USDA-FOREST SERVICE FS-2500-8 (5/00)

Date of Report: 8/31/2001
Final Report 3/7/2003 jnoriega

**UPPER WILLOW WILDFIRE**
**BURNED-AREA REPORT**
**Santa Rosa Ranger District**
**Humboldt-Toiyabe National Forest**
(Reference FSH 2509.13)

## PART I - TYPE OF REQUEST

**A. Type of Report**

[ ] 1. Funding request for estimated WFSU-SULT funds
**[x] 2. Accomplishment Report**
[ ] 3. No Treatment Recommendation

**B. Type of Action**

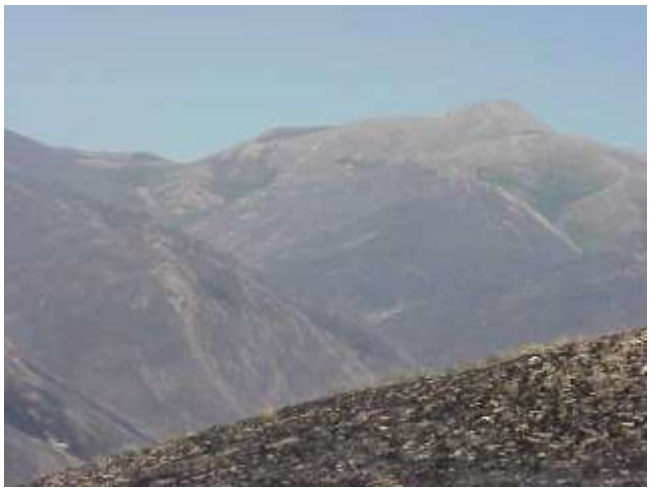
[ ] 1. Initial Request (Best estimate of funds needed to complete eligible rehabilitation measures)

[ ] 2. Interim Report
[ ]Updating the initial funding request based on more accurate site data and design analysis
[ ]Status of accomplishments to date

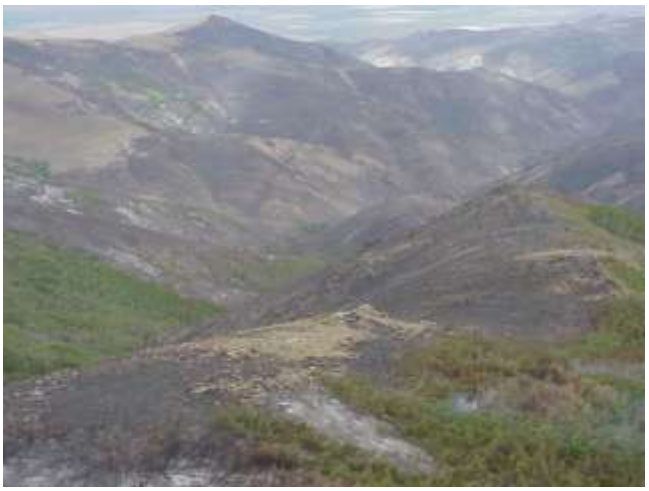
**[x] 3. Final report - following completion of work**

## PART II - BURNED-AREA DESCRIPTION

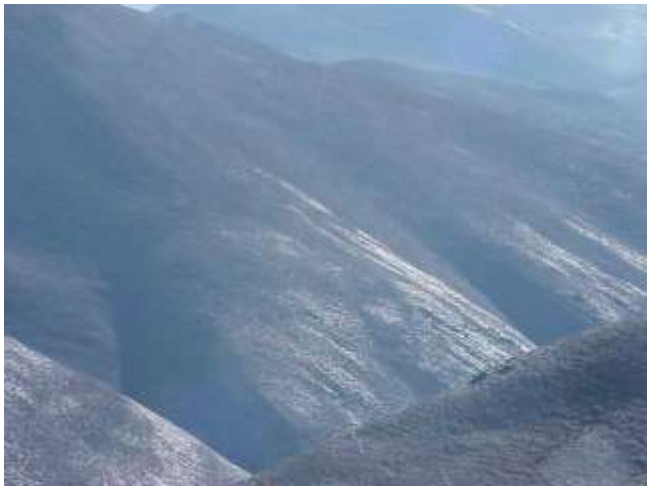
**A. Fire Name:** Upper Willow
**B. Fire Number:** NVC-NC-0254
**C. State:** Nevada
**D. County:** Humboldt
**E. Region:** R4
**F. Forest:** Humboldt-Toiyabe
**G. District:** Santa Rosa
**H. Date Fire Started:** 8/17/2001
**I. Date Fire Controlled:** 08/24/2001 **Contained:** 08/26/2001
**J. Suppression Cost:** $2.9 Million
**K. Fire Suppression Damages Repaired with -PF12 Funds:**
1. Fireline waterbarred (miles): 57
2. Fireline seeded (miles): 0
3. Other (identify): Fence repair - unknown length
**L. Watershed Number:** 16040109, 16040201
**M. NFS Acres Burned:** 26,362
**Total Acres Burned:** 41,830



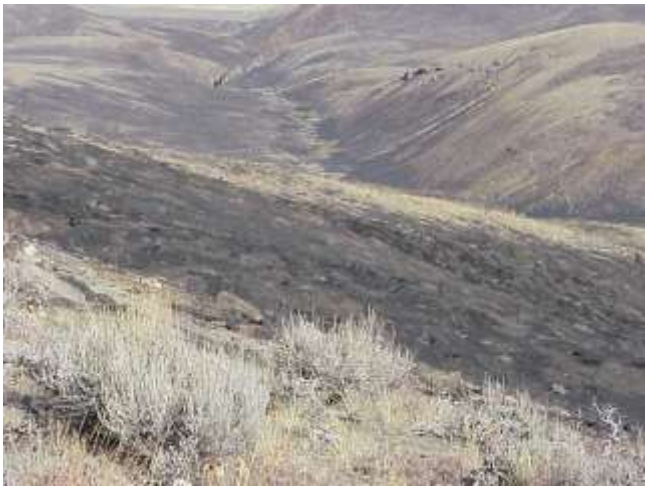
Upper Willow Burn near Granite Peak.



