

ENVIRONMENTAL ASSESSMENT

for

PINE VALLEY C&H ALLOTMENT MANAGEMENT PLAN

on the

**Pine Valley Ranger District
Dixie National Forest
September 30, 1991**

LEAD FEDERAL AGENCY:

**U.S.D.A. -- FOREST SERVICE
DIXIE NATIONAL FOREST
PINE VALLEY RANGER DISTRICT
196 E. TABERNACLE
ST. GEORGE, UTAH 84770**

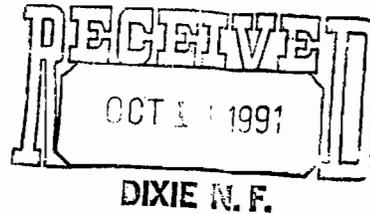
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Oct.14,1991

Mr. Hugh Thompson
Forest Supervisor
82 N. 100 E.
Cedar City, UT 84720

Dear Mr. Thompson:

As the time for a decision on the AMP for the Pine Valley District on the Dixie National Forest is here, I would hope that the current condition of the mountain in this drought year be taken into account. In visiting with Tom Contreras, District Ranger, as well as Randy Russell and Alan Bate, the range cons, I feel the Forest Service's major concern is the mountain unit.

This year as the permittees have been gathering our cattle from the mountain unit, we find that the utilization has been very light. In visiting with several permittees we felt that overall the utilization would be in the 20 to 25 percent range. In many areas you can't even tell cattle have been there by looking at the grass.

At White Rocks for example, there has been utilization on the East side of the pond. But you can find abundant grass that has hardly been touched within 30 to 40 yards of the pond on the other three sides.

Almost all the trails I have been on this fall have grass over two feet tall lining the sides a good share of the time.

As we were forced to take our cattle off the mountain two weeks early this year, and go into Grass Valley, we have not made a dent in the feed there. As we will be taking the cattle off Grass Valley tomorrow, I don't feel that we have even reached 25 per cent utilization. Even right around the pond that is along the road, the utilization is less than 30 per cent.

I feel that the only logical alternative is the first one, or one that increases rather than decreases the number of AUMs.

Sincerely,

A handwritten signature in cursive script that reads "Alan Gardner".

Alan Gardner

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CHAPTER I. PURPOSE AND NEED

INTRODUCTION

The Pine Valley Ranger District, Dixie National Forest, is proposing the revision of the Pine Valley Allotment Management Plan (AMP). The revised AMP would be effective the beginning of the 1992 grazing season.

There are 60,540 acres on the allotment of which approximately 32 percent is suitable for livestock grazing. The allotment is located approximately 25 miles north of St. George, Utah. (See Appendix A and B.)

The legal description includes parts of sections:

T. 39S., R. 16W. Section 12, 13 and 24, SLBM, Washington County Utah

T. 39S., R. 15W. Section 1, 2, 3, 4, 5, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 35 and 36. SLBM, Washington County Utah.

T. 39S., R. 14W., Sections 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14, 15, 16, 17, 18, 19 and 30 SLBM, Washington County Utah.

T. 38S., R. 15W., Sections 1, 11, 12, 13, 14, 15, 21, 22, 23, 24, 25, 26, 27, 28, 33, 34, 35 and 36, SLBM, Washington County Utah.

T. 38S., R14W., Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34 and 35, SLBM, Washington County Utah.

T. 37S 1/2., R. 14W., Sections 31, 32, 33 and 34, SLBM, Washington County, Utah.

T. 37S., R. 14W., Sections 33 and 34, SLBM, Washington County, Utah.

T. 38S., R. 13W., Sections 7, 8, 17, 18, 19 and 20., SLBM, Washington County, Utah.

The Federal Land Policy Management Act (FLPMA), as amended by the Public Rangelands Improvement Act allows for AMP's to be included in grazing permits at the direction of the Secretary of Agriculture. (43 USC [1752] [d]), as amended by 92 Stat. 1803 (1978). The Secretary has elected to exercise this discretion, and has delegated his authority to issue regulations in the area to the Chief of the Forest Service. (See 36 CFR 222.1 and 222.2.)

An AMP is defined in FLPMA as a document prepared in consultation with lessees or permittees applying to livestock operation on the public lands prescribing (1) the manner in and extent to which livestock operation will be conducted in order to meet multiple use, sustained-yield, economic and other needs and objectives, (2) describing range improvements to be installed and maintained and (3) containing such other provisions relating to livestock grazing and other objectives found by the Secretary to be consistent with the provision of FLPMA.

The Environmental Analysis and Assessment were developed under the implementing regulations of the National Environmental Policy Act (NEPA). Council on Environmental Quality, Title 40, Code of Federal Regulation, Parts 1500-1508; and the National Forest Management Act (NFMA), Title 36, Code of Federal

CHAPTER I. PURPOSE AND NEED

Regulation, Part 219. Further direction is provided in the Dixie National Forest Land and Resource Management Plan (LRMP).

A. PROPOSED ACTION

Permitted Cattle Numbers and Season of Use

The proposed action for the revision of the Pine Valley AMP is to permit 800 cattle from 6/1 through 10/15. The proposed grazing system would be a deferred rotation grazing system using Mahogany Bench, Four-Mile Bench, Black Bench, Grass Valley, Mountain and Pine Valley pastures. The area in the Pine Valley Pasture that falls within Management Area 1A will be fenced to exclude cattle from the Pine Valley Recreation Area. (See Appendix B.)

Suitable Range

Range suitability criteria has been developed for the Pine Valley Allotment. (The criteria for the classification of suitable acres is in Appendix C.)

The number of suitable acres on the Pine Valley Allotment would be 18,849 acres. (See Appendix D, E and F.)

Grazing Rotation

The grazing rotation for the proposed action for the Pine Valley Allotment is listed below. The grazing rotation will be repeated every two years.

First Year

<u>Pasture</u>	<u>No. of Cattle</u>	<u>Period of Use</u>
Mahogany Bench	800	6/01 through 6/21
Black Bench	800	6/22 through 7/20
Grass Valley	800	7/21 through 7/30
Mountain	800	8/01 through 9/04
Mountain	700	9/05 through 9/26
Pine Valley	100	9/05 through 10/15
Four-Mile	700	9/27 through 10/15

Second Year

<u>Pasture</u>	<u>No. of Cattle</u>	<u>Period of Use</u>
Four-Mile Bench	800	6/01 through 7/10
Grass Valley	800	7/11 through 7/31
Mountain	800	8/01 through 9/03
Mountain	800	9/04 through 9/26
Mahogany Bench	700	10/01 through 10/15
Pine Valley	100	9/05 through 10/15
Mahogany Bench	700	9/27 through 10/15
Black Bench (Rest or graze last if needed)		

The above dates are estimates. Actual entry and exit dates would be determined by the District Ranger in consultation with appropriate Range Staff. These dates would depend on factors such

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Suitable Range

Range suitability criteria has been developed for the Pine Valley Allotment. (The criteria for the classification of suitable acres is in Appendix C.)

The number of suitable acres on the Pine Valley Allotment would be 18,849 acres. (See Appendix D, E and F.)

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Mahogany Bench	800	6/01 through 6/21
Grass Valley	800	6/22 through 7/15
Mountain	800	7/16 through 9/04
Black Bench	700	9/05 through 9/15
Four-Mile	700	9/16 through 10/15
Pine Valley	100	9/05 through 10/15

Second Year

<u>Pasture</u>	<u>No. of Cattle</u>	<u>Period of Use</u>
Four-Mile Bench	800	6/01 through 6/30
Black Bench	800	7/01 through 7/15
Grass Valley	800	7/16 through 7/31
Mountain	800	8/01 through 9/03
Mountain	700	9/04 through 9/26
Pine Valley	100	9/05 through 10/15
Four-Mile Bench and Black Bench	700	9/27 through 10/15

The above dates are estimates. Actual entry and exit dates would be determined by the District Ranger in consultation with appropriate Range Staff. These dates would depend on factors such

as forage development, soil conditions and proper use determination. Permittees will be notified and cattle will be removed from the National Forest when the Forest Officer judges the allotment to be at proper use.

Monitoring Criteria

Proper use on upland suitable range sites will be 50 percent of total available forage plants, except crested wheatgrass where 60 percent is allowable (Forest Plan, Page IV-36, Range Management, Direction 3, S&G 2A). Appropriate Range Personnel will monitor percent utilization of grass and grass-like plants during the grazing season utilizing approved Range Analysis techniques. Utilization will be measured at designated benchmark locations. Benchmark location would be utilization cages located in the following areas: One mile northeast of Rock Springs in the Mahogany Bench Pasture, 1/4 mile east of the first trough on the Four-Mile Spring pipeline 1/4 mile west of the first pond on the Wide Hollow Spring pipeline, 1/2 mile north of Black Bench Guzzler, Wood Bench, White Rocks seeding, 1/4 mile north of Big Water Reservoir, Mill Flat and Sheep Pen.

Proper use in riparian areas will be 60 percent on grass and grass-like plants. On willows and other riparian shrubs proper use would be 50 percent utilization or less of new leader production. Proper use is when utilization standards are first reached by either vegetation group (Forest Plan, Page IV-41, Riparian, Direction 3, S&G A, B, C).

Areas of the allotment that are in 9A Management of Riparian Areas are East Pinto Creek and Santa Clara River. Allowable use on grass, grass-like, forbs and willows would be 50 percent (Forest Plan, IV-138, Range Resource Management, Direction 1, S&G A). Utilization on browse species within the riparian areas would not exceed 50 percent of new leader growth (Forest Plan, IV-138, Range Resource Management, Direction 1, S&G A).

Proper use can be measured at any location within the riparian areas. Benchmarks would not be designated.

Riparian Areas that would be monitored on the allotment are: Santa Clara River south of private land below Pine Valley, Water Canyon, Reservoir Canyon, Bare Valley, Mill Flat, Big Water, The Cove, Long Flat, Deep Flat, Pinto Springs, Bench Springs and East Fork of Pinto Creek.

In pastures with a combination of upland and riparian areas proper use would be when utilization is first reached on either site. The Mahogany Bench, Grass Valley and Mountain pastures have a combination of upland and riparian forage locations.

Additional Production and Utilization Surveys and mapping will be completed to determine if the allotment is properly stocked. The nested frequency plots can be read to monitor and evaluate trend.

Mitigation Measure

The mitigation measure would be the reduction of permitted cattle on the Pine Valley Allotment from 1,056 to 800 cattle from 6/1 through 10/15. The reduced numbers of cattle on the Allotment would reduce the cattle use on vegetation in the riparian areas.

Livestock Management

Salt should be located 1/4 mile from water troughs, springs, ponds and riparian areas.

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As cattle enter an allotment pasture, they should be distributed throughout the pasture. Cattle would not be allowed to concentrate at historically heavily used areas, such as White Rocks, Big Water, The Cove, Long Flat, Mill Flat and along the Santa Clara River below the town of Pine Valley.

Improvements

There were no structural or non-structural range improvements with The Proposed Action.

B. PURPOSE AND NEED

The revision of the Pine Valley Allotment management plan is needed to meet the Desired Future Condition for Management Areas 1 General Forest Direction, 1A Developed Recreation, 2A Semi-Primitive Recreation Opportunities, 2B Rural and Roded Recreation, 4A Fish Habitat Emphasis, 4B Wildlife Habitat (shrub areas), 5A Big Game Winter Range, 6A Livestock Grazing, 8A Wilderness, 9A Riparian Management and 10B Municipal Supply Watersheds, Dixie National Forest Land and Resource Management Plan.

The differences between the Desired Future Conditions described in the Forest Plan and existing conditions on the allotment has brought about the need to revise the Pine Valley AMP in order to implement actions that will bring existing conditions in line with Forest directions.

Existing and Desired Future Conditions

The existing condition of the upland range sites is that cattle are allowed within the Pine Valley Recreation Area.

The Desired Future Condition is that cattle would be excluded from developed recreation sites (LRMP IV-57). The Equestrian Campground is being constructed within the Pine Valley Recreation Area. Upon completion of the campground a fence would be constructed to exclude cattle from this Developed Recreation site.

The existing condition is that riparian areas on the Pine Valley Allotment are exceeding proper use described in the Forest Plan.

The Desired Future Condition is that livestock use in riparian areas would not exceed 60 percent (LRMP IV-41).

The existing conditions of the upland range sites is that they are in marginally satisfactory to unsatisfactory conditions.

The management direction is to achieve or maintain satisfactory range condition on all rangelands (LRMP IV-37).

The existing condition is that pinion/juniper trees are re-invading the old chainings decreasing the production of grasses in the Four-Mile Bench Pasture.

"The Desired Future Condition for Management Area 6A is that range condition is maintained through use of forage improvement practices and regulation of other resource activities. Investment in structural and non-structural range improvement is moderate to high. Nonstructural restoration and forage improvement practices available are seeding, planting, burning, fertilizing, pitting, furrowing, spraying, crushing and plowing. Cutting of encroaching trees may also occur." (LRMP IV-109)

C. BACKGROUND

The Pine Valley Cattle Allotment has been grazed by domestic livestock since the settlement of Pine Valley in 1859. The livestock have been almost exclusively cattle and horses except for a brief period between 1929 and 1934, when some of the permittees attempted a sheep operation.

Prior to the creation of the National Forest System and for a time afterwards, livestock drifted onto the allotment and followed the snow line. This early season grazing and large numbers of stock contributed to the over utilization of the forage base on the allotment. By 1915 a forest boundary fence was constructed to aid in controlling livestock use. This held livestock off until the opening of the grazing season and helped prevent trespass from outside livestock.

Prior to 1925 there were horses on the allotment that grazed yearlong. From 1925 to 1964 the horses were grazed during the same time period as cattle. In 1964 the remaining horses were exchanged for cattle.

In 1933 a fence was constructed along the north side of the allotment to stop unauthorized livestock use. In 1935 another fence was constructed to help hold cattle on spring range until the summer range was ready for grazing. This was the beginning of a deferred management system. Other fences have been built to control movement of livestock on the allotment. From 1960 to 1974, some rest has been built into the system, but only on a minor scale. One of the reseeded pastures was rested each year. Except for the reseeded pastures the remaining areas of the allotment were not rested.

From 1974 to present a deferred grazing system has been utilized on the allotment and permitted Animal Unit Month (AUM's) have remained constant at 4,496 AUM's for a permitted season of use from 6/1 to 10/15.

D. PURPOSE OF THE ENVIRONMENTAL ASSESSMENT

This Environmental Assessment (EA) documents the site-specific analysis that was completed for the revision of the Pine Valley Allotment Plan. This EA is not an allotment management plan for the Pine Valley Allotment.

The EA for the revision of the Pine Valley AMP is tiered to the Dixie National Forest Land and Resource Management Plan Final Environmental Impact Statement.

This EA is not a decision document and it does not describe the decision of the Forest Supervisor. The Forest Supervisor's decision for the Pine Valley AMP is explained in the accompanying Decision Notice.

Any one of the alternatives, if selected by the Forest Supervisor, could become the allotment management plan for the Pine Valley Allotment. The EA discloses the environmental consequences of the proposed action and alternatives to the proposed action.

E. PUBLIC INVOLVEMENT

The public involvement process began by preparing a list of individuals, private organizations and State and Federal agencies that wanted to be informed about livestock grazing on the Pine Valley Ranger District, Dixie National Forest. Approximately 180 individuals, private organizations and State and Federal agencies were notified about the proposed action to revise the Pine Valley Allotment Plan to meet the resource objectives in the Dixie National Forest Land and Resource Management Plan. A public notice appeared in The Daily Spectrum on June 13, 1991. Scoping letters were also

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posted in the Post Office in Enterprise, Utah and in two grocery stores in Veyo, Utah from May 21 through June 21, 1991.

A total of 19 letters were received from individuals, private organizations and State and Federal agencies who responded to the scoping letter dated May 16, 1991. The interdisciplinary team reviewed the respondents' letters and identified the relevant issues to the proposed action. The issues that were determined to be relevant and monitoring indicators were developed.

The list of respondents to the scoping letter and the issues identified from the respondents letters were mailed on July 22, 1991 to the individuals and agencies who responded to the scoping letter. This was done to inform the respondents to the scoping letter of the identification of relevant issues from the public comment period.

1. RESPONDENTS TO SCOPING LETTER

The names listed below are the people who responded to the May 16, 1991 scoping letter on the revision of the Pine Valley AMP. The letters are listed according to the dates that the Pine Valley Ranger District received them.

