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LAKEVIEW DISTRICT

EA COVERSHEET

RESOURCE AREA: Klamath Falls

EA #: OR-014-04-04

ACTION/TITLE: Norcross Spring Vegetation Treatments

LOCATION: Klamath Falls Resource Area

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Environmental Assessment  
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**Norcross Springs Vegetation Treatments  
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## **1. Introduction**

### *1.1 Need for Action*

The abundance of western juniper (*Juniperus occidentalis*) has increased across large portions of the Lakeview District during the 20<sup>th</sup> century. In the Gerber Block (110,000 acres of contiguous BLM-administered lands in eastern Klamath County), the cover and density of western juniper has increased in shrub/bunchgrass and pine ecological communities, as well as in communities with a historically large juniper component (BLM and USFS, 2003). Increases in the density of ponderosa pine trees occurred simultaneously. Increased abundance of conifers (especially junipers) affects numerous physical and ecological processes, including rates of water infiltration and runoff; water use by transpiration; competition between grasses, shrubs, and trees; and fuel loading (BLM and USFS, 2003). Management intervention is needed to reduce the density and extent of juniper and, to a lesser degree, ponderosa pine in plant communities historically dominated by grasses and shrubs.

Efforts to monitor the effects of juniper encroachment and of management actions designed to address juniper encroachment are ongoing in the Lakeview District and across the Great Basin. Nonetheless, increased information regarding the response of ecologic and hydrologic processes to juniper management would be of use to land managers.

This project would address the effects of increased juniper density and canopy cover in portions of the Gerber Block. In addition, monitoring that would be integrated with the design of vegetation treatments would be used to enhance our understanding of the effects of juniper management.

### *1.2 Location*

Proposed vegetation treatments and monitoring activities would include a large-scale project in the vicinity of Norcross Spring and three much smaller projects in the vicinity of Bug, East Fork, and Alkali Springs.

The proposed treatment units are located as follows (see also Figure 1):

- Norcross Spring – Township 39S, Range 14E, sections 10, 11, 14, and 15;
- Bug Spring – Township 40S, Range 15E, section 32;
- East Fork Spring – Township 41S, Range 14.5E, section 2; and,
- Alkali Spring – Township 41S, Range 14.5E, section 2.

### *1.3 Conformance with Applicable Land Use Plans*

The proposed treatments are in conformance with the following Plans and Environmental Review Documents:

- Klamath Falls Resource Area Record of Decision and Resource Management Plan (KFRA ROD/RMP) (1995);
- Final Klamath Falls Resource Area Management Plan and EIS (KFRA FEIS) (1994),
- Vegetation Treatment on BLM Lands in Thirteen Western States FEIS and ROD (1991);
- Supplement to the Northwest Area Noxious Weed Control Program FEIS and ROD (1987);
- Rangeland Reform '94 FEIS and ROD (1995);
- Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the States of Oregon and Washington (1997);

In addition, the following reference materials were used in the development of this document:

- The Gerber-Willow Valley Watershed Analysis was completed in July of 2003. It provides both historical and current information on the different resources in the watershed and also provides a number of recommendations for resource protection and restoration opportunities.
- Completed *Rangeland Health Standards Assessments* for the Horsefly (completed 1999), Dry Prairie (1999), Timber Hill (1999), and Willow Valley (2000) allotments;
- The supporting science from the Interior Columbia Basin Ecosystem Management Project / Eastside Draft Environmental Impact Statement / May 1997 (ICBEMP).

## **2. Alternatives**

### *2.1 Alternative 1 – Proposed Action*

The proposed action includes two components: the Norcross Spring treatment unit and the Bug, East Fork, and Alkali treatment units.

#### Norcross Spring Treatment Unit

In the Norcross Spring treatment unit, a combination of mechanical and manual treatments would be implemented on approximately 1,190 acres (including 160 acres of private land) in the vicinity of Norcross Spring (Figure 2). Treatments would be implemented over a two to four year period, with the first stage focused on areas upslope or adjacent to tributary streams and springs (Figure 3).

Encroaching juniper would be removed from the entire treatment unit, except for relatively small “no treatment” areas designated as components of the monitoring program. Juniper trees greater than approximately 130 years old would not be cut. Ponderosa pine stands would be thinned to a basal area of 60 to 100 square feet per acre. Prescriptions for juniper removal would be designed to incorporate various combinations of ecological characteristics and treatment methods. For example, “lop and scatter”, “cut and pile”, and commercial utilization sub-units could be implemented within different portions of a given ecological type. Selection of treatment methods would also consider slope and logistical constraints. Piles would be burned following project implementation.

In addition to the larger treatment units, one or two sets of four to eight small (approximately 0.5

to 3 acre) “demonstration plots” would be installed. In each replicated set, a different treatment would be implemented in each demonstration plot. These may include:

- No treatment (control);
- Mechanical cutting and utilization;
- Mechanical pile and burn;
- Manual pile and burn;
- Manual cutting, with approximately 15% of material scattered and remainder piled and burned;
- Manual cutting, with approximately 5% of material scattered and remainder piled and burned; and,
- Mechanical cutting, with approximately 15% of material scattered and remainder utilized.

In five units (totaling approximately 74 acres; Figure 3), juniper boles and limbs that were cut in 1993 will be mechanically treated to reduce fuel loading (Figure 9). Treatment will consist of mechanical chipping, piling, or mowing.

Cut trees would be extracted for commercial utilization from portions of the treatment unit. Less than one mile of access roads would be constructed; most of these roads would be obliterated following project implementation. Native grasses and shrubs would be seeded or planted on roads, skid trails, landings, and/or burn piles following project implementation.

Two to six small (approximately 3 to 5 acre) livestock enclosures would be constructed as part of the monitoring program. Various monitoring plots would be installed throughout the treatment unit, as funding allows. These plots would be designed to assess vegetation and soils conditions, and would complement spring discharge measurements and photo points.

#### Bug, East Fork, and Alkali Treatment Units

A combination of mechanical and manual treatments would be used to girdle, “cut and pile,” or “lop and scatter” encroaching juniper on the hill slopes above these springs (Figures 3 and 4). Each proposed treatment unit encompasses about 10 to 20 acres. Piles would be burned following project implementation. No roads would be constructed during project implementation. Because monitoring of these units would be limited to measurements of discharge from the springs, no monitoring plots would be installed.

#### *2.2 Alternative 2 – No Action*

The BLM would not utilize this analysis to engage in active management of encroaching juniper and densely stocked pine stands in the four proposed treatment units at this time, nor would the BLM undertake monitoring of ecologic and hydrologic processes affected by juniper management. Land management actions undertaken by the private landowner within the analysis area would not be limited or precluded under this alternative, although the BLM would not contribute to implementation of such actions.

### 3. Affected Environment

#### 3.1 Vegetation

##### Rangeland Vegetation Communities

The proposed treatment areas contain a mix of differing site potential vegetation communities, though virtually all the potential ecological sites either naturally include some juniper and/or have the potential for juniper invasion (Table 1). The only sites which have little to no potential for juniper encroachment/invasion are the *Ephemeral Meadow* and *Shallow Stony 10-20''* ecological sites. However, both are very limited in the proposed project areas.