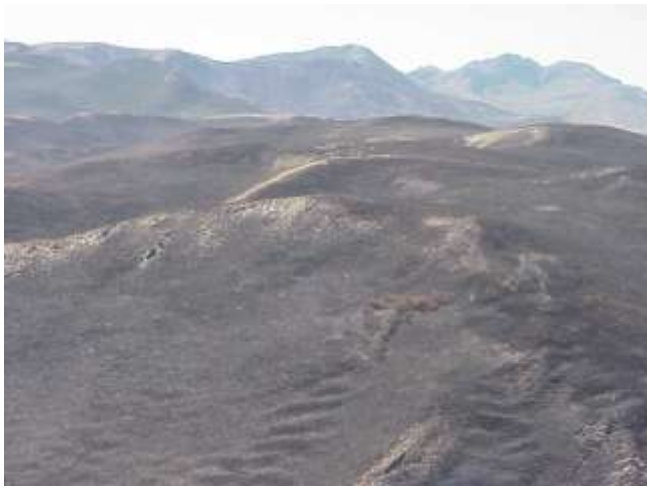
Upper Willow Burn near Granite Peak.



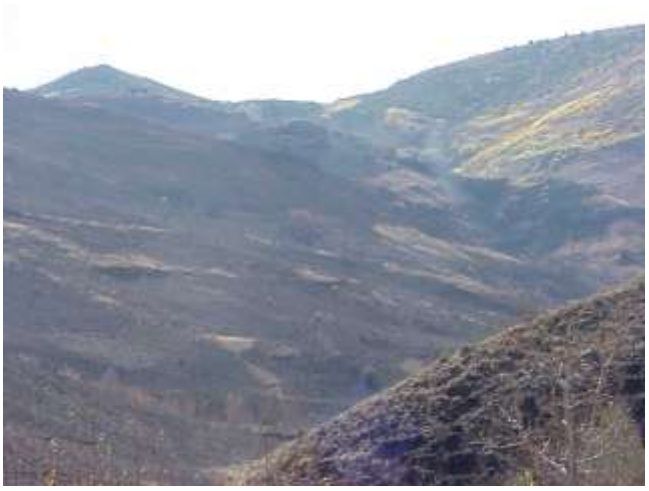
Upper Willow Burn near Willow Creek.



Upper Willow Burn.



Upper Willow Burn, note the lack of a mosaic pattern.



Upper Willow Burn near the Wilderness.

**Summary of All Ownership Within Burned Area**

| *Ownership* | *Total Acres Burned* | *Percent of Total* |
|---|---|---|
| BLM | 4,891 | 12% |
| BLM/PUBLIC WTR RESERVES | 40 | 0% |
| PRIVATE LAND | 7,074 | 17% |
| PRIVATE LANDS/USFS | 3,461 | 8% |
| USFS | 25,270 | 60% |
| USFS/PROTECTIVE WITHDRAWAL (PW) | 1,092 | 3% |
| **Total** | 41,828 | |

**N. Vegetation Types:** Mountain Big Sagebrush, Aspen, Willows, Cottonwoods, Grasses, Ceonothus/shrubs

**O. Dominant Soils:** borolls, orthids, and xerolls (gravelly or cobbly sandy loams)

**P. Geologic Types:** Volcanic

**Q. Miles of Stream Channels by Order or Class:**

| 1st order: | 2nd order: | 3rd order: | 4th order: | 5th order: |
|---|---|---|---|---|
| **128 miles** | **65 miles** | **33 miles** | **17 miles** | **7miles** |

**R. Transportation Systems:**

**Summary of All Roads Within Burned Area**

| *Ownership* | *Road Miles* |
|---|---|
| BLM | 5.1 |
| BLM/PUBLIC WTR RESERVES | 0.1 |
| PRIVATE LAND | 13.6 |
| PRIVATE LANDS/USFS | 4.0 |
| USFS | 23.5 |
| USFS/PROTECTIVE WITHDRAWAL (PW) | 1.1 |
| **Total** | 47.3 |

**Summary of System (Maintained) Roads Within Burned Area**

| *Ownership* | *Miles* |
|---|---|
| PRIVATE LAND | 1.61 |
| PRIVATE LANDS/USFS | 0.54 |
| USFS | 3.04 |
| **Total** | 5.19 |

**Summary of Non-System 4WD Roads Within Burned Area**

| *Ownership* | *Miles* |
|---|---|
| BLM | 5.08 |
| BLM/PUBLIC WTR RESERVES | 0.09 |
| PRIVATE LAND | 11.94 |
| PRIVATE LANDS/USFS | 3.49 |
| USFS | 20.43 |
| USFS/PROTECTIVE WITHDRAWAL (PW) | 1.09 |
| **Total** | 42.12 |