Iron County Multiple Lane Use Coalition
Utah Division of Wildlife Resources
Cliff G. Bove
Kurt Sparenberg -- Eagle Basin Outfitting & Guide Service
Karen LaCount -- Cougar Country Outfitters
Alan Gardner
Five County Association of Governments
Evans Beefmaster -- Gayle Evans
Sharon and David Hatfield
Washington County Commission
Five County Association of Governments
Bowler -- Fenton, Stuart, Carl
Gardner -- Dean, Larry, Lynn, Louise, Alan
Alan Gardner
Cordell Peterson
Larry Gardner
Jel Development -- Erle Snow
U.S. Fish and Wildlife Service
Utah Wilderness Association

2. PUBLIC ISSUES DETERMINED TO BE RELEVANT TO THE PROPOSED ACTION

The following issues were determined to be relevant to this proposal and have been included in the analysis. Following a brief description of the issues a monitoring indicator is listed that will be used to measure how each alternative addresses the issues in the Environmental Consequences section of this document.

a. Over Utilization of Riparian Areas and Mountain Meadows.

Recreational stock, wildlife and permitted livestock use may be impacting riparian areas and mountain meadows by exceeding proper use described in the standards and guidelines in the Forest Plan. Riparian areas are utilized over 60 percent on desirable and intermediate forage and 50 percent on browse species in riparian areas and mountain meadows.

Monitoring indicator: Percent utilization of livestock use on grass and grass-like plants in riparian areas and mountain meadows.

b. Economic Effects of Management Strategies to the Grazing Permittees.

The proposed action for the revision of the Pine Valley AMP may impact the incomes of the Pine Valley Allotment Permittees. The number of AUM's on the allotment is the indicator of economic impacts on the grazing permittees.

Monitoring indicator: Number of permitted AUM's.

c. Impacts of Livestock Grazing on Water Quality.

Livestock grazing may impact water quality in streams that run through the allotment. Increased amounts of soil sediments may enter the streams, affecting water quality for downstream water users.

Monitoring indicator: Maintain a minimum viable population of macroinvertebrates defined as a Biotic Condition Index (BCI) of 70 (LRMP II 16a), and increase the presence of clean water species.

d. Impacts of Livestock Grazing on Wildlife Habitat for Non-Game and Game Animals.

Livestock grazing may effect the food supply of game animals, such as deer and turkey. Grazing may also effect the food supply and cover for non-game animals.

Monitoring indicator: Percent utilization of herbaceous and woody plant species.

3. PUBLIC ISSUES ELIMINATED FROM DETAILED ANALYSIS

Ten issues were determined to be outside the scope of this proposal and will not be addressed in this analysis.

a. Impacts of livestock grazing on the cultures, incomes and customs of small communities in the Western States.

Impacts of livestock grazing on the culture customs of small communities in the Western States can not be measured. The economic effects of incomes to communities will not be evaluated in this EA.

b. Livestock on National Forest are converting forage into meat to feed the world.

This issue will not be analyzed.

c. No domestic livestock grazing in management areas 1A, 2B, 4A, 4C, 5A, 8A and 10B.

The decision to allow livestock grazing in management areas 2A, 2B, 4A, 4C, 5A, 8A and 10B has been made in the Dixie National Forest Land and Resource Management Plan.

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d. Increasing grazing fees from \$2.00/AUM to \$14.00/AUM.

Grazing fees are set by Congress not by the Forest Service.

e. Subsidized livestock operations on National Forest System Lands should be eliminated.

The money used for grazing permit administration and livestock improvements on the National Forest System Lands is allocated by Congress.

f. Competition for water in the Mountain Pasture between cattle and wildlife.

Southern Utah has experienced a severe drought, with below normal precipitation for the last five years. In 1989 and 1990 many ponds, small reservoirs and springs dried up by the time cattle left the respective pasture. Competition for water between recreation stock, cattle, game and non-game animals, on the Mountain Pasture has increased during the extended drought. When the Pine Valley Mountains receive normal precipitation there is little evidence of competition between livestock and wildlife. Competition for water in drought years on the Mountain Unit will be managed by following the forage allowable use guides in the Forest Plan. This issue will not be analyzed because the competition for water in the Mountain Pasture occurs only when the allotment is experiencing drought condition for extended periods of time.

g. Grazing rights versus grazing privileges.

Grazing on National Forest System Lands is a privilege. Regulation 36 CFR 222.3(b), promulgated pursuant to the Act of April 24, 1950, as well as the Federal Land Policy and Management Act (FLPMA), is specific in stating that, "Grazing permits and livestock use permits convey no right, title, or interest held by the United States in any land or resources." Two Ninth Circuit Court decisions (Swim et al. v. Bergland et al 691 F 2d 862 (1983), and Osbourne et al. v. United States, 145 F. 2nd 892 (1944) addressed the issue of grazing permit privileges versus rights.

h. Impacts of predator control in wilderness areas and non-wilderness areas of the allotment.

Predator control has been addressed in the Dixie National Forest Animal Damage Management Plan which was approved in April, 1991.

i. Impacts of removing livestock (cattle) from designated Wilderness Area.

In Section 4 (d)(4)(2) of the Wilderness Act (see Forest Service Manual [FSM] 2320), states that grazing in the wilderness area, if established prior to designation of the are as wilderness, "...shall be permitted to continue subject to such reasonable regulation as are deemed necessary by the Secretary of Agriculture."

j. Impacts of deer grazing on private land.

Utah Division of Wildlife Resources is responsible for the management of wildlife in the State of Utah. The Forest Service is responsible for wildlife habitat management on National Forest System Lands. The Forest Service has no authority for wildlife or wildlife habitat management on private land.

CHAPTER II. ALTERNATIVES

This chapter describes a range of alternatives, including the Proposed Action Alternative, the No Action Alternative and three other alternatives, for the revision of the Pine Valley AMP. These alternatives have been developed by an interdisciplinary team in response to issues identified during the scoping process (49 CFR Part 1501.7 Scoping).

This chapter is comprised of three parts; a) a description of alternatives considered, but eliminated from detailed study, b) alternatives considered and analyzed in detail, and c) a matrix comparing the alternatives considered.

A. ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

1. Convert the class of livestock from a cow/calf operation to a yearling cattle operation. This is impractical because the permittees are not in a position to convert to grazing only yearlings in a cattle operation.
2. Convert the class of livestock from cattle to sheep. This is impractical because the permittees are not in a position to convert to a sheep operation. The vegetation types in Four-Mile Bench Mahogany and Black Bench are not suited to graze sheep. Also, the large capital investment needed to convert the improvements from cattle to sheep is cost prohibited for the present permittees.
3. A total of 1,056 cattle would be permitted on the Pine Valley Allotment from 5/1 through 10/15, using the six existing pastures on the allotment. The grazing season would be five and a half months long on the allotment. The allowable use standards and guidelines described in the Forest Plan would not be met for riparian and mountain meadows.
4. Eliminating livestock grazing within the Pine Valley Allotment. Grazing in management areas 1, 2A, 2B, 4A, 5A, 6A, 8A, 9A and 10B has been addressed in the Forest Plan. Grazing is one of the many uses that has been designated for these management areas included in the Pine Valley Allotment. "There shall be no curtailment of grazing in wilderness areas simply because an area is, or has been designated as wilderness, nor should wilderness designations be used as an excuse by administrators to slowly 'phase out' grazing". (FSM 2320).
5. Permitting cattle to graze all pastures on the allotment from 6/1 through 10/15 with no pasture rotation. The standards and guidelines from the Forest Plan would not be met for riparian and mountain meadows if cattle were not managed on the allotment. Cattle would be grazing in the key areas on the allotment the entire grazing season impacting vegetation, compacting soils and exceeding allowable use in mountain meadows and riparian areas.

CHAPTER II. ALTERNATIVES

B. ALTERNATIVES CONSIDERED IN DETAIL

The alternatives considered for the revision of the Pine Valley AMP could include changes in the following areas: permitted numbers, season of use, grazing rotation and proposed range improvements. Monitoring criteria are included in alternatives for the Pine Valley Allotment.

1. ALTERNATIVE #1 -- The No Action Alternative.

This alternative would be the current management activities on the Pine Valley Allotment. A total of 799 cattle are permitted on the Pine Valley Allotment from 6/1 through 6/30. The permitted number is 1,056 cattle from 7/1 through 10/15. The grazing system would be a deferred rotation grazing system using all six pastures on the allotment. The grazing rotation for Alternative #1 -- No Action will be repeated every two years.

Suitable Range

The number of acres classified as suitable range in the 1959 Range Analysis listed 32,182 acres of suitable range. This information is located in the 1976 Pine Valley AMP. The 1991 Range Analysis classified 18,849 acres to be suitable for cattle grazing.

Grazing Rotation

First Year

<u>Pasture</u>	<u>No. of Cattle</u>	<u>Period of Use</u>
Mahogany Bench	799	6/01 through 6/30
Grass Valley	1,056	7/01 through 7/31
Mountain	1,056	8/02 through 9/03
Mountain	956	9/04 through 10/15
Pine Valley	100	9/04 through 10/15

Black Bench and Four-Mile Bench would be rested or if proper use has been reached in the last pasture of the grazing rotation they would be grazed the last few days of the grazing season.

Second Year

<u>Pasture</u>	<u>No. of Cattle</u>	<u>Period of Use</u>
Four-Mile Bench	799	6/01 through 6/30
Black Bench	799	7/11 through 8/15
Grass Valley	1,056	7/15 through 7/31
Mountain	1,056	8/01 through 9/03
Mountain	899	9/04 through 10/15
Pine Valley	100	9/04 through 10/15

ALTERNATIVE #1 -- No Action would have a total of 4,496 AUM's

Mahogany Bench would be rested or grazed the last few days of the grazing season if the Mountain Pasture has reached proper use before the end of the grazing season. Cattle would be permitted in Grass Valley from 10/1 through 10/15 to allow a location to gather cattle from the Mountain Pasture.

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B. ALTERNATIVES CONSIDERED IN DETAIL

The alternatives considered for the revision of the Pine Valley AMP could include changes in the following areas: permitted numbers, season of use, grazing rotation and proposed range improvements. Monitoring criteria are included in alternatives for the Pine Valley Allotment.

1. ALTERNATIVE #1 – The No Action Alternative.

This alternative would be the current management activities on the Pine Valley Allotment. A total of 799 cattle are permitted on the Pine Valley Allotment from 6/1 through 6/30. The permitted number is 1,056 cattle from 7/1 through 10/15. The grazing system would be a deferred rotation grazing system using all six pastures on the allotment. The grazing rotation for Alternative #1 – No Action will be repeated every two years.

Suitable Range

The number of acres classified as suitable range in the 1959 Range Analysis listed 32,182 acres of suitable range. This information is located in the 1976 Pine Valley AMP. The 1991 Range Analysis classified 18,849 acres to be suitable for cattle grazing.

Grazing Rotation

First Year

<u>Pasture</u>	<u>No. of Cattle</u>	<u>Period of Use</u>
Mahogany Bench	799	6/01 through 6/30
Grass Valley	1,056	7/01 through 7/31
Mountain	1,056	8/01 through 9/03
Mountain	956	9/04 through 10/15
Pine Valley	100	9/04 through 10/15

Black Bench and Four-Mile Bench would be rested or if proper use has been reached in the last pasture of the grazing rotation they would be grazed the last few days of the grazing season.

Second Year

<u>Pasture</u>	<u>No. of Cattle</u>	<u>Period of Use</u>
Four-Mile Bench	799	6/01 through 6/30
Black Bench	1,056	7/01 through 7/15
Grass Valley	1,056	7/16 through 7/31
Mountain	1,056	8/01 through 9/03
Mountain	956	9/04 through 10/15
Pine Valley	100	9/04 through 10/15

ALTERNATIVE #1 -- No Action would have a total of 4,496 AUM's

Mahogany Bench would be rested or grazed the last few days of the grazing season if the Mountain Pasture has reached proper use before the end of the grazing season. Cattle would be permitted in Grass Valley from 10/1 through 10/15 to allow a location to gather cattle from the Mountain Pasture.

The above dates are estimates. Actual entry and exit dates would be determined by the District Ranger in consultation with appropriate Range Staff. These dates would depend on factors such as forage development, soil condition and proper use determination. Permittees would be notified and cattle would be removed from the National Forest when the Forest Officer judges the allotment to be at proper use. Proper use is defined as 50 percent of current years growth on grass, grass-like, forbs and browse species.

Monitoring Criteria

Allowable use on grass, grass-like, forbs and browse species would be 50 percent (1976 AMP for the Pine Valley Allotment). Utilization would be measured in key areas identified in the Annual Operating Plan for each grazing season.

Mitigation Measure

- a. Fence the Equestrian Campground to exclude cattle from the Pine Valley Recreation Area. The mitigation measure of fencing the Equestrian Campground would be to meet the Desired Future Condition of the LRMP for 1A Developed Recreation.
- b. Develop the Deep Flat spring by installing a head box and 100 gallon livestock watering trough. The mitigation measure for the development of the spring in Deep Flat would be to protect the spring source from being trampled by livestock and deer.

Improvements

Structural and non-structural range improvements needed to improve cattle distribution and forage production on the Pine Valley Allotment are as follows: (See Appendix G for improvement map for Alternative #1 -- No Action.)

- a. Develop the spring at Deep Flat by installing a head box and 100 gallon livestock watering trough. Estimate material and labor costs at approximately \$2,000.
- b. Install a 100 gallon livestock watering trough at Rock Spring in the Mountain Pasture. Estimate material and labor at approximately \$1,500.
- c. Fence the Equestrian Campground to exclude cattle from the Pine Valley Recreation Area. Estimate material and labor costs at approximately \$14,000.

Livestock Management

Salt should be located 1/4 mile from water troughs, springs, ponds and riparian areas.

As cattle enter a pasture, they should be distributed throughout the pasture.

2. ALTERNATIVE #2

The permitted number of cattle would be 800 cattle from 6/1 through 9/30. The grazing system would be a deferred rotation grazing system using Mahogany Bench, Four-Mile, Black Bench, Mountain, Grass Valley and Pine Valley pastures. The rotation would be repeated every two years. The area in the Pine Valley Pasture that falls within management area 1A Developed Recreation would be fenced to exclude cattle from the Recreation Area.

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Suitable Range

Range suitability criteria has been developed for the Pine Valley Allotment. (The criteria for suitable acres classification is in Appendix C.)

The suitable acres on the Pine Valley Allotment would be 18,849 acres.

Grazing Rotation

First Year

<u>Pasture</u>	<u>No. of Cattle</u>	<u>Period of Use</u>
Four-Mile Bench	800	6/01 through 6/30
Black Bench	800	7/01 through 7/15
Grass Valley	800	7/16 through 8/01
Mountain	800	8/02 through 9/04
Mountain	700	9/05 through 9/30
Pine Valley	100	9/05 through 9/30
Mahogany Bench (Rest)		

Second Year

<u>Pasture</u>	<u>No. of Cattle</u>	<u>Period of Use</u>
Mahogany Bench	800	6/01 through 6/19
Grass Valley	800	6/20 through 7/15
Mountain	800	7/16 through 9/01
Four-Mile	700	9/02 through 9/30
Pine Valley	100	9/02 through 9/30
Black Bench (Rest)		

The total permitted AUM's would be 3,200 AUM's.

The above dates are estimates. Actual entry and exit dates would be determined by the District Ranger in consultation with appropriate Range Staff. These dates would depend on factors such as forage development, soil condition and proper use determination. Permittees will be notified and cattle would be removed from the National Forest when the Forest Officer judges the allotment to be at proper use. Proper use on upland and riparian sites is defined in the Monitoring Criteria section of Alternative #2.

When proper use is reached cattle would be moved into the next pasture or if cattle are in the last pasture of the grazing rotation they will be removed from the National Forest.

Monitoring Criteria

Proper use on upland suitable range sites would be 50 percent of total available forage plants, except crested wheatgrass where 60 percent is allowable (Forest Plan, Page IV-36, Range Management, Direction 3, Standard and Guidelines [S&G] 2A). Appropriate Range Personnel will monitor percent utilization of grass and grass-like plants during the grazing season utilizing approved Range Analysis techniques. Utilization would be measured at designated benchmark locations. Benchmark locations would be utilization cages located in the following areas: one mile northeast of Rock Springs in the Mahogany Bench Pasture,

1/4 mile east of the first trough on the Four-Mile Spring pipeline, 1/4 mile west of the first pond on the Wide Hollow Spring pipeline, 1/2 mile north of Black Bench Guzzler, Wood Bench, White Rock seeding, 1/4 mile north of Big Water Reservoir, Sheep Pens and Mill Flat.