The ecological condition of each site by allotment and pasture is listed in the Gerber-Willow Valley Watershed Analysis as follows:

- Norcross Spring – page 237 (Horsefly Allotment; Norcross Pasture),
- Bug Spring – page 218 (Bear Valley Allotment; South Pasture),
- Alkali Spring – page 274 (Timber Hill Allotment), and
- East Fork Spring – page 278 (Willow Valley Allotment; Antelope Pasture).

Virtually all of these sites were classified as either late seral or PNC (potential natural community) during the recent (1997-98) ESI, though most were noted to be in jeopardy of ecological status diminishment due to accelerating juniper invasion/encroachment (Figures 6 and 7).

**Table 1. Soil map units within the analysis area (BLM and NRCS 2001).**

Map Unit Name (Slope Range)	Associated Ecological Types (Precipitation Zone)	Extent
<i>Norcross Spring Treatment Unit</i>		
Norcross very cobbly loam (0-10%)	Stony Claypan (14-20'')	142 acres
Norcross-Dranket complex (0-8%)	Juniper Claypan (16-20'')	387
Mound cobbly loam (15-30%)	Pine-Sedge-Fescue (16-24'')	284
Schnipps-Mound complex (2-30%)	Pine-Mahogany-Fescue (16-20'') Pine-Sedge-Fescue (16-24'')	107
Menbo very stony loam (15-40%)	Pine-Mahogany-Fescue (16-20'')	253
<i>Bug, Alkali, and East Fork Treatment Units</i>		
Norcross-Dranket complex (0-8%)	Juniper Claypan (16-20'')	4 acres
Casebeer very stony loam (0-4%)	Shallow Stony (10-20'')	1
Bumpheads-Mound-Norcross complex (1-10%)	Juniper Dry Pine (14-16'') Pine-Sedge-Fescue (16-24'') Juniper Claypan (16-20'')	27
Jennett Loam (0-1%)	Claypan Bottom (12-18'')	5
Schnipps-Norcross Complex (2-15%)	Pine-Mahogany-Fescue (16-20'') Juniper Claypan (16-20'')	9
Mound-Benhall Complex (2-20%)	Pine-Sedge-Fescue (16-24'')	3
Boulder Lake-Hippyjim silty clay loams (0-1%)	Dry Meadow Ephemeral Lakebed	3

## Forested Vegetation Communities

BLM-administered lands in the proposed Norcross project areas total 1,030 acres. Of these, 187 acres of ponderosa pine are classified as “commercial” forest lands, capable of producing commercial timber on a sustained basis. These lands are included in the East Side KFRA allowable cut base acreage. None of these stands qualify as old growth (using the definition of Hopkins et al., 1993), although some have a large tree/old growth component of one to five trees over 20” dbh per acre. Generally, the north-facing slopes above Norcross Spring Road have larger, more contiguous stands due to higher available soil moisture. Pine stands on west and south-facing slopes tend to occur as relatively small clumps surrounded by juniper woodland. There is a significant amount of species variability in this area, with western juniper, mountain mahogany, and other shrubs mixing in with the pine in various densities. Past juniper management has been limited to five small (two to 25 acres) heavy cuts designed to release native grasses and shrubs for wildlife forage.

The pines stands directly above Norcross Spring Road have had the understory pine precommercially thinned in the 1970’s, and have been underburned. The overall stand has had two light selective cuts in the last 40 years. The smaller clumps on the west and south-facing slopes have largely been uncut, due to low volume and high logging costs (Figure 8).

Woodlands comprise most of the remaining project area. These are either areas of low pine stocking unable to produce timber on a sustained basis, due to low site (rocky, thin soils), or sites capable only of producing tree species classified as “noncommercial,” which is western juniper in this area. Some pine is present near Bug Spring; the Holbrook Prescribed Fire occurred near this area in 2003, but did not affect juniper encroaching into these pine stands.

## Special Status Plants

Within the Norcross Spring treatment unit there are two populations of fringed campion (*Silene nuda* ssp. *insectivora*), a Bureau Tracking species. The largest population is adjacent to and southwest of Norcross Spring. No special status plant populations are known to occur within the Bug, East Fork, or Alkali treatment units.

## Noxious Weeds

Within the Norcross Spring treatment unit, there are Canada thistle (*Cirsium arvense*) sites (NE/NE of Section 15 and NW/SW of Section 14), and one musk thistle (*Carduus nutans*) site (NE/SE of Section 15). No noxious weed populations are known to occur within the Bug, East Fork, or Alkali treatment units.

## *3.2 Soils*

Eleven distinct soil map units (either soil series or complexes of one or more soils series) exist in the analysis area (Table 1). Soils in the Norcross Spring treatment unit typically have high proportions of clay at or near the surface (i.e., within the A or B horizons), which reduces the rate at which water infiltrates into the soil. Cemented duripan layers are commonly found within

20 inches of the surface in Norcross and Dranket soils which occur on lower slope positions; these layers restrict the downward movement of water through the soil and further limit infiltration rates. As a result of low infiltration rates, soils in the Norcross Spring treatment unit are prone to generating overland runoff (Table 2).

The most extensive soils in the Bug, Alkali, and East Fork treatment units also have moderate to high potential for generating runoff. Although restrictive duripan layers are less common in these soils, high proportions of clay in upper horizons limit infiltration rates.

### 3.3 Hydrology and Water Quality

Hydrologic features in the analysis area include stream channels, springs, and small seasonally-inundated riparian wetlands. The Norcross Spring treatment unit is drained by a network of ephemeral and intermittent stream channels. The treatment unit includes the headwaters of two channels, while a third tributary channel drains a large area north of the unit. Norcross Spring and Caseview Spring provide perennial flow, although evapotranspiration losses prevent the small (approximately 0.3 gallons per minute total) discharge from these springs from flowing downstream as surface water. In the three smaller treatment units, the primary hydrologic features are developed springs. Flow from the five developed springs in the analysis area has been monitored since 2001.

**Table 2. Hydrologic characteristics of soil map units within the analysis area (BLM and NRCS 2001).**

Map Unit Name (Slope Range)	Hydrologic Group	Surface Permeability
<i>Norcross Spring Treatment Unit</i>		
Norcross very cobbly loam (0-10%)	D – High runoff potential	0.11-0.14 inches/hour
Norcross-Dranket complex (0-8%)	D – High runoff potential C – Moderate runoff potential	0.11-0.14 0.10-0.14
Mound cobbly loam (15-30%)	C – Moderate runoff potential	0.6-2.0
Schnipps-Mound complex (2-30%)	C – Moderate runoff potential C – Moderate runoff potential	0.2-0.6 0.6-2.0
Menbo very stony loam (15-40%)	C – Moderate runoff potential	0.6-2.0
<i>Stan H, Alkali, and East Fork Treatment Units</i>		
Norcross-Dranket complex (0-8%)	D – High runoff potential C – Moderate runoff potential	0.11-0.14 inches/hour 0.10-0.14
Casebeer very stony loam (0-4%)	D – High runoff potential	0.2-0.6
Bumpheads-Mound-Norcross complex (1-10%)	C – Moderate runoff potential C – Moderate runoff potential D – High runoff potential	0.6-2.0 0.6-2.0 0.2-0.6
Jennett Loam (0-1%)	C – Moderate runoff potential	0.2-0.6
Schnipps-Norcross Complex (2-15%)	C – Moderate runoff potential D – High runoff potential	0.2-0.6 0.2-0.6
Mound-Benhall Complex (2-20%)	C – Moderate runoff potential	0.6-2.0
Boulder Lake-Hippyjim silty clay loams (0-1%)	D – High runoff potential D – High runoff potential	0.2-0.6 0.06-0.2



As discussed above, vegetation and soil conditions cause the analysis area to be prone to generation of surface runoff. Increased densities of juniper and pine have increased canopy interception and increased evapotranspiration (especially during the peak precipitation period) (see pages 165 to 169 in the Gerber-Willow Valley Watershed Analysis for more discussion). Water use by these conifers reduces water available for use by native shrubs and grasses, and likely reduces soil moisture in riparian areas. In addition, juniper located near the discharge areas of springs likely consumes water that would otherwise be discharged as flow from springs.