## PART III - WATERSHED CONDITION

**A. Fire Intensity (acres):**

| Unburned | Low | Moderate | High |
|---|---|---|---|
| **107 acres** | **16,785 acres** | **23,117 acres** | **1,821 acres** |

**B. Water-Repellent Soil (acres):** 1,821 acres

**C. Soil Erosion Hazard Rating (acres):**

| Low | Moderate | High |
|---|---|---|
| **267** | **8,246** | **33,317** |

**D. Erosion Potential:** Pre-fire 0.4 tons/acre, Post-fire 1.7 tons/acre

**E. Sediment Potential:** 956 cubic yards / square mile

## PART IV - HYDROLOGIC DESIGN FACTORS

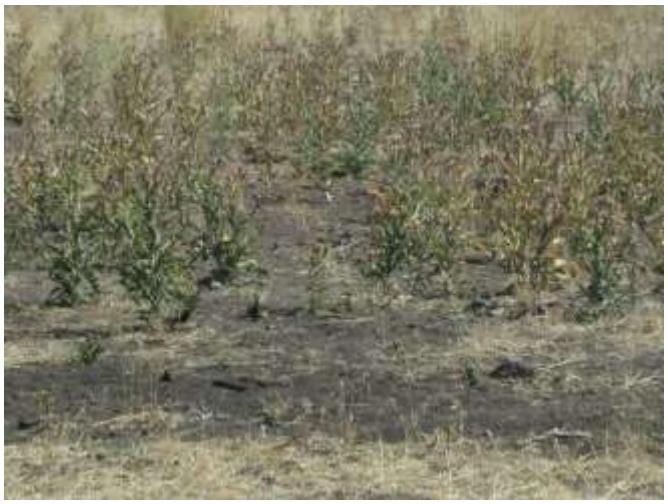
**A. Estimated Vegetative Recovery Period:** 3-5 years
**B. Design Chance of Success:** 50 percent
**C. Equivalent Design Recurrence Interval:** 5 years
**D. Design Storm Duration:** 1 hour
**E. Design Storm Magnitude:** 0.6 inches
**F. Design Flow:** 188 cubic feet per second per square mile
**G. Estimated Reduction in Infiltration:** 15 percent
**H. Adjusted Design Flow:** 216 cubic feet per second per square mile

## PART V - SUMMARY OF ANALYSIS (Final Accomplishment Report)

### Land Treatments:

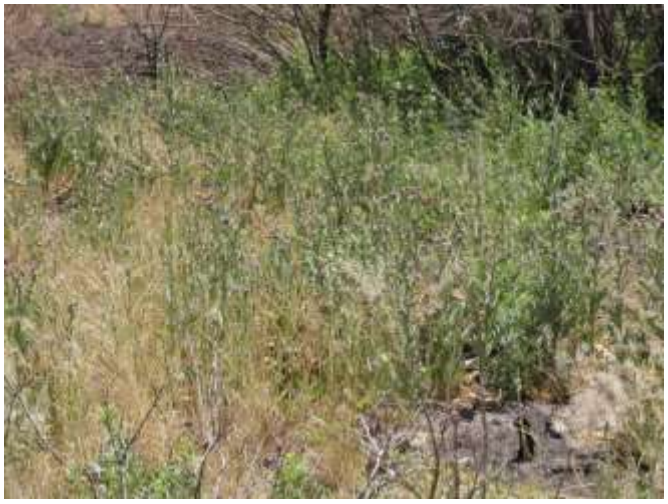
#### Invasive plant control

During the 2002 summer season approximately 8,000 to 10,000 acres within the Upper Willow Fire Area were monitored for noxious weeds. It became apparent very early that there was significant expansion of the infestation of Scotch Thistle following the Fire. Approximately 250 acres of noxious weeds were treated within the Burn Area during the 2002 summer season. A significant increase in efforts in future years is needed to prevent the further spread of these weeds. The infestations ranged in size from individual plants to 3 acres and were scattered throughout the entire burn area. Coodination with the Humboldt County Noxious Weed Task Force is necessary to ensure that all land is treated, regardless of ownership.

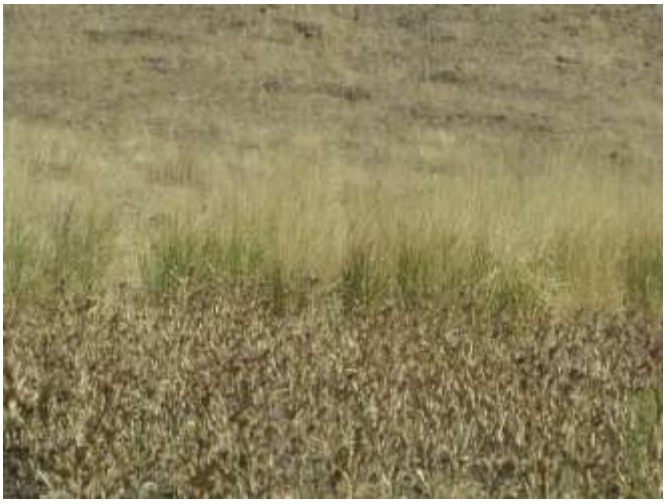


Upper Willow Burn, Scotch Thistle in Canyon Creek.