Proper use in riparian areas would be 60 percent on grass and grass-like plants. On willows and other riparian shrubs proper use would be 50 percent utilization or less of new leader production. Proper use is reached when utilization standards are first reached by either vegetation group (Forest Plan, Page IV-41, Riparian, Direction 3, S&G A, B, C).

Areas of the allotment that are in 9A. Management of Riparian Areas are East Pinto Creek and Santa Clara River. Allowable use on grass, grass-like, forbs and willows would be 50 percent (Forest Plan, IV-138, Range Resource Management, Direction 1, S&G A).

Proper use can be measured at any location within the riparian areas. Benchmarks would not be designated. Riparian areas that would be monitored on the allotment are: Santa Clara River below the town Pine Valley, Water Canyon, Reservoir Canyon, Bare Valley, Mill Flat, Big Water, The Cove, Long Flat, Deep Flat, Pinto Springs, Bench Springs and the East Fork of Pinto Creek.

In pastures with a combination of upland and riparian areas proper use for the pasture is when utilization is first reached on either site. The Mahogany Bench, Grass Valley and Mountain pastures have a combination of upland and riparian forage locations.

Additional Production and Utilization Surveys and mapping will be completed to determine if the allotment is properly stocked. The nested frequency plots can be read to monitor and evaluate trend.

Mitigation Measure

The following structural, non-structural range improvements and management techniques that may mitigate some of the impacts of livestock grazing on riparian areas and mountain meadows, water quality and effects on wildlife game and non-game animals on the Pine Valley Allotment.

- a. The reservoirs on the Mountain Pasture would be fenced to control livestock use adjacent to the reservoirs. The reservoirs to be fenced are Big Water, The Cove, Long Flat and Wood Bench. The mitigation measure for constructing fences around the reservoirs would be improved duck nesting habitat and increased cover for smaller mammals within the fenced areas of the reservoirs.
- b. To meet the Desired Future Condition in the Forest Plan a rider/herder would be used on the Mountain Pasture. The herder would mover cattle out of riparian areas daily to distribute livestock while they are in the Mountain Pasture. The mitigation measure for using a herder would be to decrease the cattle use of riparian vegetation on the Mountain Pasture.
- c. Extend the Wide Hollow pipeline along the private property in Grass Valley to a trough west of the private land. The mitigation measure is to obtain better cattle distribution in the Grass Valley Pasture by the addition of another permanent water source.
- d. Develop the spring in Deep Flat with a head box and trough. The mitigation measure is to stop cattle and deer from trampling the spring source in Deep Flat.

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- e. Construct a fence around the riparian area of Mill Flat. The mitigation measure is to protect the riparian area in Mill Flat from cattle and recreational livestock use. The fence would also improve the vigor and plant composition within the fenced areas.
- f. Construct a fence around the Mill Canyon Trailhead. The mitigation measure would be to stop cattle from concentrating at the trailhead before they are permitted on the Mountain Pasture.
- g. Relocate 3/4 mile of the White Rocks Trail in Sections 21 and 28 between Mill Flat Trailhead and Rose Bush Reservoir. The mitigation measure would be to decrease the amount of soil erosion coming from the White Rock Trail.
- h. Burn 1,000 acres of oak brush in Mahogany Bench. The mitigation measure would be to increase the amount of forage available for cattle and wildlife in the Mahogany Bench Pasture.
- i. Construct a 5,000 gallon guzzler near Paradise Reservoir. The mitigation measure would be the addition of another permanent water and improve cattle distribution on the north end of the Mountain Pasture. This would decrease the cattle use on the vegetation around The Cove and Long Flat.
- j. Construct 1 1/4 mile of fence to create the Water Canyon Riparian Pasture. The mitigation measure for the creation of the Water Canyon Riparian Pasture would be the improvement of stream side vegetation and stabilized stream banks in Water Canyon.
- k. Construct a fence around Grass Valley Reservoir to exclude livestock grazing with the exception of a corridor allowing livestock access to water. The mitigation measure for the fence around the Grass Valley Reservoir would be the improvement of waterfowl nesting habitat.
- l. Maintenance of the chained and seeded areas will be required for continued optimum forage production in these areas. The initial cost of the retreatment of chained and seeded areas will be shared equally between the Forest Service and grazing permittees. The maintenance responsibility of seedings after the initial retreatment will be assigned to the grazing permittees.

Livestock Management

The reservoirs on the Mountain Pasture would be fenced to control livestock use adjacent to the reservoirs. The reservoirs to be fenced are Big Water, The Cove, Long Flat and Wood Bench. (See Appendix H.) A lane would be left to allow large herbivore access to the water in the reservoirs.

To meet the Desired Future Condition in the Forest Plan a rider/herder would be used on the Mountain Pasture. The herder would move cattle out of riparian areas daily to distribute livestock while they are in the Mountain Pasture.

Salt should be located 1/4 mile from water trough, springs, ponds and riparian areas.

As cattle enter an allotment pasture, they should be distributed throughout the pasture. Cattle would not be allowed to concentrate at historically heavily used areas, such as

Grassy Flat, White Rocks, Big Water, The Cove, Long Flat, Mill Flat and along the Santa Clara River below the town of Pine Valley.

Improvements

To meet the Desired Future Condition of the Management Areas within the Pine Valley Allotment the following structural and non-structural range improvements would be completed for Alternative #2 are as follows: (See Appendix A.)

- a. Extend the Wide Hollow pipeline along the private property in Grass Valley to a trough west of the private land. Estimate material and labor costs at approximately \$2,500.
- b. Develop the spring in Deep Flat with a head box and trough. Estimate material and labor costs at approximately \$2,000.
- c. Construct a fence around the riparian area of Mill Flat. Estimate material and labor costs at approximately \$10,000
- d. Construct a fence around the Mill Canyon Trailhead. Estimate material and labor costs at approximately \$2,000.
- e. Relocate 3/4 mile of the White Rocks Trail in Sections 21 and 28 between Mill Flat Trailhead and Rose Bush Reservoir. Estimate material and labor costs at approximately \$3,000.
- f. Burn 1,000 acres of oak brush in Mahogany Bench. Estimate material and labor costs at approximately \$7,000.
- g. Construct a 5,000 gallon guzzler near Paradise Reservoir. Estimate material and labor costs at approximately \$8,000.
- h. Install a 100 gallon livestock water trough at Rock Spring on the Mountain Pasture. Estimate material and labor costs at approximately \$1,500.
- i. Repair the spring development in First Water. Estimate material and labor costs at approximately \$2,500.
- j. Construct 1 1/4 mile of fence to create the Water Canyon Riparian Pasture. Estimate material and labor costs at approximately \$7,000.
- k. Construct a fence around Grass Valley Reservoir to exclude livestock grazing with the exception of a corridor allowing livestock access to water. Estimate material and labor costs at approximately \$5,000.
- l. Construct fences around the riparian area in Big Water, The Cove, Long Flat and Wood Bench Spring. Estimate material and labor costs at approximately \$15,000.

Range improvements would be completed as funds become available for each project. Site-specific NEPA documents may be required for each range improvement proposed for Alternative #2.

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3. **ALTERNATIVE #3 – Proposed Action**

The Proposed Action for the revision of the Pine Valley AMP is to permit 800 cattle from 6/1 through 10/15. The proposed grazing system would be a deferred rotation grazing system using Mahogany Bench, Four-Mile Bench, Black Bench, Grass Valley, Mountain and Pine Valley pastures. The area in the Pine Valley Pasture that falls within Management Area 1A Developed Recreation would be fenced to exclude cattle from the recreation area.

Suitable Range

Range suitability criteria has been developed for the allotment. (The criteria for suitable acres classification is in Appendix C.)

The suitable acres on the Pine Valley Allotment would be 18,849 acres.

Grazing Rotation

The grazing rotation for Alternative #3 Proposed Action is listed below. The grazing rotation would be repeated every two years.

First Year

<u>Pasture</u>	<u>No. of Cattle</u>	<u>Period of Use</u>
Mahogany Bench	800	6/01 through 6/21
Grass Valley	800	6/22 through 7/15
Mountain	800	7/16 through 9/04
Black Bench	700	9/05 through 9/15
Four-Mile	700	9/16 through 10/15
Pine Valley	100	9/05 through 10/15

Second Year

<u>Pasture</u>	<u>No. of Cattle</u>	<u>Period of Use</u>
Four-Mile Bench	800	6/01 through 6/30
Black Bench	800	7/01 through 7/15
Grass Valley	800	7/16 through 7/31
Mountain	800	8/01 through 9/03
Mountain	700	9/04 through 9/26
Pine Valley	100	9/27 through 10/15
Four-Mile Bench and Black Bench	700	9/27 through 10/15

The total permitted AUM's would be 3,600 AUM's.

The above dates are estimates. Actual entry and exit dates would set be by the District Ranger in consultation with appropriate Range Staff. These dates would depend on factors such as forage development, soil conditions and proper use determination. Permittees will be notified and cattle will be removed from the National Forest when the Forest Officer judges the allotment to be at proper use. Proper use is defined in the Monitoring Criteria section of Alternative #3.

Monitoring Criteria

Proper use on upland suitable range sites would be 50 percent of total available forage plants, except crested wheatgrass where 60 percent is allowable (Forest Plan, Page IV-36, Range Management, Direction 3, Standards and Guidelines [S&G] 2A). Appropriate Range Personnel will monitor percent utilization of grass and grass-like plants during the grazing season utilizing approved Range Analysis techniques. Utilization would be measured at designated benchmark locations. Benchmark location would be utilization cages located in the following areas: one mile northeast of Rock Springs in the Mahogany Bench Pasture, 1/4 mile east of the first trough on the Four-Mile Spring pipeline, 1/4 mile west of the first pond on the Wide Hollow Spring pipeline, 1/2 mile north of Black Bench Guzzler, Wood Bench, White Rocks seeding, 1/4 mile north of Big Water Reservoir, Mill Flat and Sheep Pens.

Proper use in riparian areas would be 60 percent on grass and grass-like plants. On willows and other riparian shrubs proper use would be 50 percent utilization or less of new leader production. Proper use is when utilization standards are first reached by either vegetation group (Forest Plan, Page IV-41, Riparian, Direction 3, S&G A, B, C).

Areas of the allotment in 9A Riparian Management Areas are East Fork of Pinto Creek and Santa Clara River. Allowable use on grass, grass-like, forbs and willows would be 50 percent (Forest Plan, IV-138, Range Resource Management, 'Direction 1, S&G A).

Proper use can be measured at any location within the riparian areas. Benchmarks will not be designated.

Riparian areas that will be monitored on the allotment are: Santa Clara River below the town of Pine Valley, Water Canyon, Reservoir Canyon, Bare Valley, Mill Flat, Big Water, The Cove, Long Flat, Deep Flat, Pinto Springs, Bench Springs and East Fork of Pinto Creek.

In pastures with a combination of upland and riparian areas, proper use for the pasture is when utilization is first reached on either site. The Mahogany Bench, Grass Valley and Mountain pastures have a combination of upland and riparian forage locations.

Additional Production and Utilization Surveys and mapping will be completed to determine if the allotment is properly stocked. The nested frequency plots can be read to monitor and evaluate trend.

Mitigation Measure

The mitigation measure would be the reduction of permitted cattle on the Pine Valley Allotment from 1,056 to 800 cattle from 6/1 through 10/15. The reduced number of cattle on the allotment would reduce the cattle use on vegetation in the riparian areas.

Livestock Management

Salt should be located 1/4 mile from water troughs, springs, ponds and riparian areas.

As cattle enter an allotment pasture, they should be distributed throughout the pasture. Cattle will not be allowed to concentrate at historically heavily used areas, such as White Rocks, Big Water, The Cove, Long Flat, along the Santa Clara River below the town of Pine Valley and Mill Flat.

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Improvements

There were no structural range improvements proposed with this alternative. (See Appendix I.)

4. ALTERNATIVE #4

The permitted cattle on the Pine Valley Allotment would be 650 cattle from 6/1 through 10/15. The grazing system would be a rest rotation grazing system. Five of the six pastures would receive a year of rest before cattle graze the rested pasture. The area included in Management Area 1A Developed Recreation in the Pine Valley Pasture would be fenced to exclude cattle from the Recreation Area.

Suitable Range

Range suitability criteria has been developed for the allotment. (The criteria for suitable acres classification is in Appendix C.)

The number of suitable acres on the Pine Valley Allotment is 18,849 acres.

Grazing Rotation

The grazing rotation would be repeated every five years.

First Year

<u>Pasture</u>	<u>No. of Cattle</u>	<u>Period of Use</u>
Mahogany Bench	650	6/01 through 6/20
Grass Valley	650	6/21 through 7/21
Mountain	650	7/22 through 9/05
Mountain	500	9/06 through 9/30
Pine Valley	150	9/06 through 10/15
Four-Mile	500	10/01 through 10/15
Black Bench (Rest)		

Second Year

<u>Pasture</u>	<u>No. of Cattle</u>	<u>Period of Use</u>
Four-Mile Bench	650	6/01 through 7/10
Black Bench	650	7/11 through 7/31
Mountain	650	8/01 through 9/05
Mountain	550	9/06 through 9/30
Pine Valley	100	9/06 through 10/15
Mahogany Bench	550	10/01 through 10/15
Grass Valley (Rest)		

Third Year

<u>Pasture</u>	<u>No. of Cattle</u>	<u>Period of Use</u>
Mahogany Bench	650	6/01 through 6/25
Four-Mile	650	6/26 through 8/10
Black Bench	650	8/11 through 9/04
Grass Valley	500	9/05 through 10/15
Pine Valley	150	9/15 through 10/15
Mountain (Rest)		0.5

Fourth Year

<u>Pasture</u>	<u>No. of Cattle</u>	<u>Period of Use</u>
Mahogany Bench	650	6/01 through 6/20
Black Bench	650	6/21 through 7/15
Grass Valley	650	7/16 through 8/02
Mountain	650	8/03 through 9/05
Mountain	525	9/06 through 10/15 9/30
Pine Valley	125	9/06 through 10/15
Grass Valley	525	10/01 through 10/15
Four-Mile Bench (Rest)		

Fifth Year

<u>Pasture</u>	<u>No. of Cattle</u>	<u>Period of Use</u>
Four-Mile Bench	650	6/01 through 7/10
Black Bench	650	7/11 through 7/31
Mountain	650	8/01 through 9/15
Mountain	550	9/16 through 9/30
Pine Valley	100	9/16 through 10/15
Grass Valley	550	10/01 through 10/15
Mahogany Bench (Rest)		

The total permitted AUM's would be 2,925 AUM's.

The above dates are estimated. Actual entry and exit dates would be determined by the District Ranger in consultation with appropriate Range Staff. These dates would depend on factors such as forage development, soil conditions and proper use determination. Permittees will be notified and cattle will be removed from the National Forest when the Forest Officer judges the allotment to be at proper use. Proper use on upland and riparian areas is defined in the Monitoring Criteria section of Alternative #4.

Monitoring Criteria

Proper use on upland suitable range sites would be 50 percent of total available forage plants (Forest Plan, Page IV-36, Range Management, Direction 3, Standards and Guidelines [S&G] 2A). Appropriate Range Personnel will monitor percent utilization of grass and grass-like plants during the grazing season utilizing approved Range Analysis techniques. Utilization would be measured at designated benchmark locations. Benchmark locations would be utilization cages located in the following areas: one mile northeast of Rock Springs in the Mahogany Bench Pasture, 1/4 mile east of the first trough on the Four-Mile

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Spring pipeline, 1/4 mile west of the first pond on the Wide Hollow Spring pipeline, 1/2 mile north of Black Bench Guzzler, Wood Bench, White Rocks seeding, 1/4 mile north of Big Water Reservoir, Mill Flat and Sheep Pen.

Proper use in riparian areas would be 60 percent on grass and grass-like plants. On willows and other riparian shrubs proper use would be 50 percent utilization or less of new leader production. Proper use is when utilization standards are first reached by either vegetation group (Forest Plan, Page IV-41, Riparian, Direction 3, S&G A, B and C).

Areas of the allotment that are in 9A Management of Riparian Areas are East Pinto Creek and Santa Clara River. Allowable use on grass, grass-like, forbs and willows would be 50 percent (Forest Plan, IV-138, Range Resource Management, Direction 1, S&G A).

Proper use can be measured at any location within the riparian areas. Benchmarks would not be designated.

Riparian Areas that would be monitored on the allotment are: Santa Clara River below the town of Pine Valley, Water Canyon, Reservoir Canyon, Bare Valley, Mill Flat, Big Water, The Cove, Long Flat, Deep Flat, Pinto Springs, Bench Springs and East Fork of Pinto Creek.

In pastures with a combination of upland and riparian sites proper use for the pasture is when utilization is first reached on either site. The Mahogany Bench, Grass Valley and Mountain pastures are the units with a combination of upland and riparian forage locations.