Reduced densities and vigor of understory vegetation due to juniper encroachment and livestock grazing can result in reductions in the supply of organic matter to soils. This, in turn, may reduce the moisture-holding capacity of the upper soil horizon. Additionally, reduced organic litter can result in reduced soil surface roughness and, therefore, reduced “detention” and subsequent infiltration of overland flow.

Excess delivery of fine sediment to streams is the primary water quality concern in the analysis area. This may be caused by bank erosion, roads, and surface erosion from hill slopes. In general, the same factors responsible for reduced infiltration are responsible for increased surface erosion.

### *3.4 Wildlife and Fisheries*

#### Special Status Species

There are six special status species that may occur in the vicinity of the proposed project. A complete description of these species and their habitats is located in the Gerber-Willow Valley Watershed Analysis pp. 95-108 (BLM and USFS, 2003).

#### **Bald Eagle** (Federally Threatened)

No federally threatened or endangered species occur within the planning unit boundaries. There is one bald eagle nest territory within .25 mile of the proposed Alkali treatment unit. The nest was located in 1994 and to date, there has been no reproduction documented at this site (Isaacs and Anthony, 2002). There was a pair of adult bald eagles seen at the reservoir in 2002 but no nest found.

#### **Sage Grouse** (Federal Species of Concern, Bureau Assessment Species)

The proposed project lies on the eastern edge of the historic range of the Western Sage Grouse. Sage grouse are generally found where there is relatively large open sage brush stands with few trees or perches for aerial predators to roost and a variety of sage steppe habitats for their life cycle requirements (breeding, brood rearing, nesting, etc.) Much of these larger tracts of low and big sagebrush habitat are currently dominated by young juniper that have encroached into the sagebrush steppe. There are five historic sage grouse leks (Casebeer Ranch, North Gerber, Bumpheads, Round Valley and Dry Prairie) within the Gerber block. The closest Lek site (<.5 mile) from the project area is the Casebeer Ranch Lek. Surveys over the last several years by BLM and ODFW personnel have not detected use by sage grouse at any of the known Lek sites during the breeding season. Although there has been no evidence of use at the Lek sites since the

late 1980's, in the past few years there have been a few incidental sightings of individual grouse and a report of one brood in the area.

**Black-backed/White-headed Woodpecker** (Federal Species of Concern, Bureau Assessment Species)

Both species are strongly associated with ponderosa pine especially late successional stands. Both have been documented in the Gerber Watershed and may utilize the ponderosa pine stands in the proposed project area.

**Northern Goshawk** (Federal Species of Concern, Bureau Assessment Species)

The watershed analysis indicated that there is approximately 2,258 acres of suitable nesting habitat within the Gerber Watershed. The ponderosa pine stands within the proposed project may contain some suitable nesting habitat for northern goshawks. No goshawk surveys have been conducted to date.

**Shortnose Sucker** (Federally Endangered)

Casebeer Creek, located approximately 1.25 miles from the Norcross Spring treatment area, is the nearest downstream waterbody that may provide spawning and rearing habitat for suckers. Although recent surveys of Casebeer Creek indicate that speckled dace and sculpin are present, no suckers were found. A downstream dam that had blocked upstream migration of sucker into Casebeer Creek recently washed out.

The distance to occupied sucker habitat and the ephemeral nature of connected streams suggest no effects would occur to shortnose suckers or other fish from the proposed project, and no further analysis is necessary.

Other Terrestrial Wildlife

A complete description of the ungulates, landbirds and their habitat that may be affected by the proposed is located in the Gerber –Willow Valley Watershed Analysis pp. 95-108. (BLM and USFS, 2003)

**Ungulates**

The proposed project area is primarily considered transitional and winter range for mule deer, although the area does have year round residents. During the fall and winter months deer move into the area from their higher elevation summer ranges and congregate in the lower elevation to avoid higher snow depths and find available forage.

Pronghorn are year round residents in the Gerber Block and have been seen in the general area of the proposed project. The majority of the Norcross unit is heavily encroached with young juniper, such that use at this time would be very limited.

The proposed project is in the South-Central Elk Management Zone for Roosevelt Elk. Elk populations in the area were estimated to include about 1300 animals in 1997, and have continued to expand since then (BLM and USFS, 2003). The project area is primarily used during migration and in the winter months, although there have been increased sightings earlier in the fall throughout the Gerber Block.

## **Landbirds**

Bird census stations are set up throughout the Gerber, including the Norcross unit. These point count stations were setup to gather baseline data and determine which sagebrush steppe species were present within sagebrush habitats with varying degrees of juniper encroachment and also to determine the change in species after juniper management activities were completed.

### *3.5 Fuels*

Fuels in the project area are composed of a mixture of fuel model 9 (pine stands), fuel model 2 (sagebrush-grasslands), and fuel model 6 (juniper stands). Frequent, low intensity ground fires occurred in pine stands prior to European settlement. Somewhat less frequently, the sagebrush-grasslands burned as well. These frequent fires prevented juniper from invading, and reduced fuel accumulations in the pine. An unnatural fuel type and load has accumulated due to the lack of fire across the project area. This is due to fire suppression, fragmentation, grazing, and loss of native burning. Suppression of the high intensity wildfire that is possible in this fuel bed is likely to have a high financial and ecological cost.

### *3.6 Cultural Resources*

Prehistoric and historical cultural resources are known to occur throughout much of the Gerber Reservoir / Norcross Spring area. Native American sites range from small lithic scatters to areas exhibiting evidence of intense utilization. Within the general area, historic sites are most commonly represented by small refuse scatters though ranching activities are known to have occurred in the area since the late 1800s.

The region was most likely used by the Modoc and/or Klamath peoples. On a map showing the Klamath territory, Spier (1930:8-9) shows that the area falls within the Modoc territory, but it is very near the boundary between the Klamath and Modoc. Similarly, Ray (1963:206-207) shows the Modoc territory extending north of the survey area but, close enough that there was probably some overlapping use of the area by Klamath peoples. Ray (1963:202) notes that the Modoc territory was divided into three geographic areas that were named after those who lived in those areas. Of these three areas, the *Kokiwa's* or “people of the far out country” were concentrated in the eastern portion of the Modoc territory. Stern (1998:447) refers to this same group as *Gogewa's*. The Klamath and Modoc shared a similar semi-sedentary lifestyle following an annual subsistence round based on local resource availability.