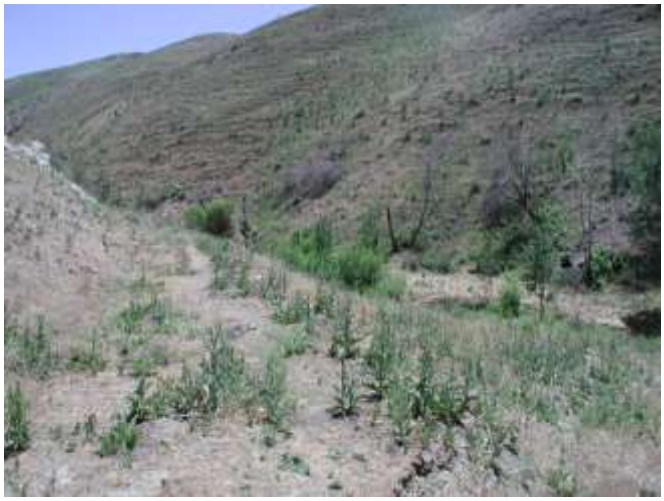
Canyon Creek Treated Area.



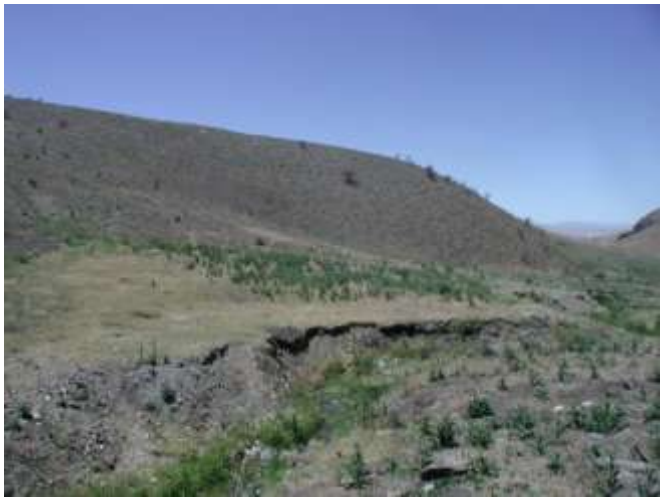
Upper Willow Burn, Scotch Thistle in Canyon Creek.



Upper Willow Burn, Scotch Thistle in Canyon Creek.



Upper Willow Burn, Scotch Thistle in Flat Creek.



Upper Willow Burn, Scotch Thistle in Flat Creek.

**Seeding**

During February of 2002 approximately 7,500 acres within the Upper Willow Fire area was aerial seeded using a helicopter. The project involved two separate seed mixtures. The first mix was a low elevation mix which was being proposed to reestablish vegetation below 6,000 feet where cheatgrass was a significant concern, the risk of invasive plant species was greater, as well as impacts to important wildlife species such as sagegrouse and mule deer. The second mix was to seed along drainages and in areas where there was a high burn severity rating. Forage Kochia was included in the mix to provide forage for wildlife which lost significant habitat during the fire. Forage Kochia was also included in an attempt to establish vegetation which would compete well with cheatgrass at lower elevations. This would allow for state agency goals to be met through Forest Service application with no additional costs. The seeding operation was successful and monitoring during the late spring and early summer showed that the seeding was beginning to establish. Of particular interest was the intitial reports which concluded that the Forage Kochia was very successful at establishing. Early reports have shown no indication that forage kochia has limited establishment of cheatgrass, however, the species provides increased diversity of plant species as compared to unseeded plots. Below are the tables of the seed mixtures and various photos showing the results of the seeding.

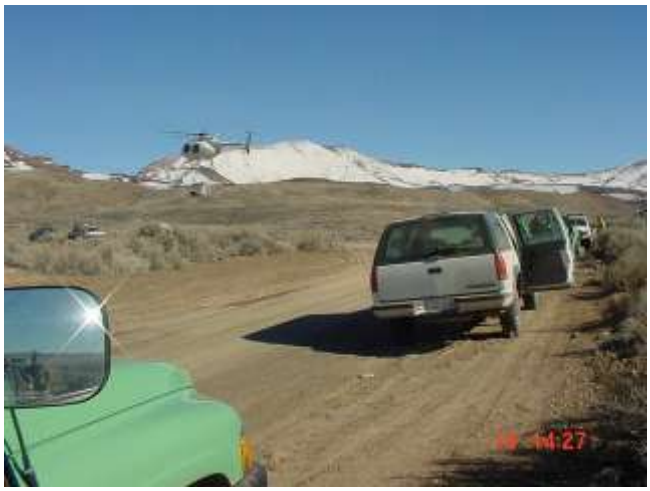
**Low Elevation Seed Mix**

| SPECIES | RATE PLS POUNDS/ACRE | PLS/square foot |
|---|---|---|
| Bluebunch wheatgrass | 2.5lb/ac (Secar) | 12 |
| Big bluegrass | .25lb/ac (Sherman) | 4 |
| Lewis flax | .50lb/ac | 4 |
| Forage Kochia* | .25lb/ac | 4 |
| Fourwing saltbush | 2lb/ac | 3 |
| Wyoming big sagebrush | .10lb/ac | 7 |
| TOTAL | 5.6 lb/ac | 34 PLS/sq.ft. |