Additional Production and Utilization Surveys and mapping will be completed to determine if the allotment is properly stocked. The nested frequency plots can be read to monitor and evaluate trend.

Mitigation Measure

The following structural, non-structural range improvements and management techniques that may mitigate some of the impacts of livestock grazing on riparian areas and mountain meadows, water quality and effects on wildlife game and non-game animals on the Pine Valley Allotment.

- a. The grazing system would be a rest rotation grazing system, resting five of the six pastures on the allotment. The mitigation measure is every pasture except the Pine Valley Pasture would receive one complete year of rest from cattle use.
- b. Construct a fence around the riparian area in Mill Flat. The mitigation measure would be to protect the riparian area from over use by cattle and recreational livestock. The fence would improve the vigor and plant composition in Mill Flat.
- c. Burn up to 100 acres of the upland site around Big Water. The mitigation measure would be the improvement of the upland area around Big Water to increase the available forage for livestock and wildlife.
- d. Construct a 5,000 gallon guzzler near Paradise Reservoir. The mitigation measure is the guzzler would provide another permanent water location for cattle and improve cattle distribution on the north end of the Mountain Pasture.
- e. Develop the spring in Deep Flat by installing a headbox, 100 gallon livestock watering trough. The mitigation measure would be the protection of the spring source in Deep Flat from being trampled by cattle.

- f. Construct a fence around the small reservoirs in Big Water, The Cove, Long Flat and Wood Bench Spring leaving a lane to water so that cattle can water at the reservoirs. The mitigation measure would be improved nesting habitat for waterfowl and increased cover for smaller mammals and other species next to the reservoirs.
- g. Relocate 3/4 mile of the White Rock Trail in Sections 21 and 28 between the Mill Flat Trailhead and Rose Bush Reservoir. The mitigation measure would be the decrease of the soil erosions coming from the White Rock Trail.
- h. Maintenance of the chained and seeded areas will be required for continued optimum forage production in these areas. The initial cost of the retreatment of chained and seeded areas will be shared equally between the Forest Service and grazing permittees. The maintenance responsibility of seedings after the initial retreatment will be assigned to the grazing permittees.

Livestock management

Salt should be located 1/4 mile from water troughs, springs, ponds and riparian areas.

As cattle enter an allotment pasture, they should be distributed throughout the pasture. Cattle will not be allowed to concentrate at historically heavily used areas, such as White Rocks, Big Water, The Cove, Long Flat, Mill Flat and along the Santa Clara River below the town of Pine Valley. A rider/herder is not required to daily check livestock and move cattle out of riparian areas, however, daily riding is strongly encouraged to obtain proper cattle distribution.

Improvements

To meet the Desired Future Conditions described in the Forest Plan for the Management areas in the Pine Valley Allotment the following structural and non-structural range improvements would be completed for Alternative #4. (See Appendix J.)

- a. Construct a fence around the riparian area in Mill Flat. Estimate material and labor costs at approximately \$10,000.
- b. Revegetate up to 100 acres of the upland site around Big Water by burning the rabbitbrush and sagebrush on the upland sites. Estimate material and labor costs at approximately \$2,000.
- c. Construct a 5,000 gallon guzzler near Paradise Reservoir. Estimate material and labor costs at approximately \$8,000.
- d. Construct a fence around the small reservoirs in Big Water, The Cove, Long Flat and Wood Bench Spring leaving a lane so that cattle can water at the reservoirs. Estimate material and labor costs at approximately \$15,000.
- e. Develop the spring in Deep Flat by installing a headbox and 100 gallon livestock watering trough. Estimate material and labor costs at approximately \$2,000.
- f. Install a 100 gallon livestock watering trough at Rock Spring in the Mountain Pasture. Estimate material and labor costs at approximately \$1,500.
- g. Reconstruct the spring development in First Water. Estimate material and labor costs at approximately \$2,500.

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- h. Relocate 3/4 mile of the White Rock Trail in Section 21 and 28 between the Mill Flat Trailhead and Rose Bush Reservoir. Estimate material and labor costs at approximately \$3,000.

Completion of the range improvements for Alternative #4 would be completed as funds become available for each project. Site-specific NEPA documents may be required for each range improvement proposed for Alternative #4

5. **ALTERNATIVE #5**

A total of 725 cattle would be permitted from 6/1 through 10/5. The grazing system would be a modified rest rotation grazing system using Mahogany Bench, Grass Valley, Four-Mile Bench, Black Bench, Mountain and Pine Valley pastures. The pastures that would be rested in the grazing rotation are Mahogany Bench, Black Bench, Grass Valley and Mountain. Management Area 1A Developed Recreation, which includes the Equestrian Campground, would be fenced to exclude cattle from the Recreation Area.

Suitable Range

Range suitability criteria has been developed for the Pine Valley Allotment. (The criteria for suitable acres classification is in Appendix C.)

The suitable acres on the Pine Valley Allotment would be 18,849 acres.

Grazing Rotation

The grazing rotation will be repeated every three years.

First Year

<u>Pasture</u>	<u>No. of Cattle</u>	<u>Period of Use</u>
Mahogany Bench	725	6/01 through 6/20
Grass Valley	575	6/21 through 7/31
Pine Valley	150	6/21 through 7/31
Four-Mile Bench and Black Bench	725	8/01 through 10/05
Mountain (Rest)		

Four-Mile Bench and Black Bench would be grazed together in this rotation.

Second Year

<u>Pasture</u>	<u>No. of Cattle</u>	<u>Period of Use</u>
Four-Mile Bench	725	6/01 through 7/14
Mountain	725	7/15 through 9/15
Grass Valley	725 625	9/16 through 10/05
Pine Valley	100	9/16 through 10/05
Black Bench and Mahogany Bench (Rest)		¹⁶

Third Year

<u>Pasture</u>	<u>No. of Cattle</u>	<u>Period of Use</u>
Mahogany Bench	725	6/01 through 6/20
Four-Mile and Black Bench	725	6/21 through 7/31
Mountain	725	8/01 through 8/31
Mountain	625	9/01 through 10/05
Pine Valley	100	9/01 through 10/05
Grass Valley (Rest)		

The total permitted AUM's would be 3,020 AUM's.

Four-Mile Bench and Black Bench would be grazed together for this rotation.

The above dates are estimates. Actual entry and exit dates would be determined by the District Ranger in consultation with appropriate Range Staff. These dates would depend on factors such as forage development, soil conditions and proper use determination. Permittees will be notified and cattle will be removed from the National Forest when the Forest Officer judges the allotment to be at proper use. Proper use is defined in the Monitoring Criteria section of Alternative #5.

Monitoring Criteria

Proper use on upland suitable range sites would be 50 percent of total available forage plants, except crested wheatgrass where 60 percent is allowable (Forest Plan, Page IV-36, Range Management, Direction 3, S&G 2A). Appropriate Range Personnel will monitor percent utilization of grass and grass-like plants during the grazing season utilizing approved Range Analysis techniques. Benchmark locations would be utilization cages located in the following areas: one mile northeast of Rock Springs in the Mahogany Bench Pasture, 1/4 mile east of the first trough on the Four-Mile Spring pipeline, 1/4 mile west of the first pond on the Wide Hollow Spring pipeline, 1/2 mile north of Black Bench Guzzler, Wood Bench, White Rocks seeding, 1/4 mile north of Big Water Reservoir, Mill Flat and Sheep Pen.

Proper use in riparian areas would be 60 percent on grass and grass-like plants. On willows and other riparian shrubs proper use will be 50 percent utilization or less of new leader production. Proper use is reached when utilization standards are first reached by either vegetation group (Forest Plan, Page IV-41, Riparian, Direction 3, S&G A, B and C).

Areas of the allotment in 9A Riparian Management Areas are East Pinto Creek and Santa Clara River. Allowable use on grass, grass-like, forbs and willows would be 50 percent (Forest Plan, IV-138, Range Resource Management, Direction 1, S&G A). Utilization on browse species within the riparian areas would not exceed 50 percent (Forest Plan, IV-138, Range Resource Management, Direction 1, S&G A).

Proper use can be measured at any location within the riparian areas. Benchmarks would not be designated.

Riparian areas that would be monitored on the allotment are: Santa Clara River below the town of Pine Valley, Water Canyon, Reservoir Canyon, Bare Valley, Mill Flat, Big Water, The Cove, Long Flat, Deep Flat, Pinto Springs, Bench Springs and East Fork of Pinto Creek.

CHAPTER II. ALTERNATIVES

In pastures with a combination of upland and riparian sites proper use for the pasture is when utilization is first reached on either site. The Mahogany Bench, Grass Valley and Mountain pastures have a combination of upland and riparian forage locations.

Additional Production and Utilization Surveys and mapping will be completed to determine if the allotment is properly stocked. The nested frequency plots can be read to monitor and evaluate trend.

Mitigation Measure

The following structural and non-structural range improvements and management techniques that may mitigate some of the impacts of livestock grazing on riparian areas and mountain meadows, water quality and effects on wildlife game and non-game animals on the Pine Valley Allotment.

- a. The grazing rotation is a modified rest rotation grazing system for Alternative #5. The mitigation measure would be three of the six pastures on the allotment would be rested.
- b. The permitted cattle on the allotment would be 725 cattle from 6/1 through 10/05. The mitigation measure is that less cattle would be permitted on the allotment for a shorter season of use. The amount of forage that cattle use would be less because of the shorter season of use and fewer cattle permitted on the allotment.
- c. To meet the Desired Future Condition in the Forest Plan a rider/herder would be used on the Mountain Pasture. The mitigation measure would be that the herder would decrease the cattle use of riparian vegetation on the Mountain Pasture by moving cattle out of the riparian areas daily to distribute cattle throughout the pasture.
- d. Construct a fence around the Equestrian Campground. The mitigation measure of constructing the fence would be to avoid conflict between cattle and recreationists in the Pine Valley Recreational Area.
- e. Construct a fence around the riparian area in Mill Flat. The mitigation measure of building a fence in Mill Flat would be to protect the riparian area from cattle and recreational livestock. The fence would also improve the plant vigor and plant composition in the fence area.
- f. Develop the spring in Deep Flat by installing a trough and headbox. The mitigation measure for developing the spring in Deep Flat would be to protect the spring source from trampling from cattle and wildlife.
- g. Burn 1,000 acres of oak brush in Mahogany Bench. The mitigation measure of burning 1,000 acres in Mahogany Bench would be the increase of available forage for cattle and wildlife.
- h. Install a 5,000 gallon guzzler near Paradise Reservoir. The mitigation measure for the construction of the guzzler would be the addition of another permanent water source and better distribution of cattle on the north end of the Mountain Pasture.
- i. Construct a fence around the Mill Canyon Trailhead. The mitigation measure of the fence around the Mill Canyon Trailhead would be cattle would not over utilize the vegetation along the fence that separates the Grass Valley and Mountain pastures

- j. Relocate 3/4 mile of the White Rocks Trail in Sections 21 and 28 between the Mill Flat Trailhead and Rose Bush Reservoir. The mitigation measure of relocating the White Rock Trail would be the reduction of soil erosion coming from the trail.
- k. Construct fences around Big Water, The Cove, Long Flat and Wood Bench Spring leaving a lane for large herbivores to access the water in the reservoirs. The mitigation measure of constructing fences around the reservoirs on the Mountain Pasture would be increased duck nesting habitat and an increase of cover for smaller mammals and other animal species next to the reservoirs.
- l. Place a solar powered pump in Santa Clara River below the town of Pine Valley. Install a trough 1/4 mile southwest of the pump and run a pipe between the pump and the trough. The mitigation measure for placing a solar powered pump and trough on the Santa Clara River would be the addition of another water source to improve cattle distribution along the Santa Clara River below the town of Pine Valley.
- m. Construct 1 1/4 miles of fence to create the Water Canyon Riparian Pasture. The mitigation measure for creating the Water Canyon Riparian Pasture would be the improved plant vigor and increased plant composition along the stream channel. The stream banks along the stream would recover from the impacts of livestock grazing before cattle would be allowed to return to the pasture.
- n. Construct a fence around Grass Valley Reservoir to exclude livestock grazing with the exception of a corridor allowing livestock access to water. The mitigation measure of the Grass Valley Reservoir fence would be the improvement in waterfowl nesting habitat.
- o. Maintenance of the chained and seeded areas will be required for continued optimum forage production in these areas. The initial cost of the retreatment of chained and seeded areas will be shared equally between the Forest Service and grazing permittees. The maintenance responsibility of seedings after the initial retreatment will be assigned to the grazing permittees.

Livestock Management

The small reservoirs on the Mountain Pasture would be fenced to control livestock use around the reservoirs. The reservoirs that would be fenced are Wood Bench, Big Water, The Cove and Long Flat. (See Appendix K.)

To meet the Desired Future Condition in the Forest Plan a rider/herder would be used on the Mountain Pasture.

A small area around the reservoirs would not be fenced to allow a watering location for livestock access to the water.

Salt should be located 1/4 mile from water troughs, springs, ponds and riparian areas.

As cattle enter an allotment pasture, they should be distributed throughout the pasture. Cattle will not be allowed to concentrate at historically heavily used areas, such as White Rocks, Big Water, The Cove, Long Flat, Mill Flat, Sheep Pens, Quaking Aspen spring and along the Santa Clara River below the town of Pine Valley.

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Improvements

Structural and non-structural range improvements needed to meet the Desired Future Condition of the management areas on the allotment for Alternative #5 are as follows: (See Appendix K.)

- a. Construct a fence around the Equestrian Campground. Estimate material and labor costs at approximately \$14,000.
- b. Construct a fence around the riparian area in Mill Flat. Estimate material and labor costs at approximately \$10,000.
- c. Develop the spring in Deep Flat by installing a trough and head box. Estimate material and labor costs at approximately \$2,000.
- d. Burn 1,000 acres of oak brush in Mahogany Bench. Estimate material and labor costs at approximately \$7,000.
- e. Install a 100 gallon livestock watering trough at Rock Spring in the Mountain Pasture. Estimate material and labor costs at approximately \$1,500.
- f. Install a 5,000 gallon guzzler near Paradise Reservoir. Estimate material and labor costs at approximately \$8,000.
- g. Construct a fence around the Mill Canyon Trailhead. Estimate material and labor costs at approximately \$2,000.
- h. Relocate 3/4 mile of the White Rocks Trail in Sections 21 and 28 between the Mill Flat Trailhead and Rose Bush Reservoir. Estimate material and labor costs at approximately \$3,000.
- i. Construct fences around Big Water, The Cove, Long Flat and Wood Bench Spring leaving a lane for large herbivores to access the water in the reservoirs. Estimate material and labor costs at approximately \$15,000.
- j. Place a solar powered pump in Santa Clara River below the town of Pine Valley. Install a trough 1/4 mile southwest of the pump and run a pipe between the pump and the trough. Estimate material and labor costs at approximately \$9,000.
- k. Construct 1 1/4 miles of fence to create the Water Canyon Riparian Pasture. Estimate material and labor costs at approximately \$7,000.
- l. Construct a fence around Grass Valley Reservoir to exclude livestock grazing with the exception of a corridor allowing livestock access to water. Estimate material and labor costs at approximately \$5,000.