Beckham (2000) presents a thorough historical overview of the Gerber Block including the Norcross Spring area. Peter Skene Odgen, under the employ of the Hudson’s Bay Company, visited the Klamath Basin in 1826 when traveling south from the Williamson River and Upper Klamath Lake vicinity to the Lost River. After the initial exploration period (roughly 1826 through 1864), early historic economic activity centered on trapping, grazing, and lumber production. Shortly after the passage of the Taylor Grazing Act in 1934, the Gerber Block became one of the first grazing allotment in the nation. Dispersed livestock grazing and timber harvest continues through the present on BLM-administered lands.

### *3.7 Livestock Grazing*

All of the projects are located in relatively large grazing allotments that are under multi-pasture, rest or deferred grazing systems. The allotments and existing grazing use associated with each of the four treatment units are as follows:

- Norcross Spring – Located in the Norcross pasture of the Horsefly allotment. Grazing use in this project area occurs each year primarily in mid to late June (2-3 weeks use), with some minimal fall (October to mid-November) trailing-back-to-the-ranch use.
- Bug Spring – Located in the South pasture of the Bear Valley allotment. Annual grazing use occurs in July or early August after full vegetation growth.
- Alkali Spring – Located in the extreme north end of the Timber Hill allotment. Grazing use is deferred each year and occurs between early July and mid-August.
- East Fork Spring – Located in the Antelope pasture of the Willow Valley allotment. Grazing use occurs in 3 out of 4 years (rested 1 out of 4 years) for 3-4 weeks between May and late June.

### *3.8 Recreation/Visual Resources*

Recreational use of the proposed treatment/project areas generally consists of dispersed motorized and non-motorized uses such as camping, hiking, hunting, fishing, and wildlife viewing. No recreation sites are located within the project area, although the Stan H Springs primitive camp is within a few hundred feet of the Stan H treatment unit. Also, the planned Gerber-Miller Creek-Potholes hiking trail will be immediately below this treatment area. This project is expected to be completed by fall 2005.

The Norcross Spring treatment area is located in Visual Resource Management (VRM) class II areas. Class II objectives are to retain the existing character of the landscape. The Bug, Alkali, and East Fork treatment units are located in a VRM Class IV area. Class IV objectives are to allow for maximum modifications to the existing character of the landscape.

## **4. Environmental Consequences**

### *4.1 Vegetation*

#### Rangeland Vegetation Communities

Under the proposed action, the removal of invasive juniper from these areas will “push” the ecological status upwards as the more desired plant species will become a higher proportion of the plant community. However, the removal of juniper often results in a post-treatment “flush” of less desired – or totally undesired – annual grasses and forbs. This would “push” the ecological condition rating lower for the time period it takes (10-30 years is typical for the area) for the desired perennial plants to dominate over the annuals. This annual influx may not occur in the proposed treatment areas since most are already in late seral/PNC conditions and should be somewhat armored to an influx of undesirable plants, depending on the level of disturbance from the treatment activities themselves.

Under Alternative 2, juniper would not be removed and plant community succession would cause continued loss of shrubs and perennial grasses.

### Forested Vegetation Communities

Thinning of pine stands, as proposed, would most benefit stands not previously thinned. These stands occur as clumps, mostly on the south-facing slopes, and have not been economic to treat (due to high logging costs and low product value). After thinning, health and resiliency of these stands would be increased. Ladder fuels will also be reduced, lowering the risk of stand-replacing fire.

Invasive juniper would also be cut under the proposed action, removing juniper from large parts of the project area. While appearing to be a drastic change to the casual observer, this removal would eliminate an unnatural component to the grass and shrub communities. Individual old growth juniper, which will not be cut, would benefit by cutting of smaller, invasive juniper nearby.

Under Alternative 2 (No Action), pine stands (especially on the south-facing slopes) would continue to grow denser, and at some future point, undergo attack by mountain pine beetles attracted by the stressed trees. This would result in higher tree mortality and higher fuel loads. Invasive juniper would continue to compete with old growth trees, eventually resulting in mortality of the old trees.

### Special Status Plants

Under alternative 1, known special status plant populations will be identified and appropriate protection measures will be implemented, therefore, negative impacts to these populations are not expected. Protection measures can include flag and avoid, flagging of buffers around sites, or unit boundary adjustments. The use of a mechanical shearer or other mechanical equipment would have the potential for impacts to populations undetected by pre-project surveys.

Alternative 2 is the no action alternative. No new ground disturbing activities are proposed, therefore no impacts to special status plants would occur.

### Noxious Weeds Risk Assessment

Alternatives that result in the most ground disturbance could create conditions that favor the invasion of noxious weeds. The use of the mechanical equipment in Alternative 1 may create the disturbed conditions under which many noxious weeds have a competitive advantage. The vehicles and machinery entering the project area to implement these treatments would increase the potential for the introduction of noxious weeds into the area from sources outside the project area. Project design features for the prevention of the introduction of noxious weed seeds and plant parts would reduce the potential for the dispersal of these species into the project area.

The potential exists to spread known populations of noxious weeds as a result of project activities. Flagging and avoidance of these populations will reduce the potential to spread these

noxious weeds. Alternately, project design features to mow noxious weed plants to the ground and wash vehicles before leaving these areas would also reduce the potential to spread noxious weeds.

Alternative 2 (no action) would not create the physically disturbed conditions under which many noxious weeds have a competitive advantage.

#### *4.2 Soils*

Under Alternative 1, the type, extent, and severity of effects to soils in a given area would vary based on treatment prescriptions and soil characteristics. Direct impacts would include soil displacement and compaction due to mechanical equipment traffic, construction and subsequent decommissioning of roads, and volatilization of organic material due to burning of slash piles. Implementation of appropriate PDFs would limit the extent and severity of these impacts (see Section 5).

Indirect impacts resulting from implementation of Alternative 1 would include increased soil organic matter and increased soil surface roughness. These effects would result from both the influx of material from cut juniper (in the short-term) and the recovery of understory vegetation communities (in the long-term). During the period between juniper removal and the onset of these effects, certain areas may be susceptible to increased overland flow and increased surface erosion (discussed in the Hydrology section, below).

Increased growth of grasses and shrubs following juniper removal could attract more livestock use (especially in the three small treatment units), thereby causing slightly increased soil compaction.

Impacts resulting from implementation of Alternative 2 would include ongoing reductions in soil organic matter and soil surface roughness as juniper continues to displace desired understory grasses and shrubs. Likewise, soil moisture levels would continue to be reduced during certain seasons as a consequence of consumptive use by juniper.

#### *4.3 Hydrology and Water Quality*

Implementation of Alternative 1 would result in reduced water use by juniper and small diameter pines (interception and evapotranspiration) and increased soil moisture, especially in late winter and early spring. Removal of juniper in the vicinity of the discharge areas of springs would likely cause increased flow from these springs, especially in the late summer (when juniper currently consumes a relatively higher proportion of water available for discharge). This has been observed at Schnipps Valley Spring, which has produced higher flows since juniper removal in 2001/2002 (BLM Data).

In the years immediately following juniper removal, prior to the recovery of desired understory grasses and shrubs, decreased canopy interception could result in more rainfall reaching the soil surface, and at higher velocities. This could potentially result in “sealing” of soil surface pores, which would tend to reduce infiltration rates and increase runoff generation from portions of

some hill slopes. This impact would be greatest where utilization (and associated ground disturbance) occur in areas with shallow soils (conceptually similar to the discussion in Wilcox et al., 2003). Project Design Features include road and skid trail rehabilitation to mitigate impacts of utilization (see Section 5).