**High Severity/Riparian Seed Mix**

| SPECIES | RATE PLS POUNDS/ACRE | PLS/square foot |
|---|---|---|
| Basin big sagebrush | .10lb/ac | 7 |
| Great Basin wildrye | 2lb/ac (Magnar) | 4 |
| Streambank wheatgrass | 2lb/ac (Sodar) | 12 |
| White yarrow | .25lb./ac | 16 |
| TOTAL | 4.35 lb/ac | 39 PLS/sq.ft. |

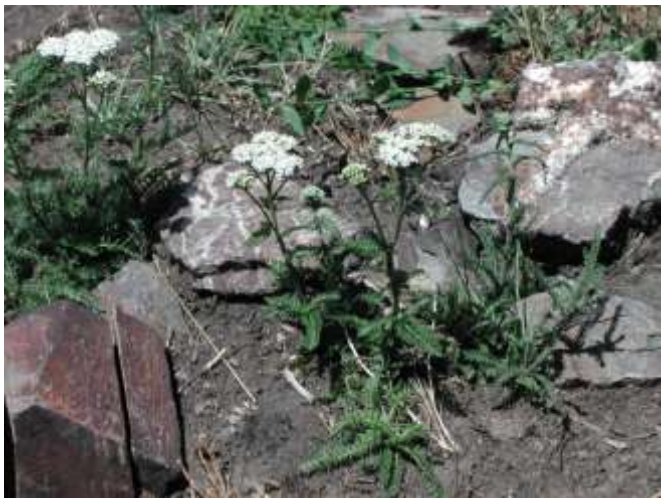
Upper Willow Fire, Canyon Creek Seed Mixing Site.



Upper Willow Fire, Canyon Creek Site.

Upper Willow Fire, Flat Creek Site (Private Lands)

Upper Willow Fire, Canyon Creek Seed Mixing Site.



Upper Willow Fire, Yarrow coming from seed.

Upper Willow Fire, Multiple Forage Kochia Plants.

## Channel Treatments:

### Fisheries Surveys

Due to concerns regarding the potential effects of the fire on the Threatened Lahontan Cutthroat Trout, The Forest Service cooperated with the Nevada Division of Wildlife to conduct surveys of approximately 41 miles of stream to determine what effects the Upper Willow Fire had on Lahontan Cutthroat Trout populations and potential habitats. A copy of the fisheries report will be included with this final report on the BAER Accomplishments.

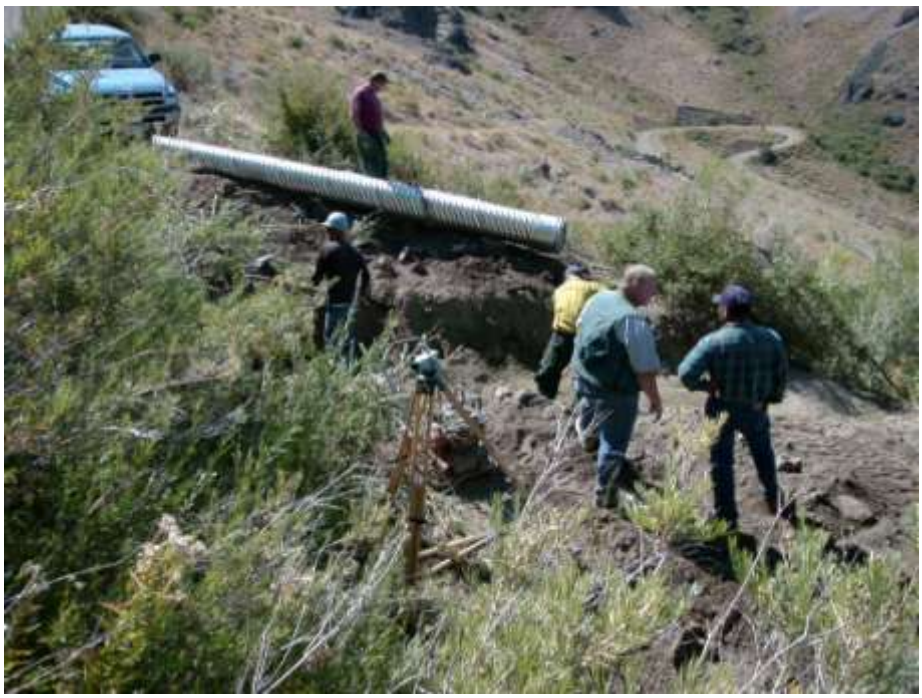
## Roads and Trail Treatments:

### 4WD Roads

There were a few sections of non-system roads within the burned area that show signs of gullying even before hillside above those sections burned. Further ground and aerial surveys indicate that other compacted areas such as cow trails traveling up intermittent drainages have caused excessive erosion through gullying. This situation has been compounded through the expected increase in overland flow following the fire. To mitigate excessive gullying items such as rolling dips, water bars, and road shaping was implemented on several non-system roads. All road work that was entirely on public lands has been completed through pre-approval correspondence with the regional office, due to dozers being already mobilized and in place on the hillside. Approximately 4 miles of non-system roads received work to minimize gullying and soil erosion.

### Canyon Creek Road

Canyon Creek Road is a classified system road and is maintained by both the Forest Service and Humboldt County. Work on this road involved both private land and Forest Service land. The Humboldt-Toiyabe National Forest Road Crew completed the replacement of 19 culverts which were not functioning properly and at risk for failure during a high run-off event following the fire. Additional culverts were maintained along the road and approximately 5.1 miles of system road were maintained.



