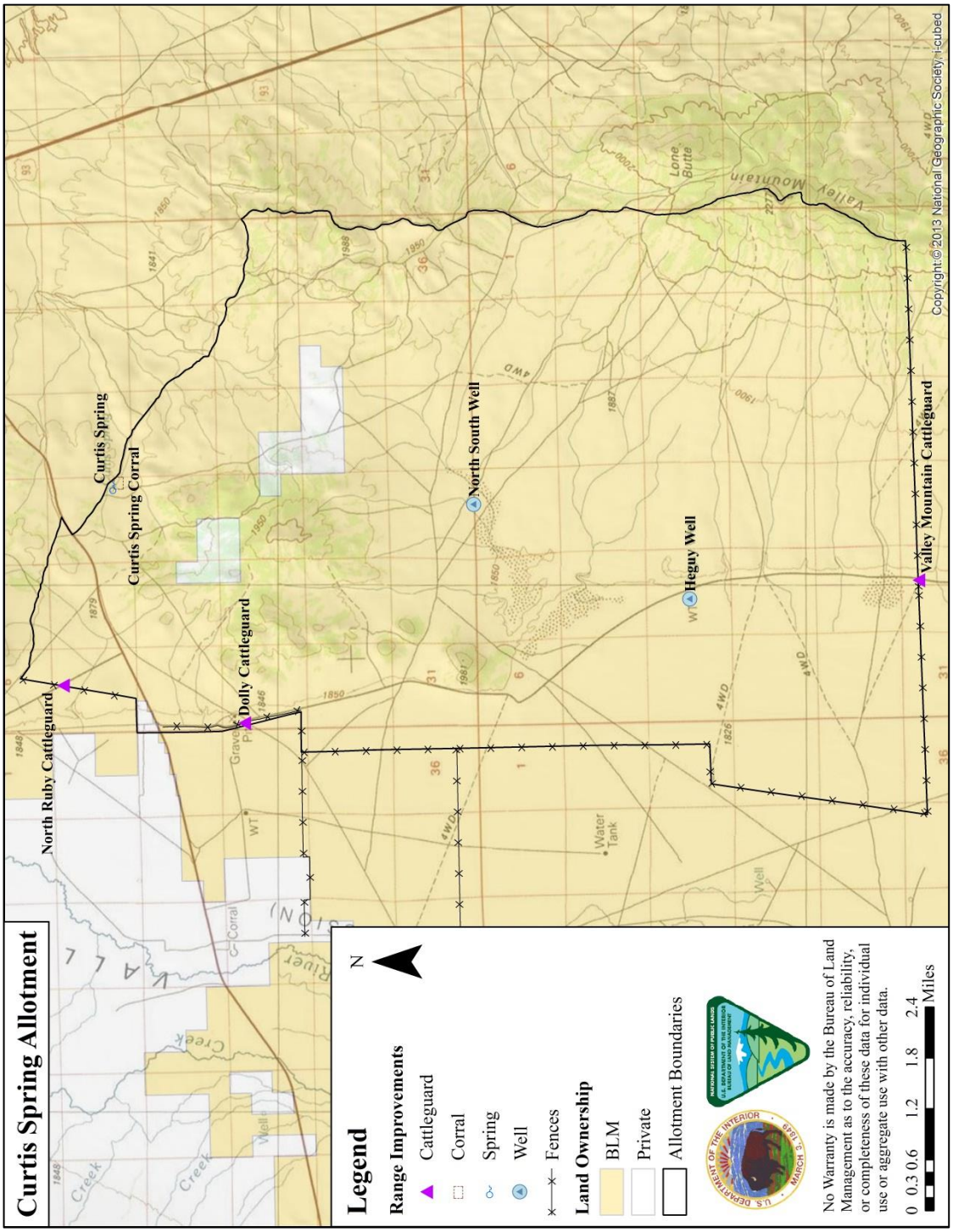
Late Brood-Rearing Habitat Indicators (Uplands)	Habitat Suitability		
	Suitable	Marginal	Unsuitable
Average Sagebrush Canopy Cover (%) (Suitable= 10-25, Marginal= 5 to <10 or >25, Unsuitable= <5)	1	2	
Woody Height (cm) (Suitable= 40-80, Marginal= 20 to <40 or >80, Unsuitable= <20)		1, 2	
Average Perennial Grass and Forb Canopy Cover (%) (Suitable= ≥15, Marginal= 5 to <15, Unsuitable= <5)			1, 2
Preferred Forb Availability (total species) (Suitable= preferred forbs are common with several species present, Marginal= preferred forbs are common but only a few species present, Unsuitable= Preferred forbs are rare)			1, 2

Table 10. Habitat Ratings for Greater Sage-Grouse Winter Habitat, Curtis Spring Allotment, June, 2013. Note, under habitat suitability, 1 = CS-03, 2 = CS-04.