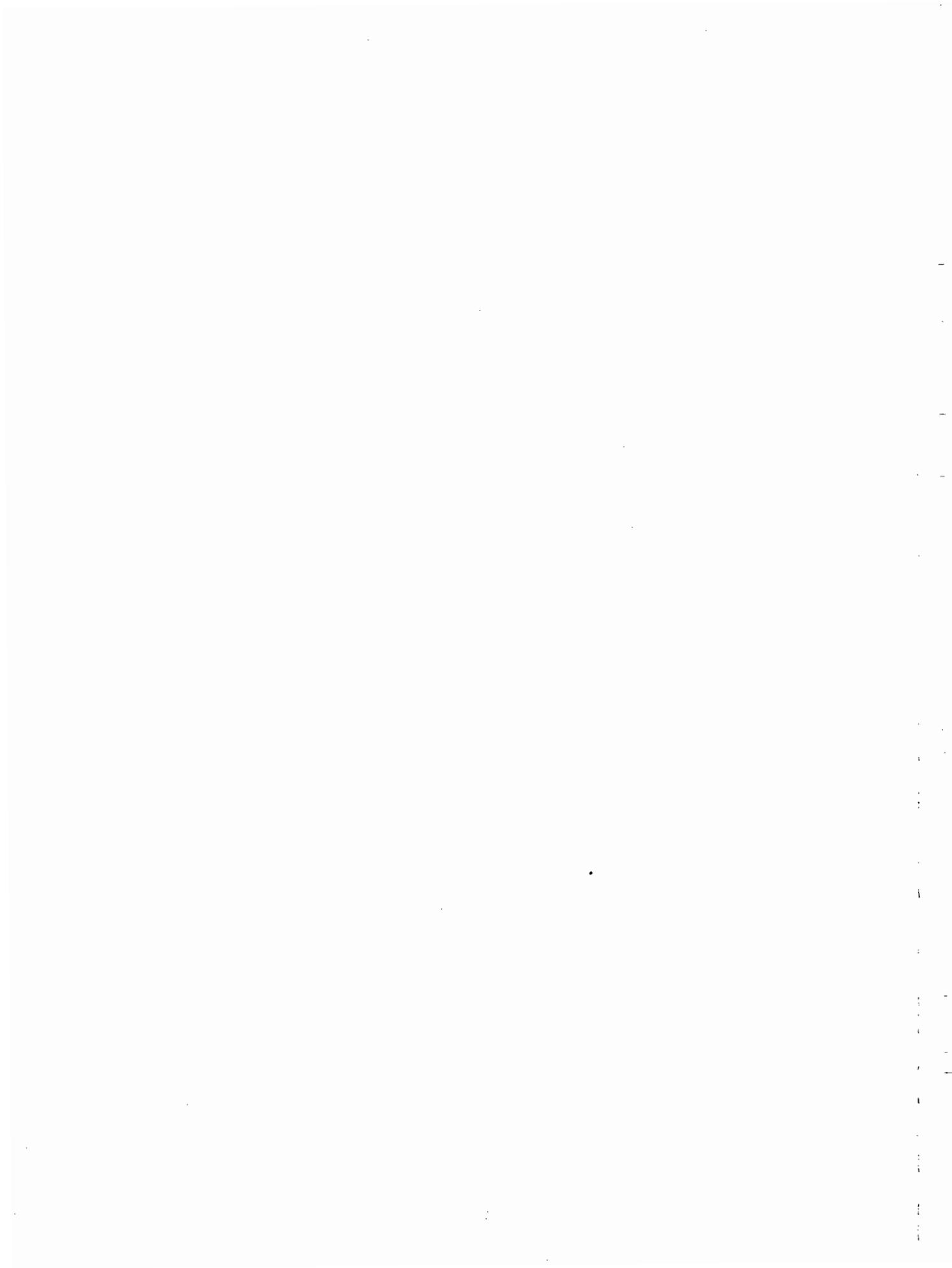
Range improvements for Alternative #5 would be completed as the funds become available for each project. Site-specific NEPA documents may be required for each range improvement proposed for Alternative #5.

COMPARISON OF ALTERNATIVES

Chapter II, Table 1 summarizes the effects of implementing each Alternative by Issue.

Table II-1 COMPARISON OF ALTERNATIVES

RELEVANT ISSUES	NO ACTION ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5
Issue 1: Over Utilization of riparian areas and mountain meadows -- a. Percent utilization in riparian and mountain meadows	Heavy use between 65% to 75% especially in dry years	Moderate use between 55% to 65%	Heavy use between 60% to 70%	Moderate use between 55% to 60%	Moderate use between 55% to 60%
Issue 2: Economic effects management strategies has on grazing permittees -- a. Permitted Number and Season of Use b. AUM'S	799 Cattle from 6/1 to 6/30 and 1,056 Cattle from 7/1 to 10/15 4,496	800 Cattle from 6/1 to 9/30 3,200	800 Cattle from 6/1 to 10/15 3,600	650 Cattle from 6/1 to 10/15 2,925	725 Cattle from 6/1 to 10/05 3,020
Issue 3: Water Quality a. Maintain a Biotic Condition Index (BCI) of 70 plus b. Increase the presence of clean water species in the Allotment streams	BCI would remain the same Clean water species would not increase	BCI would improve Clean water species would increase	BCI would remain the same Clean water species would not increase	BCI would improve Clean water species would increase	BCI would improve Clean water species would increase
Issue 4: Impacts of livestock grazing on wildlife habitat for non-game and game animals a. Percent utilization of grass, grass-like and browse species	Heavy use on grasses and moderate use on browse species	Moderate use on grasses and browse species	Heavy use on grasses and moderate use on browse species	Moderate use on grasses and browse species	Moderate use on grasses and browse species



CHAPTER III. AFFECTED ENVIRONMENT

The allotment includes Management Areas 1, 1A, 2A, 2B, 4A, 4C, 5A, 6A, 8A, 9A and 10B. Each of the management areas has a specific management prescription relating to livestock, timber, recreation values, maintenance of wildlife and watershed values. Detailed management prescriptions are displayed in the Dixie National Forest Land and Resource Management Plan on pages IV-24, 57, 63, 68, 73, 88, 97, 109, 121, 135 and 156.

This section describes the environmental components that would be affected by the alternatives if they were implemented. Only those environmental components that are relevant to the issues, purpose and need, and the decision to be made will be addressed.

A. LIVESTOCK GRAZING

Domestic livestock grazing has occurred on the Pine Valley Cattle Allotment since the settlement of Pine Valley in 1859. The Pine Valley Allotment has been grazed with cattle and horses except for a brief period between 1929 and 1934, when some of the permittees attempted a sheep operation. In 1964 the remaining permitted horses were exchanged for cattle.

Six grazing permittees are permitted 799 cattle from 6/1 through 6/30. Seven permittees are permitted 1,056 cattle from 7/1 through 10/15. The allotment is managed using a six pasture deferred rest rotation grazing system. The current pasture rotation system is in the 1976 Pine Valley AMP. In 1990 and 1991 the permitted numbers were temporarily reduced and the pasture rotation was modified because of the extreme drought conditions that have occurred on the allotment since 1986.

The proposed action would reduce permitted cattle by 24 percent, which may affect the incomes of the permittees that have cattle permitted on the allotment.

The 1990 Production Utilization survey indicates that the estimated capacity of the Pine Valley Allotment is 3,080 AUM's. (See the 1990 Utilization Survey calculations in Appendix L.)

Thus far into the 1991 grazing season, 771 cattle are currently grazing the Mountain and Pine Valley pastures. Cattle have grazed the Four-Mile Bench, Black Bench and Grass Valley pastures in 1991. The reduced numbers are due to the continuing drought conditions on the allotment.

B. WILDLIFE

The area within the Pine Valley Allotment supports a viable deer, turkey, grouse, cougar, bear and many small predators, such as bobcat, fox and coyote, rodents and avian species populations. Cattle and deer may be competing for forage on the Mountain Pasture when cattle switch from grass to browse for feed. The heavy utilization of vegetation around the small reservoirs, streams and mountain meadows on the Mountain Pasture may be impacting the non-game animals and birds that inhabit the area within the Pine Valley Allotment. The impacts to the non-game animals and birds may be the lack of hiding, nesting and cover habitat adjacent to water caused by the over utilization of riparian areas.

The vegetation improvement projects and water developments completed have benefitted wildlife by increasing forage, increased edge effects, increased successional stages of vegetation and improved water distribution on the allotment.

CHAPTER III. AFFECTED ENVIRONMENT

C. RECREATION

The Pine Valley Wilderness and Roadless Areas are popular for recreationists such as hikers, recreational horsemen, campers, fishermen and hunters from June through October of each year.

The Equestrian Campground is included in the Pine Valley Recreation Area. The Equestrian Campground is under construction and a fence would be constructed to exclude cattle from the campground in 1992. Dispersed camping occurs throughout the area included in the Pine Valley Allotment from June through October. The most heavily used dispersed recreation camping sites are Water Canyon, Mill Flat, Quaking Aspen Spring, Pinto Springs and along the South Fork of Pinto Creek. The heaviest use in these dispersed camping sites occurs during the deer hunting seasons from August through October. (See the Recreation Horse Use Report found in Appendix M.)

D. RIPARIAN AREAS

Cattle, wildlife and recreational stock are attracted to and concentrate in the riparian areas during the summer months. The use on riparian areas by large herbivores is exceeding allowable use guidelines for riparian areas described in the Forest Plan (LRMP IV-41).

Some riparian areas along the Santa Clara River do not meet LRMP groundcover requirements due to heavy livestock and recreation use. The standards and guidelines in the Forest Plan for 9A Riparian Area Management is that ground cover is maintained at least 70 percent within riparian areas (LRMP IV-41 Riparian Area Management 3 S&G C). Lack of groundcover is also a concern in riparian areas along Water Canyon and Pinto Creek but it is unknown what the potential groundcover could be on these sites.

In general, streambanks are stable throughout the allotment. Exceptions have been noted on Pinto Creek and Water Canyon where bank instability is contributing sediment to these streams. Banks are actively eroding on the private land along the Santa Clara River through Pine Valley.

LRMP standards for overhanging vegetation, such as carex, juncus, watercress, willow species and other hardwood species, appears to be met in most of the allotment except for the section of Santa Clara River just above the gorge. Livestock use in this narrow riparian area may be limiting riparian shrub recovery from past heavy grazing. The riparian shrub component is relatively healthy along Pinto Creek and the upper Santa Clara River.

Substantial loss of riparian habitat occurred many years ago on the Mountain Pasture as a result of the gully erosion described above. Most of the riparian areas remaining are relatively healthy and stable meadows. They receive concentrated heavy use by livestock every year. Reduced vigor and groundcover may be a problem at White Rocks. Gully erosion could be rejuvenated in response to a storm event in this area. (See the Regional Ecologists Report in Appendix N.)

E. SOIL

There are 36 soil mapping units identified for the Pine Valley Allotment. (See Appendix D, E and F.) Cattle are grazing on slopes of greater than 25 percent which may be increasing soil erosion on the allotment. Over utilization on riparian and upland sites may be increasing soil sedimentation in the allotment streams degrading water quality for downstream water users. Also cattle may be compacting soils around the small reservoirs on the Mountain Pasture. The compaction of soils may be decreasing water infiltration into the soil profile and increasing runoff rates from lack of groundcover around White Rocks, Water Canyon, The Cove, Wood Bench, Grassy Flat and Grass Valley.

F. WATER QUALITY

Macroinvertebrate communities have been sampled periodically in Water Canyon (1981 and 1987), Forsyth Canyon and Reservoir Canyon (1987) and the Santa Clara River (1987 and 1989). While water quality monitoring on the Pine Valley Allotment has not been intensive enough to conclusively evaluate the impacts of livestock grazing, this data provides a "snapshot" indicator of water quality trend at the sample site. Macroinvertebrates are useful bioindicators of water quality degradation because some species are less tolerant of such impacts than other. Dominance of sediment-tolerant species in a community indicates excessive sediment impacts (Mangum, 1985; Rinne, 1990).

The use of macroinvertebrates as Management Indicator Species for aquatic habitat is supported by the LRMP (p. II-17). The minimum viable population of macroinvertebrates in a stream is defined as a Biotic Condition Index (BCI) of 70 (LRMP II-16a). All of the sites sampled on the Pine Valley Allotment had BCI's above 70 and received a fair to good rating for supporting a resident fishery with the exception of the Santa Clara River below Pine Valley. This site had a BCI of 66 and received a poor rating, reflecting the heavy sediment impacts from the poor riparian conditions immediately upstream on private land.

Sediment tolerant species dominated most of the sites. Clean water species were well represented in Reservoir Canyon and the upper Santa Clara site, but were absent from the lower Santa Clara site (Mangum, 1981; 1987 and 1989).

Santa Clara River, Water Canyon and the South Fork of Pinto Creek have been classified as Class 3 trout streams according to the Utah Division of Wildlife Resources (UDWR). Class 3 trout streams are considered important since they comprise about half of the total stream fishery habitat in Utah and therefore support a significant portion of stream fishing pressure.

The Santa Clara River is a wild brown trout stream. It receives significant fishing pressure because it originates and flows through a high use Recreational Area (Pine Valley). Grazing effects are limited to the headwater area upstream from the steep gorge the river flows through. There are some sedimentation problems due to recreation and grazing impacts in this headwater area. The stream banks are actively eroding on the private land along the Santa Clara River through Pine Valley. This is causing sedimentation problems downstream for the wild brown trout fishery.

Water Canyon flows off the west slopes of the Pine Valley Mountains down into Grass Valley. Pure strain Bonneville cutthroat trout have been confirmed by electrophoresis by UDWR in 1986. The stream is small and experiences extreme low flows during dry years. There are some unstable banks and sedimentation problems caused by livestock use. Grazing has also changed some of the riparian plant species to less desirable ones. Re-establishing a healthy riparian area along this stream would enhance bank storage of water which would in turn augment late summer stream flows.

Reservoir Canyon also flows off the west slopes of the Pine Valley Mountain down into Grass Valley. In 1986 the population of cutthroat trout was confirmed as pure strain Bonneville by electrophoresis by UDWR. The quality of fish habitat varies in Reservoir Canyon. In areas of dense timber stands, dead-fall and/or large boulders, the trout habitat is excellent. There is an abundance of ripple/pool ratio and stable stream banks with good riparian vegetation. In areas where the surrounding vegetation is more open such as meadow areas, overgrazing and subsequent fish habitat degradation is evident. However, grazing effects are not severe in this stream.

CHAPTER III. AFFECTED ENVIRONMENT

The South Fork of Pinto Creek originates on the west side of the Pine Valley Mountain and flows towards Newcastle Reservoir. It contains populations of wild rainbow and cutthroat trout. There are some unstable stream banks and sedimentation effects from grazing and roading. (See Forest, Fisheries Biologist Report Appendix O.)

G. CULTURAL RESOURCE

Livestock grazing is not a ground disturbing activity since there is no potential to change the character of historic properties in the area.

H. WILDERNESS

The Wilderness Act of 1984 set aside 83,000 acres on the Forest which possesses outstanding natural characteristics. Management emphasis is to provide for the protection and perpetuation of essentially natural bio-physical conditions. Solitude and a low level of encounters with other users or evidence of past use is an essential part of the social setting ([LRMP] Chapter IV-121). The act designated three wilderness areas within the Dixie National Forest; Ashdown Gorge (7,000), Box Death Hollow (26,000) and Pine Valley Mountain (50,000).

Approximately 12,462 acres of the Pine Valley Allotment included in the Pine Valley Mountain Wilderness area. Livestock grazing occurs on the Mountain Pasture from approximately 7/20 through 10/15. The number of cattle allowed in Mill Flat, Sheep Pens, Bare Valley, Reservoir Canyon and First and Second Water have been limited to less than 200 cattle for the last five years to not exceed the allowable use on upland and riparian sites in the small mountain meadows. (See Recreational Horse Use Report in Appendix M.)

I. THREATENED, ENDANGERED SPECIES AND SENSITIVE SPECIES.

There are no known Threatened or Endangered species of plants and animals within the Pine Valley Allotment. The U.S. Fish and Wildlife Service was contacted and found nothing of significant concern to the Fish and Wildlife Service. (See Appendix P.)

Sensitive species have been determined by the Regional Forester (FSM 2670.5) and are those species for which population viability is a concern. Region 4 has compiled an official listing of sensitive vertebrate and plant species by National Forest. One animal species exists on the Pine Valley Allotment that has been classified as a sensitive species which is the Bonneville Cutthroat Trout Oncorhynchus clarki utah.

Cattle may be impacting trout habitat in Water and Reservoir Canyons on the Mountain Pasture (See Fisheries Biologist report Appendix O.)

J. VEGETATION

According to the 1991 Range Analysis there are 18,849 acres suitable for livestock grazing. Small reseeding projects started on the allotment as early as 1935. Records indicate approximately 5,817 acres have received some kind of revegetation treatment, primarily in the form of chainings and seedings. The areas treated were Four-Mile Bench, Mahogany Bench, Grass Valley, Wood Bench, Black Bench and White Rocks. These areas were seeded with a variety of wheatgrasses after treatment.

The condition of the seeded areas within the allotment are classified as marginally satisfactory. The re-invasion of woody shrubs into the seedings is the reason these areas are classified as marginally satisfactory.

CHAPTER III. AFFECTED ENVIRONMENT

Other vegetation types found on the allotment are riparian, sagebrush/rabbitbrush, oak brush, pinion/juniper, aspen, ponderosa, spruce/fir and mountain meadows.

The riparian areas on the allotment may be impacted the heaviest by livestock grazing. Livestock use in the riparian areas on the Mountain Pasture has exceeded allowable use for the last two years.