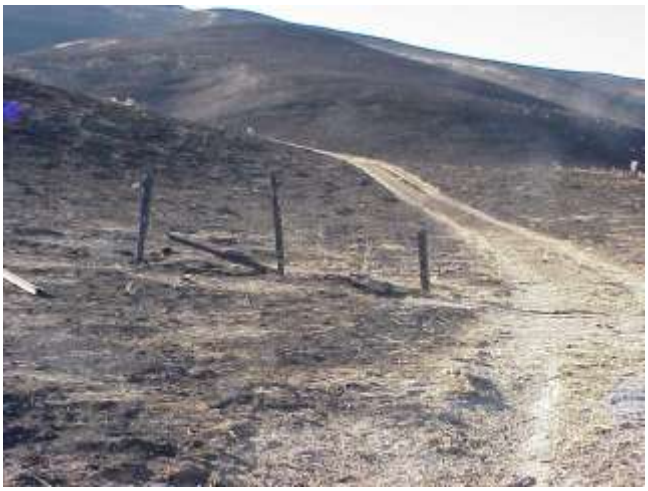
Upper Willow Fire, Crew replacing culvert within the fire area.

## Structures:

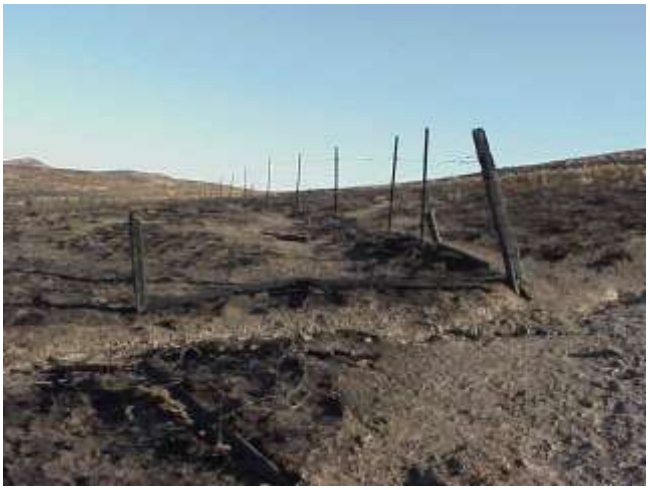
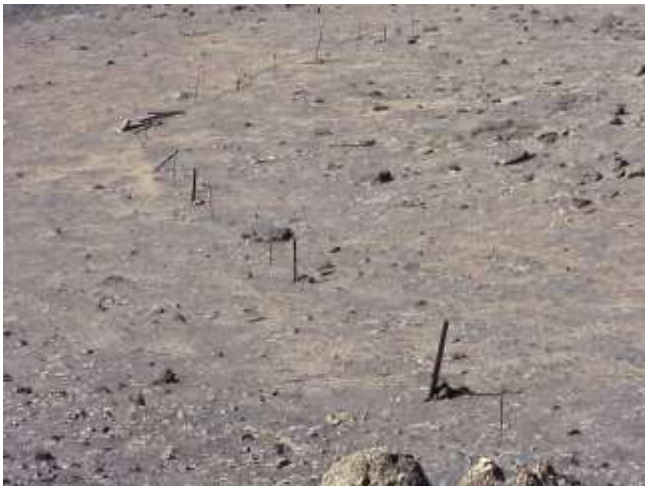
### Forest Boundary Fence

During the 2002 Field Season approximately 16 miles of Boundary Fence was reconstructed and an additional 4 miles of fence received heavy maintenance to protect the 7,500 acres seeding which had been completed in February of 2002.

This fence prevents livestock off of BLM and Private lands from entering upon the burned area. The burned area will be rested from livestock grazing for a minimum of 2 years.

Upper Willow Fire, Examples of the condition of the fences following the Fire.

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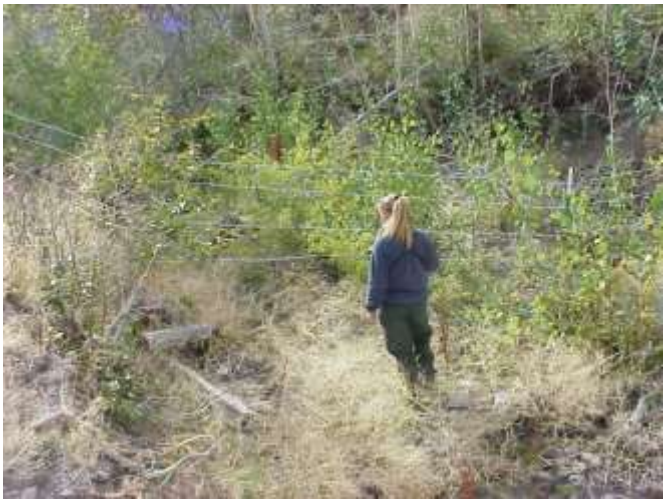


Upper Willow Fire, showing the new fenceline.

## Monitoring Accomplishments:

**Vegetation/Seeding:**

a. Sticky sheets were placed to ensure that aerial seeding was done with the proper rate of spread.
b. Photo points were established.
c. Seed germination and growth was monitored to determine reestablishment of cover.
d. Monitoring has determined that the seeding has been at least partially successful throughout the burn area.
e. Intensive monitoring has occurred within the burned area to ensure that livestock use does not occur in the area.