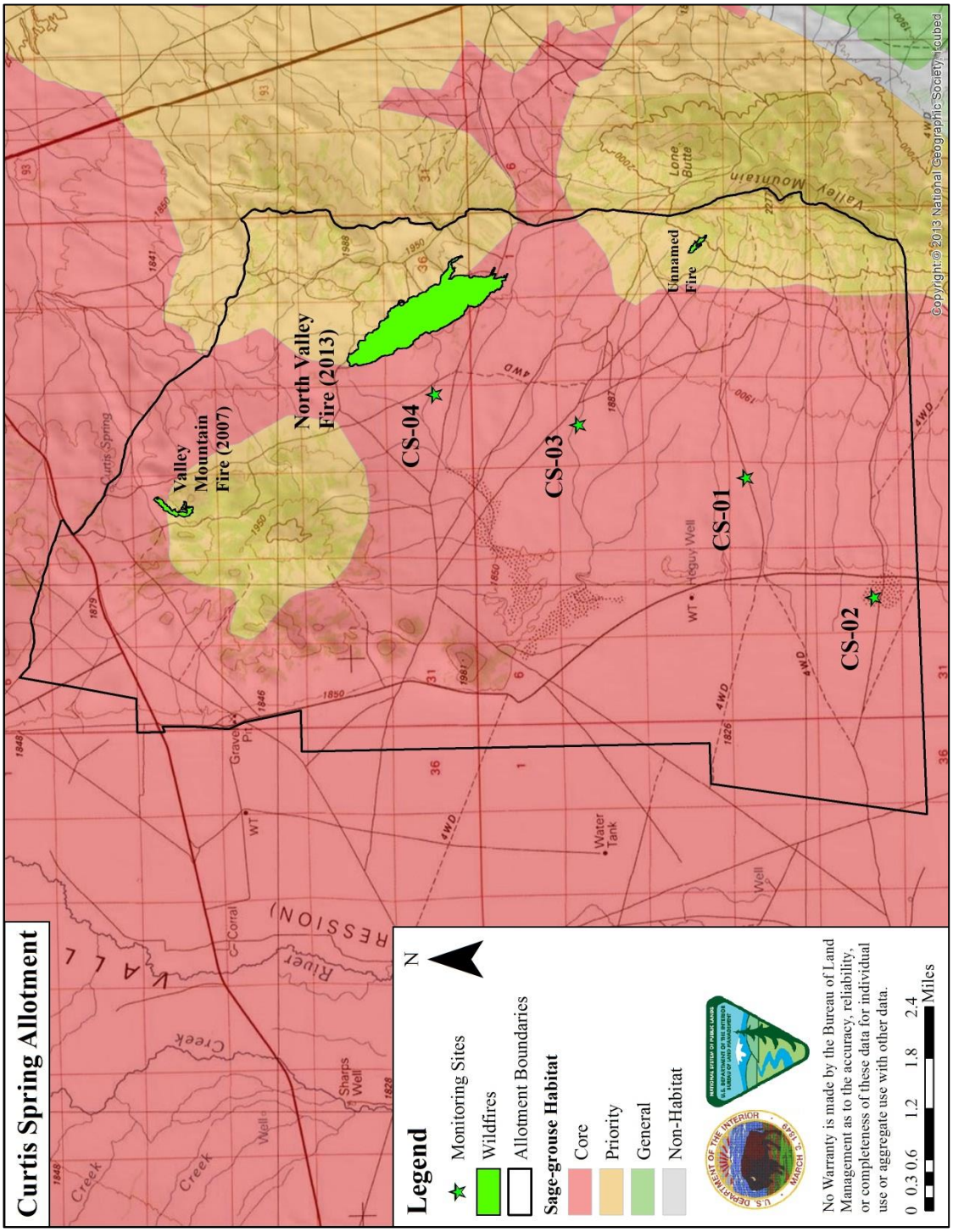
Winter Habitat Indicators	Suitable	Marginal	Unsuitable
Sagebrush Canopy Cover (%) (Suitable= ≥10, Marginal= 5 to <10, Unsuitable= <5)	1, 2		
Sagebrush Height (cm) (Suitable= >25, Marginal= >10 to <25, Unsuitable ≤ 10)	1	2	