Mill Flat is a 21 acre mountain meadow with a small stream and a riparian area in unsatisfactory condition. Kentucky bluegrass dominates the site and is not the desired plant for the riparian area and mountain meadow. The Mill Flat meadow is a major junction for three trails and a very heavily used spot for overnight camping and the grazing of recreational livestock. The vegetation of Mill Flat exhibits extremely low plant vigor, shallow root systems and very little production. In 1991 actual use on forage by recreational livestock exceeded proper use standards long before August 1, 1991 when cattle were scheduled to graze the area. The estimated grazing capacity of the Mill Flat Meadow is 7 AUM's. Estimating grazing capacities by this methodology can only be used in very small areas and cannot be used on the whole allotment.

Bare Valley and Reservoir Canyon are located in the Mountain Pasture. The meadow areas have a combined total of approximately 50 acres and are in low satisfactory condition. The meadows are producing approximately 1,000 pounds per acre and the estimated capacity is approximately 39 AUM's. Estimating grazing capacities by this methodology can only be used in very small areas and cannot be used on the whole allotment.

The seeded areas may be affected by the re-invasion of woody species which includes sagebrush, rabbitbrush and pinion/juniper trees. The production of grass and browse species has decreased because of the re-invasion of woody species into the seeded areas.

The mountain meadows also may be impacted from recreational livestock use from May through October of each year.

K. WETLANDS AND FLOODPLAINS

Livestock grazing has not altered wetlands or floodplains on the Pine Valley Allotment. No significant wetlands or floodplains will be impacted by the Proposed Action Alternative or other alternatives. Therefore, there will be no conflict with Executive Order 11988 (Floodplain Management) or Executive Order 11990 (Wetlands Protection).



CHAPTER IV. ENVIRONMENTAL CONSEQUENCES

This chapter of the EA provides the analytical basis for the comparison of alternatives. It describes the expected environmental consequences of each alternative on the relevant issues. The resources are described in Chapter III, The Affected Environment, and are directly linked to the issues listed in Chapter I, Purpose and Need. As noted in Chapter I, the analysis of the environmental consequences are evaluated by a monitoring indicator that was developed for each issue. For easy reference these monitoring indicators are repeated at the beginning of each issue.

A. ISSUE 1: OVER UTILIZATION OF RIPARIAN AND MOUNTAIN MEADOWS.

The monitoring indicator is:

Percent utilization of livestock use on grass and grass-like plants in riparian and mountain meadows.

1. ALTERNATIVE #1 -- The No Action Alternative**Direct and Indirect Effects**

The current grazing system is a deferred rotation grazing system, using the six pastures on the Pine Valley Allotment. The possible impacts of allowing current management would be the continuous over utilization of the riparian and mountain meadows. Proper use is 50 percent on all grasses except crested wheatgrass where 60 percent is allowable. The allowable use in riparian areas on grass and grass-like species would be 60 percent. Any cattle use over 60 percent is considered heavy use. The areas that would continue to receive the heaviest livestock use would be White Rocks, Big Water, The Cove, Long Flat, Wood Bench, Water Canyon, Mill Flat and the riparian area below the town of Pine Valley.

Since 1986 the Pine Valley Allotment has experienced extreme drought conditions with below normal precipitation levels. The impacts of the extended drought on the riparian and mountain meadows has been the lowering of the water tables and decreasing spring flows. This has impacted the riparian vegetation by affecting the vigor of the grass and grass-like species and willows in the riparian areas.

The permitted numbers are 799 cattle from 6/1 through 10/15 and 257 cattle from 7/1 through 10/15 for a total of 1,056 cattle (4,496 AUM's). The Pine Valley Allotment is currently stocked for the years that the areas receive above normal precipitation. The current stocking rate exceeds the grazing capacity of the Pine Valley Allotment.

The long term effects of continuous over use on riparian areas would be the loss of plant vigor and desirable plant composition. The loss of riparian vegetation in the green line around watering locations would also occur.

Recreational livestock use is increasing each year in the Mountain Pasture. (See recreational livestock use report Appendix M.)

2. ALTERNATIVE #2**Indirect and Direct Effects**

The grazing system is a deferred rotation grazing system, using all six pastures with alternating yearlong rest for Mahogany Bench and Black Bench pastures. Because of the deferment, the riparian vegetation has the opportunity to store carbohydrates and set seed

CHAPTER IV. ENVIRONMENTAL CONSEQUENCES

every other year (Platts 1989). The grazing system provides some control of animal distribution.

When precipitation on the allotment is average or below normal, riparian vegetation would not be impacted as much as in Alternative #1 and #3 because there would be less cattle, a shorter grazing season, new range improvements and improved livestock management techniques proposed for Alternative #2.

The proper use levels of 60 percent or less that are described in the LRMP for riparian areas could be met if the following improvements and livestock management techniques are implemented. The following reservoirs on the Mountain Pasture would be fenced, they are Big Water, The Cove, Long Flat and Wood Bench Spring. A lane to water would allow livestock and wildlife access to water in the reservoir. A 5,000 gallon guzzler would be constructed south of Paradise Reservoir to provide an additional permanent water in the north end of the Mountain Pasture. The addition of another permanent livestock water location in the north end of the Mountain Pasture would reduce the livestock use in Long Flat and The Cove. A herder/rider would be used when cattle are in the Mountain Pasture. The herder/rider would move cattle out of the riparian areas daily while cattle are in the Mountain Pasture. The vigor of the riparian vegetation would improve because of the reduction of permitted cattle, shorter season of cattle use, the range improvements and livestock management techniques to be implemented on the Pine Valley Allotment.

The vegetation within the riparian and mountain meadows could be impacted by the concentration of cattle around the water locations in the Mountain Pasture.

There would be an improvement of soil productivity within the fenced riparian areas. Adverse soil compaction would occur in the lanes to water for livestock around Big Water, The Cove, Long Flat and Wood Bench Spring. The soil compaction would be from the heavy concentration of cattle utilizing the lanes to water at the reservoirs.

3. ALTERNATIVE #3

Direct and Indirect Effects

The grazing system is a deferred rotation grazing system using all six pastures on the allotment. During the years that precipitation is above normal the livestock use on riparian and mountain meadows would be within the proper use levels which is 60 percent in riparian areas. In years when precipitation is average or below normal, livestock use would be above the proper use levels. Cattle would concentrate around the riparian areas while they are in the Mahogany Bench and Mountain pastures (1989 and 1990 Utilization Inspection Reports in the 2210 Allotment Plans Analysis folder).

During the dry years the vegetation in riparian areas would be impacted by livestock exceeding proper use levels. The vigor of the vegetation would be reduced because of the drought condition and continuous heavy use from cattle and recreational stock.

4. ALTERNATIVE #4

Direct and Indirect Effects

The grazing system is a rest rotation grazing system, resting five of the six pastures during a five year time period. One of the pastures would receive complete yearlong rest each year. Cattle use in riparian areas would be 60 percent or less because fewer cattle would be permitted, shorter seasons of use and fencing the riparian areas of Big Water, The Cove,

CHAPTER IV. ENVIRONMENTAL CONSEQUENCES

Long Flat and Wood Bench Spring. A lane to water would allow livestock and wildlife access to water in Big Water, The Cove, Long Flat and Wood Bench Spring. The guzzler that would be constructed near Paradise Reservoir would improve cattle distribution in the north end of the Mountain Pasture. Cattle would have an additional permanent water location in the Mountain Pasture which would reduce the cattle use around Long Flat and The Cove.

There would be less impact on vegetation because one in every five years the riparian and mountain meadows in the Mountain Pasture would be rested from use by livestock. Recreational livestock would be using the mountain meadows and riparian areas during the summer months

There would be improvement of soil productivity within the fenced riparian areas. Adverse soil compaction would occur in the lanes to water for livestock around Big Water, The Cove, Long Flat and Wood Bench Spring. The soil compaction would be from the heavy concentration of cattle utilizing the lanes to water at the reservoirs.

Vigor of riparian vegetation would improve because of the rest the riparian areas would receive rest one year out of five.

5. **ALTERNATIVE #5**

Direct and Indirect Effects

The grazing rotation for Alternative #5 is a modified rest rotation grazing system, resting four of the six pastures on the Pine Valley Allotment. The livestock use in riparian areas and mountain meadows would be between 55 to 60 percent which is within the proper use levels described in the LRMP for riparian areas.

In this alternative two range improvements and a livestock management technique are being proposed to improve livestock distribution in the riparian areas and mountain meadows. The first range improvement would be fencing the small reservoirs on the Mountain Pasture, they are: Big Water, The Cove, Long Flat and Wood Bench Spring. A lane to water would allow livestock and wildlife access to water in the reservoir. The second is a 5,000 gallon guzzler that would be constructed near Paradise Reservoir. This would relieve some of the livestock use from Long Flat and The Cove. A herder/rider would be used when cattle are in the Mountain Pasture. The herder/rider would move cattle out of the riparian areas while cattle are in the Mountain Pasture.

There would be an improvement of soil productivity within the fenced riparian areas. Adverse soil compaction would occur in the lanes to water for livestock around Big Water, The Cove, Long Flat and Wood Bench Spring. The soil compaction would be from the heavy concentration of cattle utilizing the lanes to water at the reservoirs.

Vigor of riparian vegetation would improve because of the yearlong rest that is scheduled into the grazing rotation. Pastures that are used every year would be grazed early one year and deferred the next year.

6. **CUMULATIVE EFFECTS**

The scope of the Cumulative Effects Analysis (CEA) is the riparian areas and mountain meadow. The effects of past, present and future activities do result in cumulative effects to riparian areas and mountain meadows. The activity which may contribute toward these effects would be livestock grazing.

CHAPTER IV. ENVIRONMENTAL CONSEQUENCES

Cumulative Effects Related to Livestock Grazing (Cattle):

Over use of riparian areas has the potential to impact the vegetation within riparian areas and mountain meadows. The impacts include loss of desirable plant composition, loss of plant vigor and degradation of riparian vegetation.

In the past cattle were allowed to stay in the riparian areas the duration of the grazing period. The cattle use of riparian vegetation has exceeded proper use of 60 percent in 1989 and 1990. The Pine Valley Allotment has been impacted by extreme drought condition since 1986. This has impacted the riparian areas because cattle are staying around water longer. Some of the watering locations have dried-up during the time cattle depend upon the water. The reduced number of water locations and the reduced amount of water available has concentrated livestock on good, dependable, permanent water sources. Poor livestock distribution has impacted the areas that continue to provide available water in the Mountain Pasture.

In Alternative #2, #4 and #5 the Standards and Guidelines from the (LRMP IV-41) for riparian areas, which is 60 percent on grass and grass-like species, would be met for the following reasons. The riparian areas around the small reservoirs in the Mountain Pasture would be fenced. This would exclude cattle from using the riparian vegetation right around the reservoirs. The vigor of the riparian vegetation within the areas to be fenced would improve because cattle would be excluded from using the vegetation in the fenced areas. The impacts of implementing Alternative #2, #4 and #5 on the other riparian areas such as Mill Flat, Reservoir Canyon, Santa Clara River and South Fork of Pinto Creek would be less because the number of permitted cattle would be reduced. In Alternative #2 and #5 the season of use would be shorter than what is currently allowed. This would reduce the amount of time that cattle would be utilizing riparian vegetation. The beneficial effects of implementing Alternative #2, #4 and #5 on riparian vegetation would be improved vigor throughout and plant composition if all range improvements and management techniques are implemented.

In Alternative #2 and #5 a herder/rider would be used to improve cattle distribution on the Mountain Pasture. The herder/rider would move cattle out of the riparian areas daily while the cattle are on the Mountain Pasture. This would not allow cattle to concentrate and linger in the riparian areas.

In Alternative #1 and #3 cattle use of riparian areas would exceed 60 percent described in the LRMP because cattle would concentrate around the riparian areas. The heavy use would cause the loss of plant composition and plant vigor within the riparian areas.

Long term soil productivity would be maintained in Alternative #2, #4 and #5. The impacts of cattle use on soil productivity would be reduced because of utilization guidelines, requiring a herder/rider on the Mountain Pasture and the fences around the small reservoirs. In Alternative #4 and #5 the soil productivity would improve because of the rest rotation grazing system proposed.

B. ISSUE 2: ECONOMIC EFFECTS OF MANAGEMENT STRATEGIES ON THE GRAZING PERMITTEES

The monitoring indicator is: Permitted AUM's.

1. ALTERNATIVE #1 – The No Action Alternative

Direct and Indirect Effects

The permitted AUM's would be 4,496 AUM's. The permitted cattle on the Pine Valley Allotment would be 799 cattle from 6/1 through 10/15, and an additional 257 cattle from 7/1 through 10/15 for a total of 1,056 cattle. The AUM's for this alternative is the current AUM's permitted on the Pine Valley Allotment.

2. ALTERNATIVE #2

Direct and Indirect Effects

The permitted AUM's would be 3,200 AUM's. The permitted cattle would be 800 head from 6/1 through 9/30. The AUM's would be reduced by 1,296 AUM's from the current permitted AUM's of 4,496 on the Pine Valley Allotment. The impacts on the individual permittees would be a reduction of 29 percent in permitted numbers and time.

3. ALTERNATIVE #3 – Proposed Action

Direct and Indirect Effects

The permitted AUM's would be 3,600 AUM's. The permitted cattle would be 800 head from 6/1 through 10/15. The AUM's would be reduced by 896 AUM's from the current AUM's of 4,496 on the Pine Valley Allotment. The impacts on the individual permittees would be a reduction of 20 percent of their permitted AUM's.

4. ALTERNATIVE #4

Direct and Indirect Effects

The permitted AUM's would be 2,925 AUM's. The permitted cattle would be 650 head from 6/1 through 10/15. The AUM's would be reduced by 1,596 AUM's from the current AUM's of 4,496 AUM's. The impacts on the individual grazing permittees on the Pine Valley Allotment would be a 35 percent reduction of permitted AUM's. The reduction is in the number of permitted cattle on the Pine Valley Allotment.

5. ALTERNATIVE #5

Direct and Indirect Effects

The permitted AUM's would be 3,020 AUM's. The permitted cattle would be 725 head from 6/1 through 10/5. The AUM's would be reduced from 4,496 AUM's to 3,020 AUM's. The impacts to the individual grazing permittees on the Pine Valley Allotment would be a reduction of 33 percent of permitted AUM's. The reduction would be in permitted numbers and a shorter grazing season.

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6. CUMULATIVE EFFECTS

The scope of the cumulative effects analysis (CEA) is the Pine Valley Allotment permittees. The cumulative effects of the economic impacts of management strategies on the grazing permittees can only be addressed as the permitted number of livestock in relationship to the analysis area. No additional economic information was available for analysis.

C. ISSUE 3: IMPACTS OF LIVESTOCK GRAZING ON WATER QUALITY OF THE STREAMS ON THE ALLOTMENT

The monitoring indicator is:

Maintain a minimum viable population of macroinvertebrates as defined as a Biotic Condition Index (BCI) of 70 (LRMP II-16a), and increase the presence of clean water species.

1. ALTERNATIVE #1 – The No Action Alternative

Direct and Indirect Effects

The amount of sediments would not decrease in the streams on the Pine Valley Allotment. The BCI's would not improve and there would not be an increase in the presence of clean water species in the streams on the Pine Valley Allotment. The reason that there would not be a decrease in sediments and an increase in the presence of clean water species are discussed in the following paragraphs.

- a. In Water Canyon there is unstable stream bank and soil sedimentation due to grazing. Over-utilization of the riparian area with no allowance for riparian plant regrowth has changed the riparian plant species composition to less desirable ones, i.e., from carex spp. and Juncus spp. to Kentucky blue grass.
- b. The stream in Reservoir Canyon would be impacted in the open meadows where over utilization of riparian vegetation could occur. The forage utilization in the meadows next to the stream by recreational stock and associated camps would impact the amount of soil sediments in the stream. Recreational stock would impact the water quality where the Water Canyon Trail crosses the stream. This could degrade the quality of the fish habitat by increasing the soil sedimentation from unstable banks next to the open meadows along the stream.
- c. Livestock grazing would not impact water quality in the headwaters of the Santa Clara River because cattle would be excluded from grazing in the Pine Valley Recreational Area. The campgrounds in the Pine Valley Recreation Area would contribute to the sedimentation in the river from the use the stream bank receives from recreationists in the campgrounds. Cattle would contribute to sedimentation from trampling the banks, and utilizing the riparian vegetation in the riparian area below the town of Pine Valley.
- d. Water quality in the South Fork of Pinto Creek would be impacted from unstable banks and sedimentation effects from grazing.

2. ALTERNATIVE #2**Direct and Indirect Effects**

The livestock management techniques and range improvements would decrease the sediments and improve the BCI and increase the presence of clean water species in the streams on the Pine Valley Allotment. The reasons that there would be a decrease in sediments in the streams are discussed in the following paragraphs.