Project implementation would be unlikely to cause noticeable increases in runoff at scales larger than portions of hill slopes, because runoff would be detained and infiltrated in areas with lower slopes, coarser surface soil textures, and denser understory vegetation (Reid et al., 1999). Further, in the Norcross Spring treatment unit, cut material would be scattered or left on-site in some sub-units, thereby increasing the detention of overland flow (Wilcox et al., 2003). One of the purposes of the proposed project is to assess soil response to a variety of treatment prescriptions.

In the long-term, the effects of implementing Alternative 1 would include increased infiltration and decreased surface runoff. Recovered understory vegetation communities would consume some of the soil moisture previously utilized by juniper, but only during the summer growing season (not during the winter period when only conifers are physiologically active).

Impacts resulting from implementation of Alternative 2 would include continuation of high rates of water use by juniper and understory pines and ongoing deterioration of understory plant communities.

#### *4.4 Wildlife*

##### Special Status Species

##### **Bald Eagle**

Potential impacts to bald eagles from this project would come from human-caused disturbance associated with the project. Monitoring the bald eagle nest territory near the Alkali unit prior to implementation of the project would enable us to remove any detrimental impacts from the project. If the site was occupied and nesting occurred, seasonal restrictions (see PDF section) would remove any potential detrimental impacts from the project.

Removing juniper from around ponderosa pine and thinning dense ponderosa pine stands would be beneficial to bald eagles by maintaining current larger pines for nesting and roosting habitat as well as providing healthier and larger pines in the future.

Under Alternative 2, there would be no disturbance to bald eagles.

##### **Sage Grouse**

The project area is not currently suitable habitat for sage grouse. No use of the historic Lek near the Norcross project has been documented since 1987. The site should be monitored prior to implementation. If the Lek is found to be occupied, seasonal restrictions within ¼ mile of the Lek site would be implemented (see PDFs in Section 5).

The removal of the encroaching juniper will benefit sage grouse habitat. Removal of juniper from the site, piling and burning or skidding for utilization will delay the reestablishment of native vegetation in those pile burns, skidded areas and within the landings. Removal will also increase the likelihood of non-native species to occur within those disturbed areas. These disturbed areas would be a relatively small percentage of the land within the project area. The overall removal of juniper and seeding of native grasses and shrubs within the skid trails will be beneficial to sage grouse habitat by allowing native shrubs, forbs, and grasses to reestablish.

Under Alternative 2, there would be no disturbance to any sage grouse that may occur near the project area, but plant community succession would continue to limit the suitability of potential sage grouse habitat.

### **Black-backed/White-headed Woodpecker**

Juniper removal within the pine stands and the thinning of ponderosa pine stands should benefit both woodpecker species in the long-term by maintaining large live trees for foraging as well as leaving future snag trees. Leaving snags within the stand, especially those > 17" dbh, will meet RMP guidelines and benefit both species. There would be human caused disturbance from the implementation of the proposed project but this would be a short-term impact that would cease at the end of the project.

Under Alternative 2, there would be no disturbance to woodpeckers, but the vigor and growth of existing and future large live trees would continue to be affected by competition from juniper and pines.

### **Northern Goshawk**

There is potential for goshawks to occur in the ponderosa pine stands in the Norcross Unit. Surveys prior to implementation would address any issues of occupancy. The overall implementation of the project should in the long-term benefit goshawk habitat by increasing overall health of the pine stands. Leaving a multi-layered age class of pines, snags, and coarse woody debris would also maintain the structure necessary to provide optimal foraging habitat as well as nest structure.

Under Alternative 2, the vigor and growth of existing and future large live trees would continue to be affected by competition from juniper and pines.

### Other Terrestrial Wildlife

#### **Ungulates**

The project should benefit all ungulates (deer, elk, and pronghorn) that may utilize the area. The removal of juniper in the sagebrush steppe habitat will increase forage (grasses and shrubs) for ungulates. Disturbance will be a short-term impact and impact relatively few animals. The proposed project area is considered winter range area for all of these species and due to moisture restrictions most activity will occur in the dry summer/fall months when deer and elk are on their summer ranges.



Under Alternative 2, there would be no disturbance to ungulates, but plant community succession would continue to limit the abundance of desired forage species.

### **Landbirds**

Removing juniper and restoring the habitat to a sagebrush steppe will have both positive and negative impacts on local populations of landbirds. Those birds generally associated with juniper woodlands, gray flycatcher, American robins, Townsend's solitaire, scrub jays, will lose habitat for nesting and foraging. Those birds strongly associated with sagebrush steppe and grasses, sage thrasher, sage sparrow, brewer's sparrow, vesper sparrow, green-tailed towhee, western meadowlark will benefit from the removal of juniper and the planting of native grasses and shrubs. Maintaining all old growth junipers and all snags is important for cavity nesters.

Under Alternative 2, plant communities and associated landbird habitats would be maintained similar to current conditions, except that juniper would become more dominant over time and the area would be more susceptible to high intensity fire.

### *4.5 Fuels*

Under Alternative 1, removal of junipers would likely result in a flush of grasses and forbs. These continuous fine fuels support a more rapid fire spread than is currently possible. While a potential wildfire may spread more rapidly, it would be of lower intensity and spotting potential, making suppression efforts quicker, less intensive, less expensive, and safer. Lopped and scattered juniper will create a short term increase in potential fire intensity. This increased intensity will return to typical fuel model 2 levels once needles have dropped approximately 3 years later. Thinning the pine will create a more fire resistant stand that is also more favorable to safe and quick suppression activities due to lower intensity and spotting potential. The increased spacing of trees will allow prescribed fire to be implemented with lower risk of excessive mortality and escape. The reduction of fuels is necessary to protect ecosystem components and adjacent private lands from intense uncontrollable wildfire.

Under Alternative 2, juniper would likely continue to invade the sagebrush-grassland and fuels accumulate in the pine stand. These conditions increase the likelihood of an intense uncontrollable wildfire that would be financially and ecologically costly to safely suppress.

### *4.6 Cultural Resources*

Inventories for cultural resources have been conducted for nearly two-thirds of the proposed project area. The remainder (approximately 430 acres) will be surveyed prior to implementation. All cultural resources will be avoided during project activities. Thus, no environmental consequences are anticipated.

### *4.7 Livestock Grazing*

Decreased juniper allows for the increase in more desirable forage plants increasing the overall forage capacity of the range. Given that the BLM is not likely to increase permitted grazing use, the increase in forage would allow for lighter use levels on the rangeland resources and increases

the probability of increased ecological status and conditions. This would be considered a minor to moderate long term positive impact.

The small exclosures in the Norcross Spring project area would be a very minor short-term negative impact to grazing in that with portions of the pasture excluded the same amount of grazing use would be concentrated into a somewhat smaller area. However, the removal of juniper and commensurate increases in forage amounts would offset this within a 5-10 years or so. (Currently, the use levels in the Norcross Spring area - as measured by utilization point & mapping studies over the past 12 years - are typically appropriate.) The removal of 6 to 30 acres (minimum and maximum total of the proposed exclosures) of grazing area would not likely measurably affect observable utilization levels.

The removal of juniper has been found to act as a natural “magnet” to livestock – they will concentrate on the recently cut areas to the exclusion of other adjacent areas which have the same forage capability. Thus, there could be a short term negative impact to the smaller juniper treatment areas (all but Norcross Spring) from post-treatment cattle concentration.