**Noxious Weeds:**

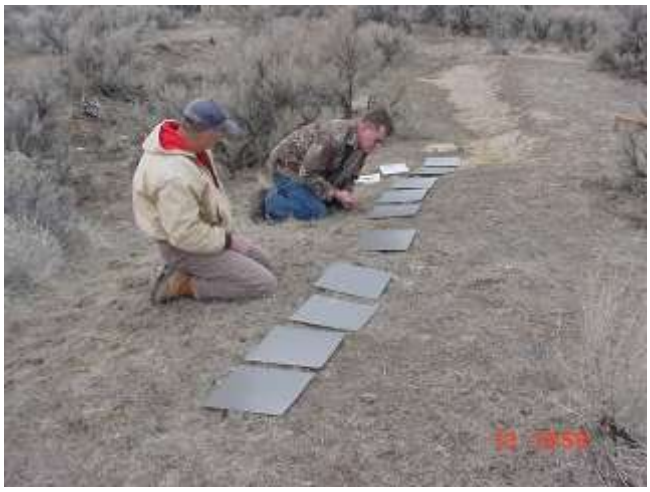
a. Annual surveys will be conducted in high potential sites for Scotch thistle invasion.
b. During the 2002 summer season approximately 8,000-10,000 acres were monitored for noxious weeds.
c. Use GPS and GIS technologies to monitor spread of infestations into the burned area.
d. Photo points have been established and will be repeated in high potential sites.
e. Effectiveness of treatments will be determined through photo points and professional observations.
f. Monitoring will be conducted under the direction of the Santa Rosa District Ranger in cooperation with BLM, NDOW, NRCS, and Humboldt County Noxious Weed Task Force.

**Riparian Vegetation**

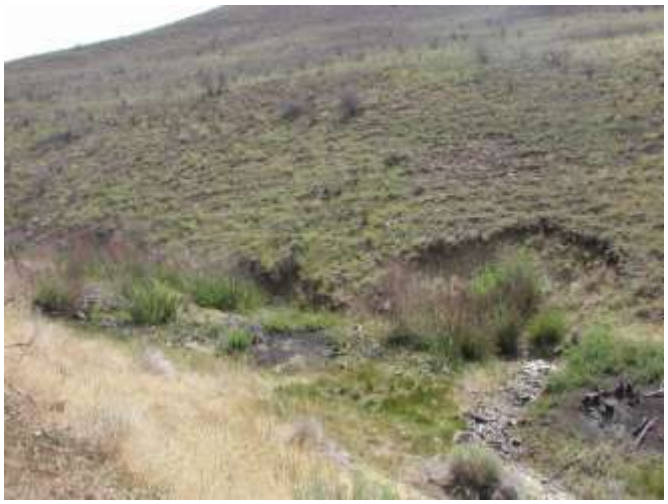
a. Photo points have been established.
b. Vegetation Growth has and will be monitored annually to determine reestablishment of cover and bank stability.
c. Follow-up treatments may be done in the future to improve riparian conditions if monitoring indicates that there is a need.

**Roads**

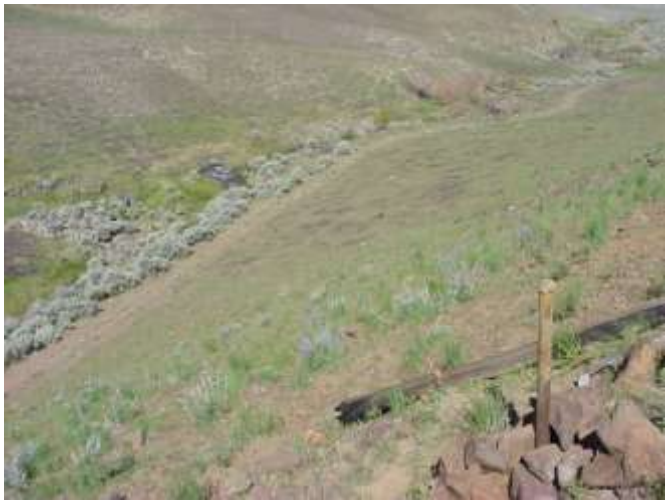
a. Roads have and will be monitored for gully or rill formation within road surface or drainage features.
b. Drainage improvement should be recommended in those areas experiencing excessive erosion.



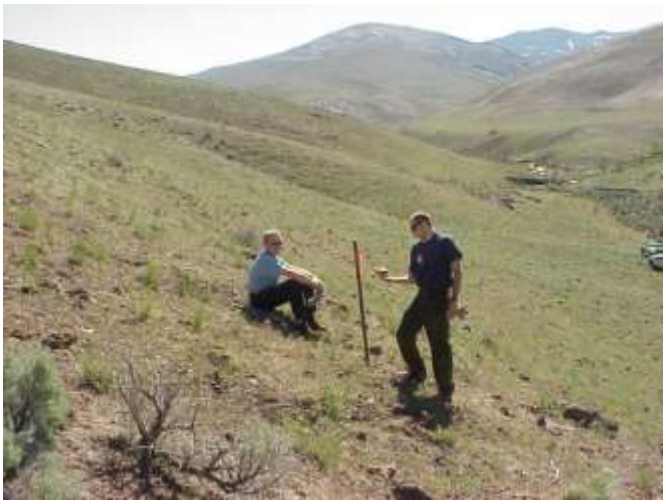
NDOW Biologist and volunteer looking at seeding rate.