- a. The water quality in Water Canyon would improve because of the Water Canyon Riparian Pasture. The use on the riparian and upland vegetation would be within the Standards and Guidelines found in the LRMP because the pasture would be grazed by less cattle for a shorter season of use. When proper use is reached cattle would be removed from the pasture. The unstable banks along the stream would improve because of the rest that the pasture would get allowing the vegetation to recover from the effects of grazing.
- b. The water quality in the stream in Reservoir Canyon would be improved over the water quality in Alternative #1. The amount of sediments entering the stream would be reduced because the herder/rider would move cattle out of Reservoir Canyon reducing the cattle use of the riparian vegetation and cattle would be in the Mountain Pasture for a shorter season of use. The forage utilization in the meadows next to the stream from recreational stock and associated camps would continue to have an impact on fine sediments entering the stream. Recreational livestock would impact water quality where the Water Canyon Trail crosses the stream. However the impacts of cattle and recreational livestock grazing on the water quality would not be severe in this stream.
- c. Livestock grazing would not impact water quality in the headwaters of the Santa Clara River because cattle would be excluded from grazing in the Pine Valley Recreational Area. The campgrounds in the Pine Valley Recreation Area would contribute to the sedimentation in the river from the use the stream bank receives from recreationists in the campgrounds. Cattle would contribute to sedimentation from trampling the banks, and utilizing the riparian vegetation in the riparian area below of the town of Pine Valley.
- d. The water quality in the South Fork of Pinto Creek would improve over Alternative #1 because cattle use would be kept within the Standards and Guidelines described in the LRMP and cattle would be moved out of the riparian areas of the stream by a herder/rider decreasing the trampling effect on the stream banks.

3. ALTERNATIVE #3 – Proposed Action**Direct and Indirect Effects**

In Alternative #3 there would not be a decrease in sediments, nor improvement in BCI or increase in the presence of clean water species in the streams on the allotment. The reasons that sediments would not decrease are discussed in the following paragraphs.

- a. The water quality in the Water Canyon stream would be as it is in Alternative #1. The unstable banks and undesirable riparian vegetation would not improve because cattle would not be moved out of the riparian areas and the time cattle are permitted in Water Canyon would remain the same.

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- b. The water quality in the stream in Reservoir Canyon would improve slightly over Alternative #1. Water quality would improve in the stream because fewer cattle would be in the Mountain Pasture. In the open meadows along the stream the use by cattle and recreational livestock on grass and grass-like species would be 60 percent or greater. This may contribute to the soil sediments that enter the streams from these open meadows. The Water Canyon Trail may contribute to the amount of sediments in the stream in two ways. First would be when recreational livestock cross the stream and the second would be the sediments that enter the stream from the trail itself just south of the stream crossing. However, the impacts of cattle and recreational livestock on water quality would not be severe in this stream.
- c. The headwaters of the Santa Clara River would be impacted in Alternative #3 by livestock because cattle would be permitted to graze within a portion of the Pine Valley Recreation Area. The river would be impacted by recreation use in the Pine Valley Recreation Area. The soil sedimentation would come from the use from recreationists in the campgrounds in the Pine Valley Recreation Area. Soil sedimentation from livestock grazing would occur along the Santa Clara River below the town of Pine Valley. The soil sediments would be from the lack of ground cover in the riparian areas along the stream. The amount of soil sediments would decrease because fewer cattle would be permitted in the Mahogany Bench Pasture and the pasture would be rested every other year.
- d. The water quality would improve in the South Fork of Pinto Creek slightly over Alternative #1 because fewer cattle would be grazing along the stream. This would decrease the amount of soil sediments induced by livestock grazing along the stream course.

4. ALTERNATIVE #4

Direct and Indirect Effects

The range improvements, livestock management techniques, grazing system and reduction of permitted cattle would decrease the sediments improving the BCI's and increase the presence of clean water species in the streams on the Pine Valley Allotment. How the sediments would be decreased is explained in the following paragraphs.

- a. The water quality in the stream in Water Canyon would improve over what the water quality would be in Alternative #1, #2 and #3 because less cattle would be permitted and both Grass Valley and the Mountain pastures would be rested every fifth year. There would be some soil sediments in the stream from livestock grazing along the stream. The soil sedimentation would be caused by livestock trampling the stream banks and using the carex and willows along the stream course.
- b. The sedimentation in the stream in Reservoir Canyon would be less than in Alternative #1, #2 and #3 because the Mountain Pasture would be rested once every fifth year allowing the vegetation a year of rest from cattle use and the reduction of permitted cattle on the Pine Valley Allotment. There would be some soil sedimentation when livestock are in Reservoir Canyon. The sedimentation would come from the trampling of the stream banks from cattle and recreational livestock. Soil sedimentation would occur from the Water Canyon Trail that crosses the stream and from dispersed recreation campsites in the meadows adjacent to the stream.

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- c. The soil sedimentation in the headwaters of the Santa Clara River would not be impacted by livestock grazing because cattle would be excluded from the Pine Valley Recreation Area. There would be some soil sedimentation from the campgrounds that are adjacent to the Santa Clara River in the Pine Valley Recreation Area. The sediments would come from recreationists along the river banks and the trampling of vegetation in the campground. There would also be some soil sedimentation from livestock grazing along the river below the town of Pine Valley. The sedimentation would come from cattle trampling vegetation along the stream banks and livestock use on the willows and grass and grass-like plants in the riparian areas. Soil Sediments would be less in Alternative #4 than in Alternative #1 and #3 because the Mahogany Bench Pasture would be rested once every fifth year and less cattle would be permitted in the pasture.
- d. The soil sedimentation would be less in Alternative #4 than in Alternative #1, #2 and #3 in the South Fork of Pinto Creek because fewer cattle would be grazing along the stream for a shorter period of time. Some soil sedimentation would occur from cattle trampling and utilizing the vegetation next to the stream.

5. ALTERNATIVE #5

Direct and Indirect Effects

The range improvements, livestock management techniques, grazing system and the reduction of permitted cattle on the Pine Valley Allotment would decrease the sediments improving the BCI and increase the presence of clean water species. How the improvements, management techniques, grazing system and reduction of permitted cattle would decrease sediments are discussed the following paragraphs.

- a. The amount of soil sedimentation in Water Canyon would be less than it is in Alternative #1, #2 and #3 because Grass Valley and the Mountain Pasture would be rested every third year in the grazing rotation and fewer cattle would be permitted on the Pine Valley Allotment. With the rest built into the grazing rotation the riparian vegetation and unstable stream banks would be given a chance to recover from their existing conditions. The Water Canyon Riparian Pasture would decrease soil sedimentation because fewer cattle would be permitted in Water Canyon and the time cattle are permitted in the riparian pasture would be reduced from the current season of use. There would be some soil sedimentation from the livestock use along the stream when cattle are in Grass Valley and the Mountain pastures. The soil sedimentation would come from livestock trampling the stream banks and utilizing the riparian vegetation along the stream channel.
- b. The soil sedimentation in the stream in Reservoir Canyon would be less than in Alternative #1, #2 and #3 because the Mountain Pasture would be rested once every third year in the grazing rotation. Cattle would be permitted to stay two months in the Mountain Pasture which would reduce the cattle use of riparian areas allowing the vegetation time for regrowth in the fall of the year. There would be some soil sedimentation from cattle using the vegetation along the stream channel, and cattle trampling the stream banks. Recreational livestock would add to the soil sedimentation when they cross the stream on the Water Canyon Trail. The dispersed recreation campsites in the open meadows may contribute to soil sediments in the stream. A herder/rider would be deployed on the Mountain Pasture to move cattle out the riparian areas daily while cattle are in the Mountain

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Pasture. The herder/rider would move cattle out of Reservoir Canyon to decrease the livestock use on the riparian vegetation and reduce the impacts on the stream banks from livestock use.

- c. The soil sedimentation in the headwater of the Santa Clara River would be reduced because livestock would be fenced out of the Pine Valley Recreation Area where the main channel is located. There would be some sedimentation from recreational use in the Pine Valley Recreation Area. The soil sedimentation would come from recreationists' use of the campground in the Recreation Area. Soil sedimentation would be reduced along the Santa Clara River below the town of Pine Valley because of the scheduled rest that Mahogany Bench would get one year out of three in the grazing rotation. The reduction of permitted cattle would decrease the soil sediments because livestock use would be within proper use described for riparian areas. There would be some sedimentation from cattle trampling the banks and using the vegetation adjacent to the river.
- d. Soil sedimentation would be less in the South Fork of Pinto Creek from livestock use than in Alternative #1, #2 and #3 because the Mountain Pasture would be rested every third year in the grazing rotation. Another reason is less cattle would be permitted in Alternative #5 than in Alternatives #1, #2 and #3.

6. CUMULATIVE EFFECTS

The scope of the cumulative effects analysis (CEA) is livestock grazing on water quality of the streams in Water Canyon, Reservoir Canyon, Santa Clara River and the South Fork of Pinto Creek. The separate effects of past, present and future activities within the watershed do result in cumulative effects from soil sedimentation from livestock grazing.

Livestock Grazing

Macroinvertebrates communities have been sampled periodically in Water Canyon (1981 and 1987), Forsyth Canyon and Reservoir Canyon (1987), and the Santa Clara River (1987 and 1989). All of the sites sampled on the Pine Valley Allotment had BCI's above 70 and received a fair to good rating for supporting a resident fishery with the exception of the Santa Clara River below Pine Valley. This had a BCI of 66 and received a poor rating, reflecting the heavy sediment impacts from the poor riparian conditions immediately upstream on private land. This site would not improve just from the management of livestock on the Pine Valley Allotment. The private land owners would have to improve the riparian conditions on their property before there would be an improvement in the BCI.

In the past cattle have impacted the water quality in the streams in the Pine Valley Allotment. The impacts have been from the soil sedimentation that has affected the fishery and water quality of Water Canyon, Reservoir Canyon, Santa Clara River and South and East Forks of Pinto Creek. (See the Forest Fisheries Biologist and Forest Hydrologist reports on the effects that livestock grazing has had on water quality Appendix O and Q.)

Alternative #1 and #3 would have the same impacts that are currently occurring in the streams on the allotment. The long term effects of implementing either Alternative #1 and #3 on water quality would remain the same with no improvement of BCI and no increase of the presence of clean water species.

Alternative #2 would improve water quality in the streams because the stream-side vegetation would be grazed for a shorter duration and time for regrowth would be provided for. (Clary and Webster, 1989.)

In Alternative #4 and #5 there would be less impact on water quality in comparison to the other alternatives. The amount of soil sediments would decrease because vegetation would have one growing season rest in addition to being deferred until July or August the following year. Stubble heights of riparian species and time for regrowth would be sufficient for the recovery of plant community composition (Clary and Webster, 1989). The soil sediments would decrease because of the improvement in the vigor of the riparian vegetation because of the management action and range improvements that would be implemented in Alternative #4 and #5.

D. ISSUE 4. IMPACTS OF LIVESTOCK GRAZING ON WILDLIFE HABITAT ON GAME AND NON-GAME ANIMALS

The monitoring indicator is:

Percent utilization of grasses, grass-like and browse species of plants.

1. ALTERNATIVE #1 – The No Action Alternative

Direct and Indirect Effects

The average range of percent utilization of grasses and grass-like species would be between 20 to 75 percent. The Standards and Guidelines from the LRMP is 50 percent on grasses, except crested wheatgrass where 60 percent is allowable. The allowable use on grass and grass-like species in riparian areas would be 60 percent. The heaviest use occurs in the riparian areas. These areas would be White Rocks, Big Water, The Cove, Long Flat and Wood Bench Spring. (See the Forest Wildlife Biologist Report Appendix R.)

Cattle are utilizing bitterbrush, oak brush, cliffrose and serviceberry while they are grazing on the Pine Valley Allotment. Cattle may switch from grass to browse species when the protein levels drop in grasses after maturation. The utilization on these browse species would be less than 50 percent of the current years growth.

2. ALTERNATIVE #2

Direct and Indirect Effects

The average range of percent utilization on grass and grass-like species would be between 20 to 65 percent. The Standards and Guidelines from the LRMP is 50 percent on grasses except crested wheatgrass where 60 percent is allowable. The allowable use on grass and grass-like species in riparian areas would be 60 percent. The heaviest livestock use would be in the riparian areas in the Mountain Pasture. These riparian areas would be White Rocks, Big Water, The Cove, Long Flat and Wood Bench.

Cattle would be utilizing browse species such as bitterbrush, oak brush, cliffrose and serviceberry while they are grazing the Pine Valley Allotment. Cattle may switch from grass to browse species when the protein levels drop in grasses after maturation. The utilization on these browse species would be less than 50 percent of the current years growth. Livestock use on these browse species would be approximately less than 50 percent of the current years growth.

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3. **ALTERNATIVE #3 – Proposed Action**

Direct and Indirect Effects

The average range of percent utilization on grasses and grass-like species would be between 20 to 70 percent. The Standards and Guidelines from the LRMP is 50 percent on grasses except crested wheatgrass where 60 percent is allowable. The allowable use on grass and grass-like species in riparian areas would be 60 percent. The heaviest use would occur in the riparian areas on the Mountain Pasture. The use in the riparian areas would be less in Alternative #3 than Alternative #1 because cattle would graze the Mountain Pasture only two months of the grazing season.

Cattle would be utilizing browse species on the allotment. Some of the browse species are bitterbrush, cliffrose, oak brush and serviceberry. Cattle would switch from grass to browse species when the protein levels drop in grasses after maturation. The utilization of browse species by cattle would be less than 50 percent of current years growth.

4. **ALTERNATIVE #4**

Direct and Indirect Effects

The average range of percent utilization on grass and grass-like species would be between 20 to 60 percent which is within the Standards and Guideline outline in the LRMP. There would still be heavy use in the riparian areas on the Mountain Pasture. The use in the riparian areas would be below 60 percent and would be less than in Alternative #1, #2 and #3. The reason for the lighter use in Big Water, The Cove, Long Flat and Wood Bench would be the construction of fences around these small reservoirs. The grazing rotation for Alternative #4 would be a rest rotation grazing system. The grazing rotation would be repeated every five years. The vegetation would be rested once every five years in five in five of the six pastures. There would be more forage available for other uses in the rested pasture when it is scheduled to be rested in the grazing rotation.

Cattle would use a variety of browse species while they are in the Pine Valley Allotment. The browse species that cattle would use would be bitterbrush, oak brush, cliffrose and serviceberry. Cattle may switch from grass to browse species when the protein levels drop in grasses after maturation. The use on these browse species by livestock would be less than 50 percent of the current years growth.

5. **ALTERNATIVE #5**

Direct and Indirect Effects

The average range of percent utilization on grasses and grass-like species on the Pine Valley Allotment would be between 20 to 60 percent which is within the Standards and Guidelines found in the LRMP. The riparian areas would still receive heavy to moderate use from livestock. The use would be lighter than in Alternative #1 and #3. The reason for the lighter utilization would be the fences constructed around, Big Water, The Cove, Long Flat and Wood Bench Spring. Also a herder/rider would be used when cattle are in the Mountain Pasture. The purpose would be to move cattle out of the riparian areas daily to improve cattle distribution in the Mountain Pasture. The grazing system for Alternative #5 is a modified rest rotation grazing system. The grazing rotation would be repeated every three years. The pastures that would be rested are Grass Valley, Mahogany Bench, Black Bench and the Mountain pastures.

Recreational stock would be utilizing the grasses in the riparian areas and mountain meadows in the Mountain Pasture.

Cattle would be utilizing browse species on the allotment during late July, August and September. The browse species that cattle would be using are bitterbrush, cliffrose, oak brush and serviceberry. Cattle may switch from grass to browse species when the protein levels drop in grasses after maturation. Cattle use on these browse species would be approximately 50 percent of the current years growth.

6. CUMULATIVE EFFECTS

The scope of the cumulative effects analysis (CEA) is the Pine Valley Allotment. The separate effects of past, present and future activities on the vegetation utilized by livestock does result in cumulative effects on wildlife non-game and game species.

Livestock Grazing

The past use of the herbaceous forage on the Pine Valley Allotment by livestock has exceeded proper use described in the Forest Plan. Proper use on upland suitable range sites would be 50 percent of total available forage plants, except crested wheatgrass where 60 percent is allowable (LRMP IV-36). Proper use in riparian areas would be 60 percent on grass and grass-like species (LRMP IV-41). The use of the forage in riparian areas has been addressed in Issue #1 over utilization of riparian areas and mountain meadows.

The utilization of browse species on the Pine Valley Allotment has been heavy in certain locations on the allotment. The utilization is a combination of cattle and deer use on the browse species on the Pine Valley Allotment.