Under Alternative 2, forage production and quality would continue to be affected by juniper encroachment, but shading near water sources would be maintained.

#### *4.8 Recreation/Visual Resources*

Only temporary, minimal disturbances to recreation visitors would occur during project activities. Short term disturbances to recreationists and adjacent landowners from noise and dust associated with fuel treatment activities in the project area can be expected.

For visual and scenic resources, VRM class objectives for the treatment area will be met. The alternatives propose vegetative treatments through thinning and removal of junipers and excess pine, with minimal road building. There would be no additional adverse effects to visual resources in excess of those previously described in the KFRA FEIS (pages 4-97 to 4-101) However, some additional project design features have been proposed to reduce the visual impact of harvesting along major roads, within VRM class II areas and within 1/4 mile of rural interface areas.

There would be no short-term impacts to recreationists or adjacent landowners under Alternative 2. Juniper would continue to be a dominant feature of hill slopes, which some might consider unnatural. The risk of high intensity fire and associated changes in scenery would not be reduced.

## **5. Project Design Features**

### *5.1 Vegetation and Noxious Weeds*

- Juniper older than approximately 130 years of age reserved from cutting should not be damaged. Juniper trees reserved from cutting will be identified based on characteristic growth forms that will be described in contract language.

- No cut areas may be designated near cultural sites, raptor nest trees, special status species, etc.
- Piles will be located to avoid damage to residual trees during pile burning. No piling would occur in wetland areas and areas associated with springs. Piles would be burned during periods with soil moisture sufficient to prevent long-term damage to soils and vegetation.
- A thin layer of borax would be spread on the top of larger ponderosa pine stumps to prevent infection by annosus root rot.
- All vehicles and equipment will be cleaned off prior to operating on BLM lands. Removal of all dirt, grease, and plant parts that may carry noxious weed seeds or vegetative parts is required and may be accomplished with a pressure hose.
- Noxious weeds in the immediate area of operations shall be mowed to ground level prior to the start of project activities.
- All equipment and vehicles operating off of main roads shall be cleaned off prior to leaving the job site when the job site includes noxious weed populations. Removal of all dirt, grease, and plant parts that may carry noxious weed seeds or vegetative parts is required and may be accomplished with a pressure hose.

## *5.2 Soils*

- No equipment operations will be allowed during the wet season (October 15 to June 1), unless waived by the contracting officer.
- No mechanical operations will be allowed during periods when soil moisture exceeds 20% at 6 inches depth, or when puddling is occurring.
- Designate skid trails prior to implementation of operations involving removal of cut material. Avoid placement of skid trails in areas with potential to collect and divert surface runoff (such as the bottom of draws).
- Residual slash will be placed upon skid trails upon completion of yarding.
- Skid trails may be seeded and/or planted with native species to accelerate recovery.
- Effort should be made to avoid displacement of soil and duff during piling operations.

## *5.3 Hydrology and Water Quality*

- No piling would occur within 50 feet of streambanks, except in special circumstances (such as narrow canyons). In all cases, no piling would occur within 10 feet of streambanks. Piles within 100 feet of stream channels should be kept as small as practical.

- Equipment paths across stream channels should be limited, and should be located in areas approved by the contracting officer where the channel is armored by bedrock or boulders. Cut material should not be pushed across stream channels.
- Best Management Practices regarding road design, construction, and obliteration are described in the KFRA RMP (Appendix D) and should be implemented.
- Slash and organic debris should be scattered on existing native-surface roads that exhibit evidence of overland flow and erosion, as well as on skid trails used during project implementation.

#### *5.4 Wildlife*

- Follow RMP direction in ponderosa pine stands by retaining at least 1.4 snag per acre that are at least 15-inches dbh and, on average, greater than 45 feet tall (snags may include live culls, snap-outs, or other defective green trees).
- Monitor bald eagle nest territory prior to implementation for the Alkali unit. If a pair of bald eagles are present and nesting provide a seasonal nest restrictions (Jan 1 – August 15) for activities within ¼-mile or ½-mile line-of-sight of the nest.
- Monitor the Casebeer Ranch Lek prior to implementation to determine if any use is occurring. If occupied, provide a seasonal restriction (March 1 – May 1) for activities within ¼-mile.
- Complete goshawk surveys in the Norcross Spring units prior to implementation. If goshawks are located, provide a nest buffer of up to 30 acres (to be managed on a site-specific basis to maintain or enhance habitat) and a seasonal restriction within ¼-mile of the nest (May 1 – August 31).

#### *5.5 Cultural Resources*

- Required cultural surveys will be completed prior to any ground disturbance. All sites located will be managed to minimize detrimental impacts.

#### *5.6 Recreation/Visual Resources*

- Leave a variety of size classes of trees and retain all large Ponderosa pine to maintain scenic quality along the Gerber County and Norcross Spring roads (within the VRM class II area).
- Maintain scenic quality within the VRM class II areas by minimizing the size of slash piles, minimizing the creation of large landings and/or log decks, cutting stumps close to the ground, and minimizing ground disturbance (skid trails, etc.) near major roads (listed above).

## 6. Consultation

A “No Effect” determination was made for all Federally Threatened and Endangered Species for the proposed project.