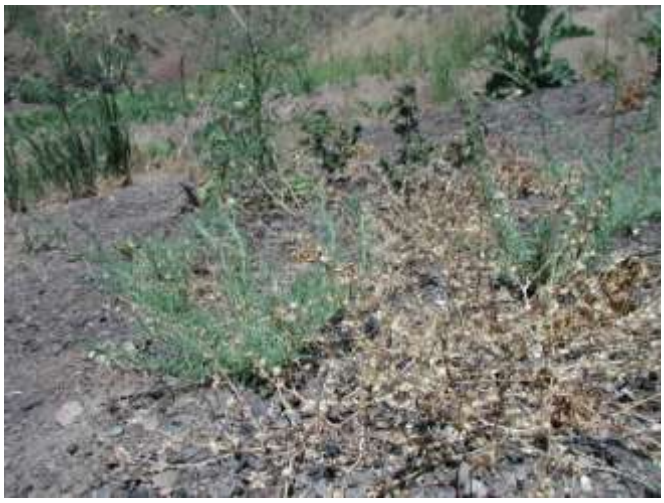
Upper Willow Fire, Vegetation response in the Spring Following the fire in Canyon Creek.



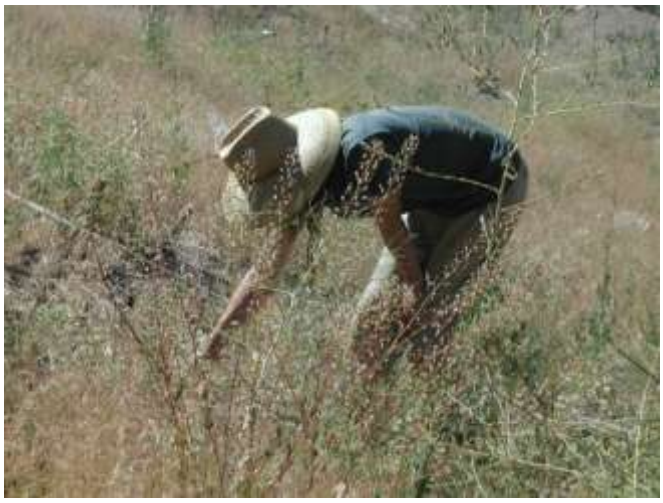
Upper Willow Fire, Vegetation response in Flat Creek.



Fire Crew setting up monitoring plot near Flat Creek.



Upper Willow Fire, Forage Kochia Plants.



Upper Willow Fire, Employee conducting Vegetation monitoring.

## Part VI – Emergency Rehabilitation Treatments, Approved Funding and Final Costs

| | | | APPROVED FUNDING | | | FINAL |
|---|---|---|---|---|---|---|
| | | Unit | # of | WFSU | Other | EXPENDITURES |
| Line Items | Units | Cost | Units | SULT $ | $ | $ |
| | | | | | | |
| **A. Land Treatments** | | | | | | |
| Seeding | acres | 51 | 7500 | $382,500 | | $381,277 |
| Noxious Weed Control | acres | 60 | 250 | $15,000 | | $14,824 |
| ***Subtotal Land Treatments*** | | | | **$397,500** | | **$396,101** |
| | | | | | | |
| **B. Channel Treatments** | | | | | | |
| | | | | | | |
| ***Subtotal Channel Treat.*** | | | | **$0** | | **$0** |
| | | | | | | |
| **C. Road and Trails** | | | | | | |
| 4WD Roads | miles | 1200 | 4 | $4,800 | | |
| Canyon Creek Road | miles | 14555 | 5.1 | $74,231 | | |
| ***Subtotal Road & Trails*** | | | | **$79,031** | | **$79,725** |
| | | | | | | |
| **D. Structures** | | | | | | |
| Exclusion Fence Repair | miles | 3000 | 4 | $20,000 | | |
| Fencing Reconstruction | miles | 5500 | 16 | $88,000 | | |
| Contract Administration | | 5000 | 1 | $5,000 | | |
| ***Subtotal Structures*** | | | | **$113,000** | | **$103,629** |
| | | | | | | |
| **E. BAER Evaluation** | | | | | | |
| Overhead | days | 3000 | 10 | $30,000 | | $29,680 |
| Equipment | days | 500 | 10 | $5,000 | | $4,516 |
| Inventory of LCT | Miles | 1,000 | 30 | $30,000 | | $30,000 |
| ***Subtotal Evaluation*** | | | | **$65,000** | | **$64,196** |
| | | | | | | |
| **F. Monitoring** | | | | | | |
| Field Crew | days | 250 | 20 | $5,000 | | |
| vehicle | month | 530 | 1 | $530 | | |
| GPS unit | each | 8000 | 1 | $8,000 | | |
| misc equip | each | 1 | 500 | $500 | | |
| ***Subtotal Monitoring*** | | | | **$14,030** | | **$13,665** |
| | | | | | | |
| **G. Totals** | | | | **$668,561** | | **$657,316** |
| | | | | | | |

## PART VII - APPROVALS

**1.** _____ _____

**Forest Supervisor (signature)** **Date**

**2.** _____ _____

**Regional Forester (signature)** **Date**