Appendix B. Maps

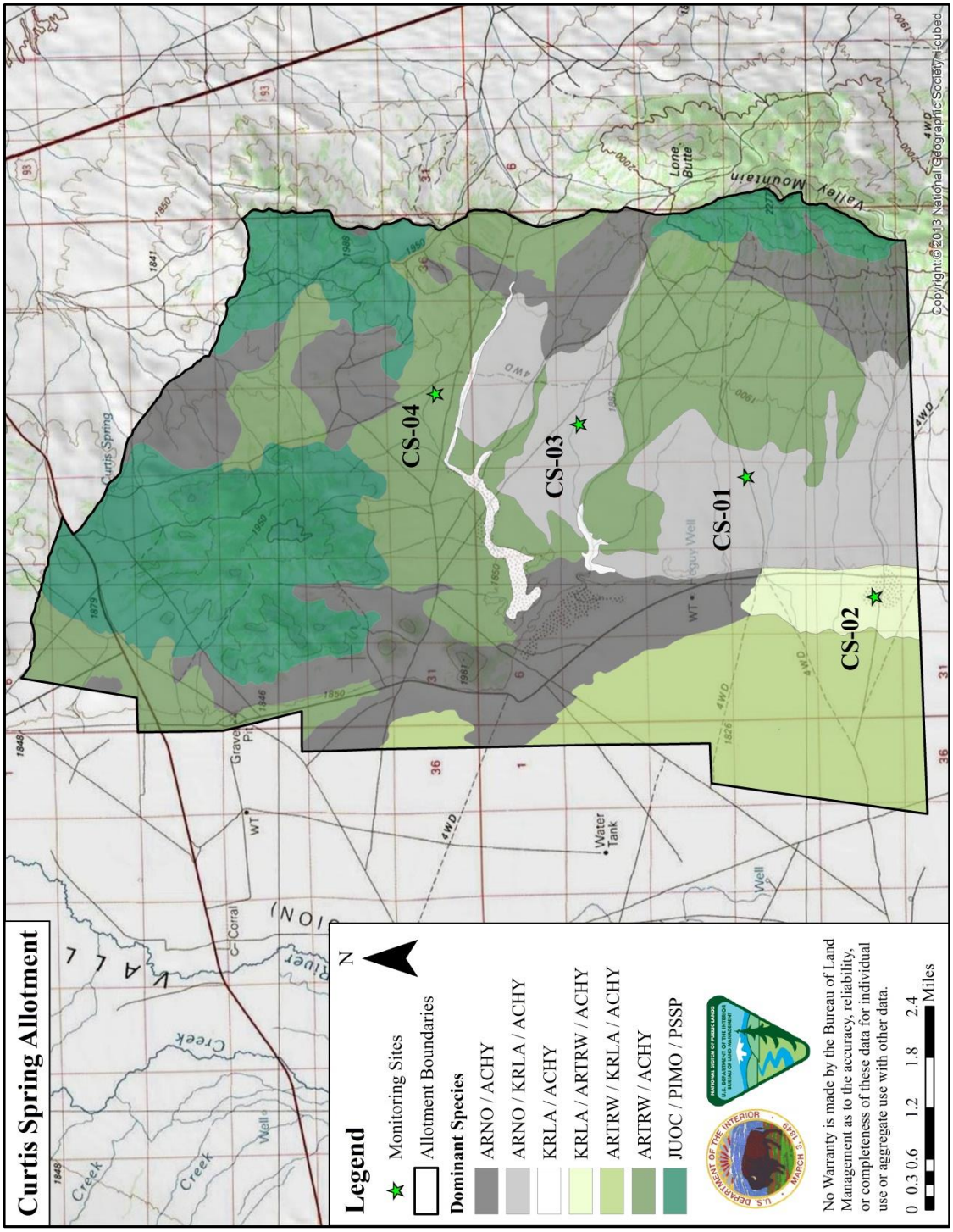
Map 1. Rangeland improvement projects and land status in the Curtis Spring Allotment.