## 7. References

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## 8. Maps and Figures

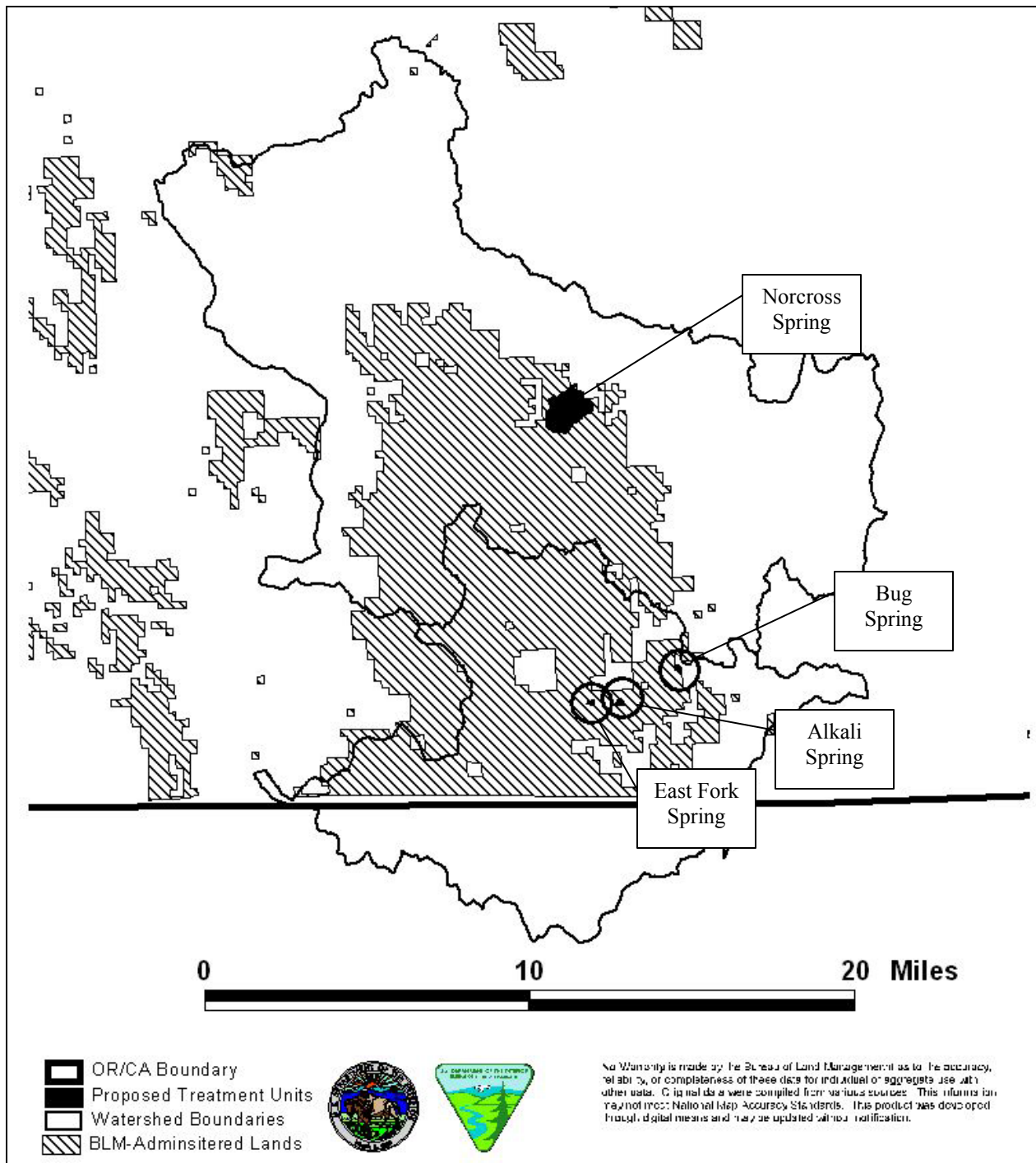


Figure 1. General location of proposed treatment units. The locations of the three smaller units are highlighted with circles.

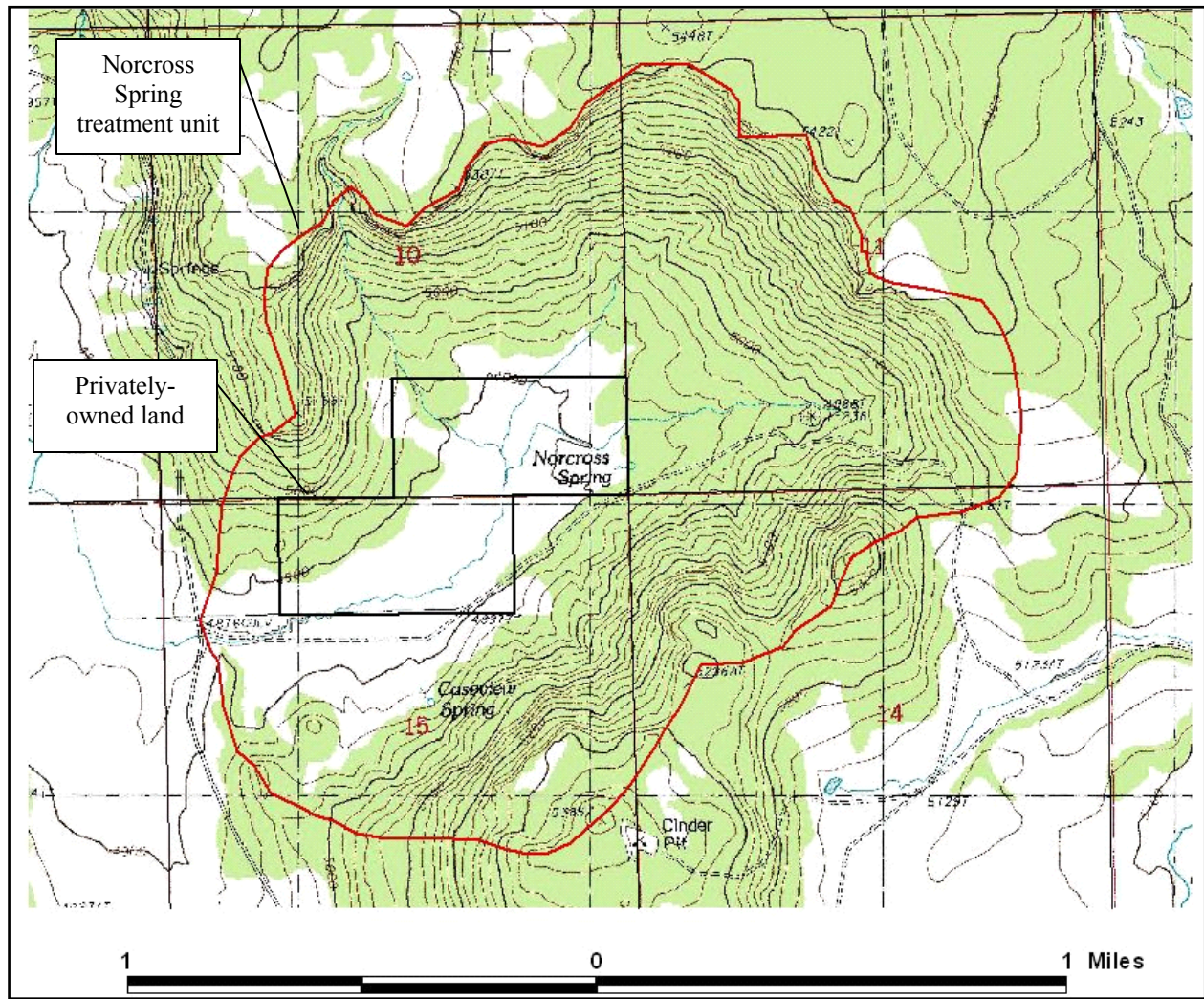


Figure 2. Location of proposed Norcross Spring treatment unit, including the 160 acre parcel of private land.

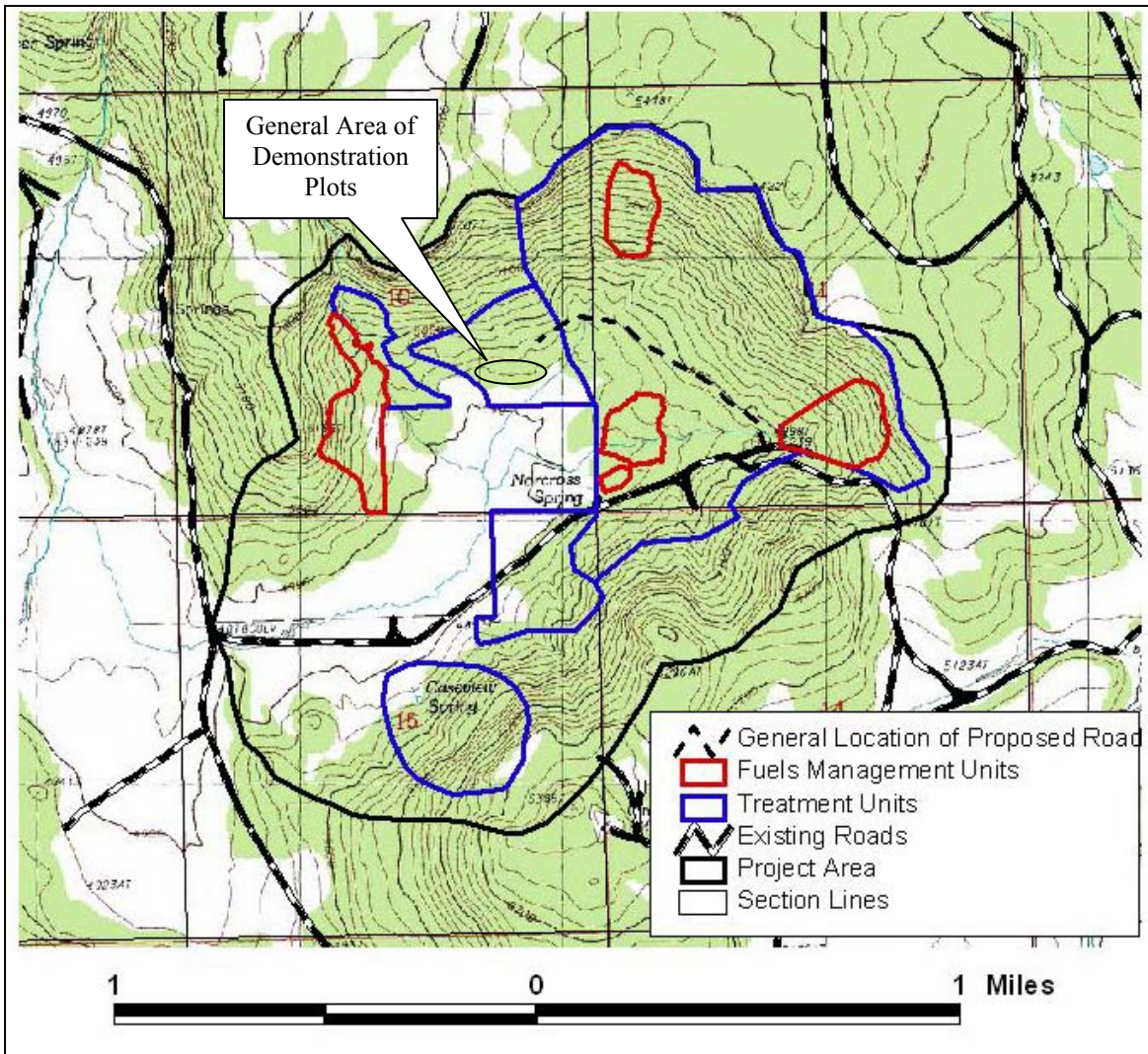


Figure 3. Proposed set of initial treatment units and demonstration plots.



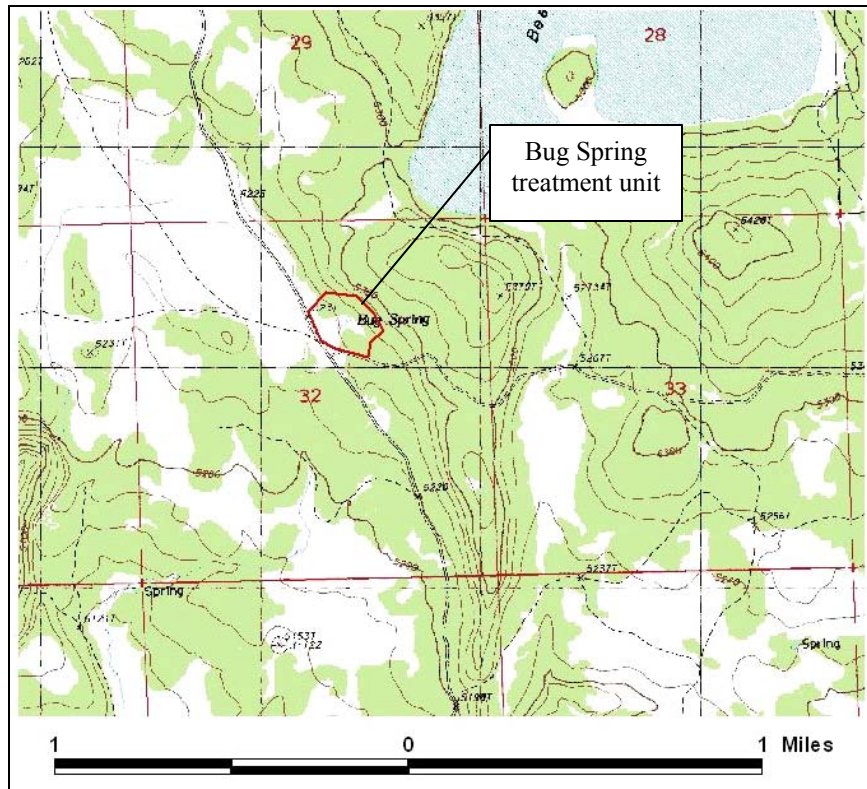


Figure 4. Location of proposed Bug Spring treatment unit.

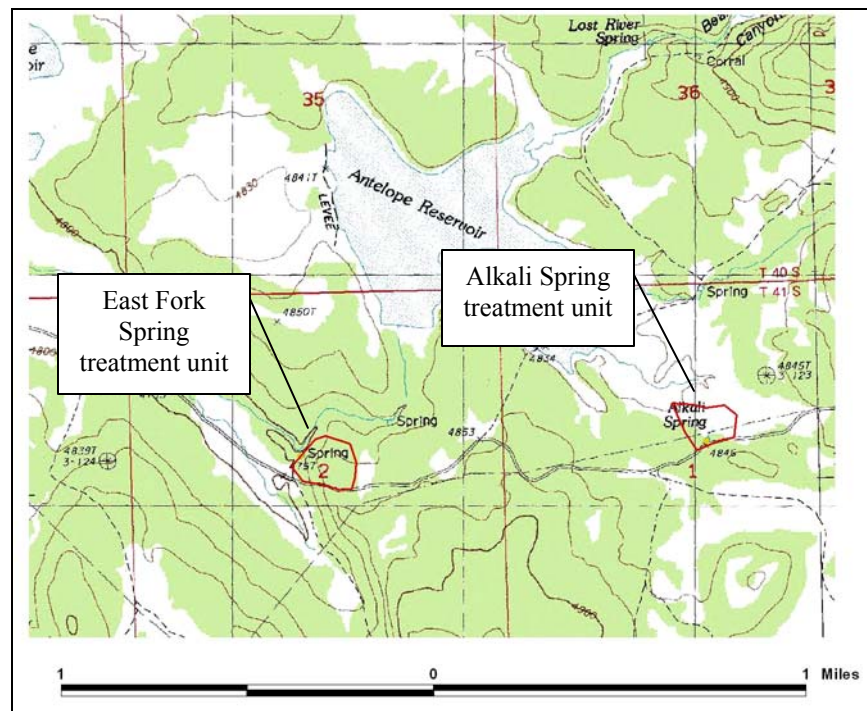


Figure 5. Location of proposed East Fork Spring and Alkali Spring treatment units.



Figure 6. Juniper encroachment onto valley-bottom and south aspect sites in the proposed Norcross Spring treatment area.



Figure 7. Example of juniper encroachment into Pine-Mahogany-Fescue ecological sites in the proposed Norcross Spring treatment area.



Figure 8. Example of ponderosa pine stands that would be thinned in the proposed Norcross Spring treatment area.



Figure 9. Example of previous juniper treatment units in the proposed Norcross Spring treatment area that would be entered again for fuels management and thinning of encroaching pines.