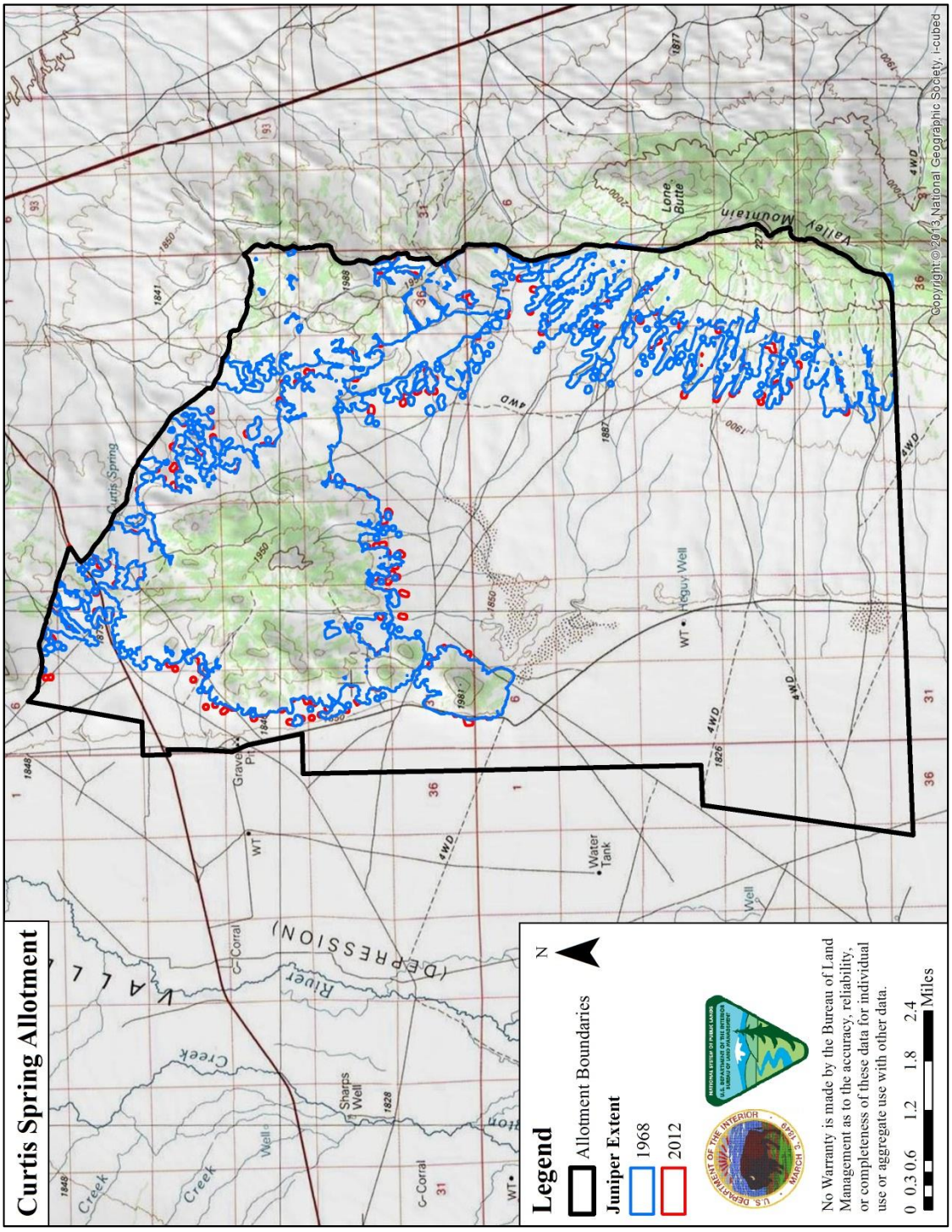
Map 2. Sage-grouse habitat and key areas found in the Curtis Spring Allotment. Wildfires displayed include all recorded fires since European settlement.



Map 3. Land cover types and key areas found within the Curtis Spring Allotment. ACHY, ARNO, ARTRW, JUOS, KRLA, PIMO, and PSSP stand for *Achnatherum hymenoides* (Indian ricegrass), *Artemisia nova* (Black Sagebrush), *Artemisia tridentata* spp. *wyomingensis* (Wyoming big sagebrush), *Juniperus osteosperma* (Utah Juniper), *Krascheninnikovia lanata* (winterfat), *Pinus monophylla* (singleleaf pinyon), and *Pseudoroegneria spicata* (bluebunch wheatgrass), respectively.



Map 4. Extent of Utah juniper (*Juniperus osteosperma*) within the Curtis Spring Allotment in 1968 and 2012.



Appendix C. Elko BLM Special Status Species

Scientific Name	Common Name	USFWS Status[1]	NV Range[2]	BLM Criteria[3]
Amphibians				
Rana pipiens	northern leopard frog		YR	1,2
Rana luteiventris	Columbia spotted frog (including Toiyabe spotted frog subpopulation)	Candidate	YR	1,2
Birds				
Falco peregrinus	Peregrine Falcon		YR	
Accipiter gentilis	Northern Goshawk		B	1
Aquila chrysaetos	Golden Eagle		YR	2
Haliaeetus leucocephalus	Bald Eagle		YR	1
Buteo regalis	Ferruginous Hawk		B	1,2
Buteo swainsoni	Swainson's Hawk		B	1
Centrocercus urophasianus	Greater Sage-Grouse	Candidate	YR	1
Charadrius alexandrinus nivosus	Western Snowy Plover	T	B	1,2
Lanius ludovicianus	Loggerhead Shrike		YR	1
Leucosticte atrata	Black Rosy-Finch		YR	2
Melanerpes lewis	Lewis' Woodpecker		YR	1
Gymnorhinus cyanocephalus	Pinyon Jay		YR	
Oreoscoptes montanus	Sage Thrasher		B	1
Fish				
Gila bicolor isolata	Independence Valley tui chub		YR	2
Gila bicolor newarkensis	Newark Velley tui chub		YR	2
Lepidomeda copei	Northern leatherside chub		YR	1
Oncorhynchus clarki henshawi	Lahontan cutthroat trout	T	YR	1,2
Oncorhynchus mykiss gairdneri	inland Columbia Basin redband trout		YR	2
Relictus solitarius	relict dace		YR	2
Rhinichthys osculus lethoporus	Independence Valley speckled dace	E	YR	1,2
Rhinichthys osculus oligoporus	Clover Valley speckled dace	E	YR	1,2
Salvelinus confluentus	Bull trout	T	YR	1,2
Mammals				

Antrozous pallidus	pallid bat		YR	2
Corynorhinus townsendii	Townsend's big-eared bat		YR	1,2
Euderma maculatum	spotted bat		YR	1,2
Eptesicus fuscus	big brown bat		YR	2
Lasionycteris noctivagans	silver-haired bat		YR	2
Lasiurus cinereus	hoary bat		B	2
Myotis californicus	California myotis		YR	2
Myotis ciliolabrum	western small-footed myotis		YR	2
Myotis evotis	long-eared myotis		YR	2
Myotis lucifugus	little brown myotis		YR	2
Myotis thysanodes	fringed myotis		YR	2
Myotis yumanensis	Yuma myotis		YR	2
Pipistrellus hesperus	western pipistrelle		YR	2
Tadarida brasiliensis	Brazilian free-tailed bat		YR	2
Brachylagus idahoensis	pygmy rabbit	petitioned	YR	1
Sorex preblei	Preble's shrew		YR	2
Ochotona princeps	pika		YR	1,2
Reptiles				
none				
Insects				
Euphilotes pallescens mattonii	Mattoni's blue butterfly		YR	2
Molluscs				
Anodonta californiensis	California floater		YR	2
Pygulopsis humboldtensis	Humboldt pyrg		YR	2
Pyrgulopsis villacampae	Duckwater Warm Springs pryg	petitioned 2009	YR	2
Pyrgulopsis vinyardi	Vinyards pyrg		YR	1,2
Tryonia clathrata	Grated tryonia	petitioned 2009	YR	1,2
Plants				
Antennaria arcuata	Meadow pussytoes	Species of Concern		1, 2
Astragalus anserinus	Goose Creek milkvetch	Candidate		1, 2
Boechera falcifructa	Elko rockcress	Species of Concern		1,2
Collomia renacta	Barren Valley collomia	Species of Concern		1, 2
Erigeron latus	Broad fleabane	Species of Concern		1, 2
Eriogonum beatleyae	Beatley buckwheat			1

Eriogonum lewisii	Lewis buckwheat	Species of Concern	1
Eriogonum nutans var. *glabratum*	Deeth buckwheat		1
Ivesia rhypara var. *rhypara*	Grimy mousetails	Former candidate	1
Lathyrus grimesii	Grimes vetchling	Species of Concern	1,2
Lepidium davisii	Davis peppercress	Species of Concern	1, 2
Leptodactylon glabrum	Owyhee prickly phlox	Species of Concern	2
Mentzelia tiehmii	Tiehm blazingstar		1
Penstemon idahoensis	Idaho beardtongue		2
Phacelia minutissima	Least phacelia	Species of Concern	2
Potentilla cottamii	Cottam cinquefoil	Species of Concern	1
Ranunculus triternatus	Obscure buttercup		1
Silene nachlingerae	Nachlinger catchfly	Species of Concern	1

[1]**Candidate**: Species for which the FWS has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act, but for which development of a proposed listing regulation is precluded by other higher priority listing activities.
Petitioned: petitioned for listing as a Threatened or Endangered species.
T: Listed as Threatened.
E: Listed as Endangered.
Species of Concern: An informal term used to refer to species that are declining or appear to be in need of conservation.

[2]**YR**: Year-round resident
B: Breeding season resident

[3]**1.** There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range, or
2. The species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk (From BLM Manual 6840-Special Status Species Management).

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