Alternative #1 and #3 impacts on wildlife would be greater around the riparian areas where the use from livestock would be above the proper use levels described in LRMP IV-41 for riparian areas which is 60 percent on grass and grass-like species. Cattle use would not impact browse species because use would be less than 50 percent of current years growth.

Alternative #2, #4 and #5 would impact riparian areas and mountain meadows less than Alternatives #1 and #3. Cattle would be controlled by fencing and herding in the riparian areas. Cattle use in riparian areas would meet the Standards and Guidelines for riparian areas which are 60 percent on grass and grass-like species. Cattle use on browse species within riparian areas would be 50 percent of current years growth (LRMP IV-41).

The impacts on biodiversity of game and non-game animals from Alternatives #2, #4 and #5 are as follows:

- a. The management activities would decrease the impacts of cattle utilizing vegetation in riparian areas.
- b. Biodiversity of animals species should improve because of the range improvements proposed for the alternatives. The fences that are to be built around Big Water, The Cove, Long Flat and Wood Bench Spring would increase the cover for smaller mammals and other species in the vicinity of water.
- c. The revegetative projects proposed in Alternative #2, #4 and #5 would benefit game and non-game animals in increasing the amount of forage available in the project areas. The revegetative projects would be designed to increase edge effect to avoid habitat fragmentation within the regional ecosystem (Keystone Policy

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Dialogue 1991). The projects would leave escape routes for deer and other smaller mammals from predators.

The impacts on biodiversity of game and non-game animals from Alternative #1 and #3 would be the same as the current impacts occurring on the Pine Valley Allotment.

ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

There is no adverse environmental effect which cannot be avoided in the proposed action and alternatives to the proposed action. If the management of the resource on the Pine Valley Allotment is done correctly the resource will be renewed as they existed before.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

An irreversible commitment of resources results from actions altering an area to the extent that it cannot be returned to its undisturbed condition through perpetuity or for an extended period of time; or it is a commitment which completely utilizes a non-renewable resource.

The proposed action does not constitute an irreversible commitment of resources. This is because the management direction in any selected alternative for this proposal can be reversed at a later time.

Irretrievable commitment includes lost production or lost use of renewable resources due to the passage of time. The opportunity to use a renewable resource is foregone during the period of time it is committed to other uses or during periods of non-use.

Alternative #1 and #3 would exceed proper use in riparian areas and mountain meadows. Irretrievable commitment of low vigor plants, loss of desirable plant composition, increase of undesirable plants which are less palatable to large herbivores. Alternatives #2, #4 and #5 would not have an irretrievable commitment of resources.

RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Long-term productivity of mountain meadows and riparian areas will be enhanced more rapidly with the implementation of Alternatives #4 and #5. Upland range site productivity will remain stable or improve.

CHAPTER V. LIST OF PREPARERS

Core Interdisciplinary (IDT) Team

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CHAPTER VI. LIST OF AGENCIES AND PERSONS CONSULTED

U.S. Fish and Wildlife Service

U.S. Department of Agriculture

Utah Division of Wildlife Resources
Southern Region, Cedar City, Utah

Mark Van Every:	Public Affairs Officer Dixie National Forest
Dale B. Harris:	Supervisory Range Conservationist Cedar City Ranger District Dixie National Forest
Susan Hayman:	Assistant District Ranger Cedar City Ranger District Dixie National Forest
Curt Johnson:	Program Manager Intermountain Regional Office U.S.D.A. Forest Service
Joe Colwell:	Resource Officer Teasdale Ranger District Dixie National Forest



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GLOSSARY**AMs**

See "animal month"

AUM

See "animal unit month"

allotment

An area designated for the use of a prescribed number and kind of livestock under one management.

alternative

One of several policies, plans or projects proposed for decision making.

analysis

A grouping of homogeneous land areas, formed from land and resource inventory data comprising a data base. Similarities within the analysis area concern common capabilities to produce resources and susceptibility to impacts. Analysis areas need not be contiguous areas of land.

animal month

A month's tenure upon range by one animal. Must specify the kind and class of animal. Not synonymous with "animal unit month."

animal unit month

The quantity of dry forage required by one mature cow (1,000 pounds or the equivalent) for one month based on a forage allowance of 26 pounds per day.

big game

Those species of large mammals normally managed as a sport hunting resource.

biological evaluation

An assessment or study required by the Endangered Species Act of 1973 to identify any threatened, endangered, or sensitive species which is likely to be affected by a proposed management action, and to evaluate the potential effects of the proposed action on the species or their habitats.

bulk density

The ratio of the mass of soil to its total volume, solids, and pores, on a dry weight basis.

developed recreation

Recreation that occurs where improvements have been made that 1) enhance recreation opportunities, and 2) accommodate intensive recreation activities in a defined area.

direct effects

Effect on the environment which occur at the same time and place as the initial cause or action.

dispersed recreation

That portion of outdoor recreation use which occurs outside of recreation developed sites in the unroaded and roaded National Forest environment (for example, hunting, backpacking, and berry-picking).

disturbance

Any management activity that has the potential to accelerate erosion or mass movement of soil and the vegetation in it. Also, any other activity that may tend to disrupt the normal movement or habits of a particular wildlife species.

diversity

The distribution and abundance of different plant and animal communities and species within an area.

early successional communities

The plant community that develops immediately following the removal of existing vegetation from an area.

ecosystem

A complete interacting system of organisms considered together with their environment (for example: a marsh, a watershed, or a lake).

edaphic

Refers to soils and their relation to plant production.

effects

Physical, biological, social, and economic results (expected or experienced) resulting from natural events or management activities. Effects can be direct, indirect, and/or cumulative.

endangered species

Any species which is in danger of extinction throughout all or a significant portion of its range and listed as such by the Secretary of the Interior in accordance with the Endangered Species Act of 1973.

horizontal diversity

The amount of structural variety in vegetation resulting from the interaction of various species of similar lifeforms, age and size classes, distribution, and abundance across the soil surface. A vegetation stand with high horizontal diversity maximizes the number of successional stages within a given habitat type or community type.

hydric soil

A soil that is saturated or flooded long enough during the year to develop an anaerobic condition in the upper part of the soil profile.

indicator species

Species identified in a planning process, which are used to monitor the effects of planned management activities on viable populations of wildlife and fish, including those that are socially or economically important.

indigenous

Born, growing, or produced naturally (native) in an area, region, or country.

indirect effects

Effects separated in time or space from the causative actions.

inherent stability

The natural ability of a stream channel to resist changes caused by a variety of sources.

issue

A subject or question of widespread public discussion or interest regarding management of National Forest System lands.

key areas

In riparian management, key areas are livestock-preferred palatable habitat types.

key (or critical) wildlife habitat components

Areas or features of the forest which are of particular importance for maintaining overall wildlife habitat. These areas and features include: moist areas, wallows, meadows, parks, critical hiding cover, thermal cover, migration routes, and staging areas.

key wildlife winter range

An area, generally of low elevation, that big game need annually in order to survive during normal winters. This area encompasses the used by the majority of animals in the population during the winter (variable, but commonly between December 1 and April 1).

NFMA

See "National Forest Management Act."

NTUs

See "nephelometric turbidity unit."

National Environmental Policy Act (NEPA)

The Act which declared a National policy to encourage productive and enjoyable harmony between humans and their environment, to promote efforts that will prevent or eliminate damage to the environment and biosphere, to stimulate the health and welfare of humans to enrich our understanding of the ecological systems and natural resources important to our Nation, and to establish a Council on Environmental Quality.

National Environmental Policy Act (NEPA) process

An interdisciplinary process, mandated by the National Environmental Policy Act, which concentrates decision making around issues, concerns, and alternatives, and the effects of those alternatives on the environment.

National Forest Management Act

A law passed in 1976 as amendments to the Forest and Rangeland Renewable Resources Planning Act, which requires the development of Regional and Forest plans and the preparation of regulations to guide that development.

National Forest System

All National Forest lands reserved or withdrawn from the public domain of the United States; all National Forest lands acquired through purchase, exchange, donation, or other means; the National Grasslands and land utilization projects administered under Title III of the Bankhead-Jones Farm Tenant Act (50 Stat. 525, 7 U.S.C. 1010-1012); and other lands, waters, or interest herein which are administered by the Forest Service or are designated for administration through the Forest Service as a part of the system.

National Register of Historic Places

A listing maintained by the National Park Service of areas which have been designated as being of historical value. The Register includes places of local and State significance, as well as those of value to the Nation as a whole.

no action alternative

An alternative where no activity would occur. The development of a no action alternative is requested by regulations implementing the National Environmental Policy Act (NEPA) (490 CFR 1502.14). The no action alternative provides a baseline for estimating the effects of other alternatives.

nongame

Species of animals which are not managed as a sport hunting resource.

public involvement

A Forest Service process designed to broaden the information base upon which agency decisions are made by 1) informing the public about Forest Service activities, plans and decisions, and 2) encouraging public understanding public understanding about and participation in the planning processes which lead to final decisionmaking.

public issue

A subject or question of widespread public interest relating to management of the National Forest System.

ROD

See "Record of Decision."

range allotment

A designated area of land available for livestock grazing upon which a specified number and kind of livestock may be grazed under a range allotment management plan. It is the basic land unit used to facilitate management of the range resource on National Forest System lands and associated lands administered by the Forest Service.

range condition / range condition class

The present state of vegetation of a range site in relation to the climax (natural potential) plant community for that site. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the climax plant community for the site.

rangeland

Land on which the climax vegetation (potential natural plant community) is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing and browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundra, and certain forb and shrub communities. It also includes areas seeded with native or adapted/introduced plant species that are managed as if they are native vegetation.

Record of Decision (ROD)

A document separate from but associated with an environmental impact statement that publicly and officially discloses the responsible (decision making) official's decision about the alternatives assessed in the environmental impact statement, and the alternative chosen to implement.

rest rotation grazing system

A grazing strategy in which animals are moved from one pasture to another on a scheduled basis, with one pasture left ungrazed in a given year. The number of pastures used in the system will dictate how often a given pasture is rested.

riding

Range management techniques used to distribute livestock in order to obtain proper utilization of forage resources. For example, livestock grazing permittees riding horses on grazing allotments

seral stages

The developmental stages of an ecological succession.

sensitive species

Those plant and animal species identified by the Forest Service for which population viability is a concern, as evidenced by:

- a) Significant current or predicted downward trends in population numbers or density, and/or
- b) Significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

significant

As used in the National Environmental Protection Act: requiring consideration of context and intensity or severity of impact. This includes:

beneficial and adverse impacts
 the degree that the action affects public safety
 unique characteristics of the geographic area
 highly controversial effects
 highly uncertain effects
 the degree to which an action may establish a precedent for future actions
 cumulative impacts
 cultural and historic resources
 Threatened and Endangered Species, and
 compliance with environmental laws.

small game

Birds and small mammals permitted for hunting or trapping.

soil compaction

The reduction of soil porosity through the expulsion of either or both of the soil water and gasses from the compressing soil body. In a plant growth perspective, soil density is usually expressed as bulk density (see "bulk density").

standard

An objective requiring a specific level of attainment; a rule to measure against; a guiding principle.

stocking / stocking rate

The number of specific kinds and classes of livestock grazing or utilizing a unit of land for a specified time period. When dual use is practiced (for example, cattle and sheep on the same unit of land), stocking rate is often expressed as either animal unit months or unit of land, or as unit of land per animal unit month.

stream order

A measure of the position of a stream in the hierarchy of tributaries (stream as referenced here refers to perennial streams).

- a. First Order streams are unbranched streams; that is, they have no tributaries.

vegetative community

A group of one or more populations of plants in common spatial arrangement with common nutritive and growth functions.

vegetative community types

An aggregation of all plant communities distinguished by floristic and structural similarities in both overstory and undergrowth layers. A unit of vegetation within a classification.

water development

A water source developed by public land managers and permittees, meant to provide water to livestock, and could be used by wildlife.

water permeability

the rate that water permeates through layers of soil, dependent upon the size and interconnectedness of pores within the soil profile.

watershed

The total area above a given point on a stream that contributes water to the flow at that point.

APPENDIX

Appendix A – General Location Map

Appendix B – Allotment Map

Appendix C – Suitable Range Criteria Letter

Appendix D – Soil Mapping Unit Definitions

Appendix E – Soil Mapping Units Suitable For Grazing

Appendix F – Suitable Acres for Grazing By Pasture

Appendix G – Range Improvement Map For Alternative #1

Appendix H – Range Improvement Map For Alternative #2

Appendix I – No Range Improvements For Alternative #3

Appendix J – Range Improvement Map For Alternative #4

Appendix K – Range Improvement Map For Alternative #5

Appendix L – 1990 Utilization Survey Calculations

Appendix M – Recreational Horse Use Report

Appendix N – Regional Ecologist Report

Appendix O – Fisheries Report

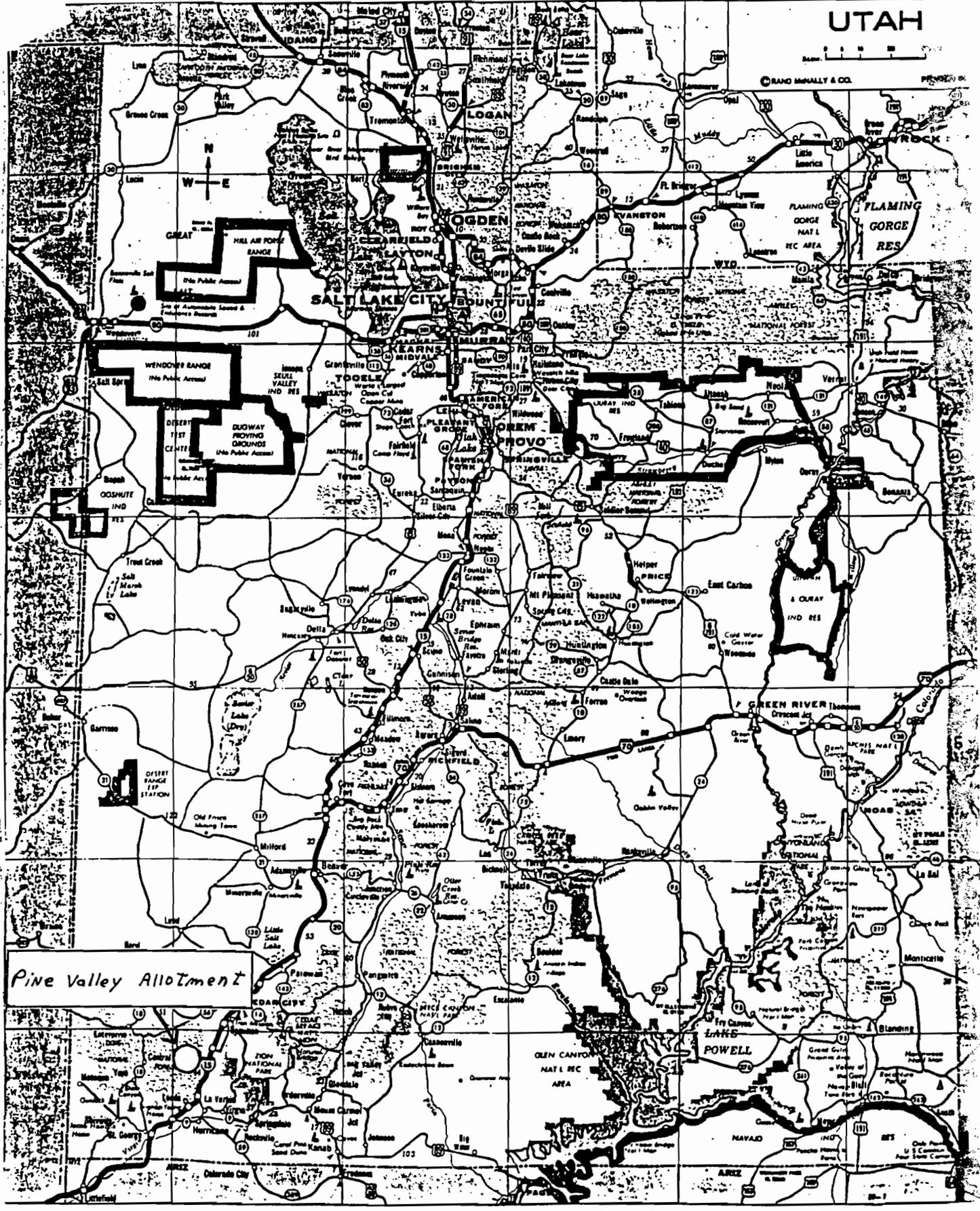
Appendix P – U.S. Fish and Wildlife Service Letter

Appendix Q – Hydrologist Report

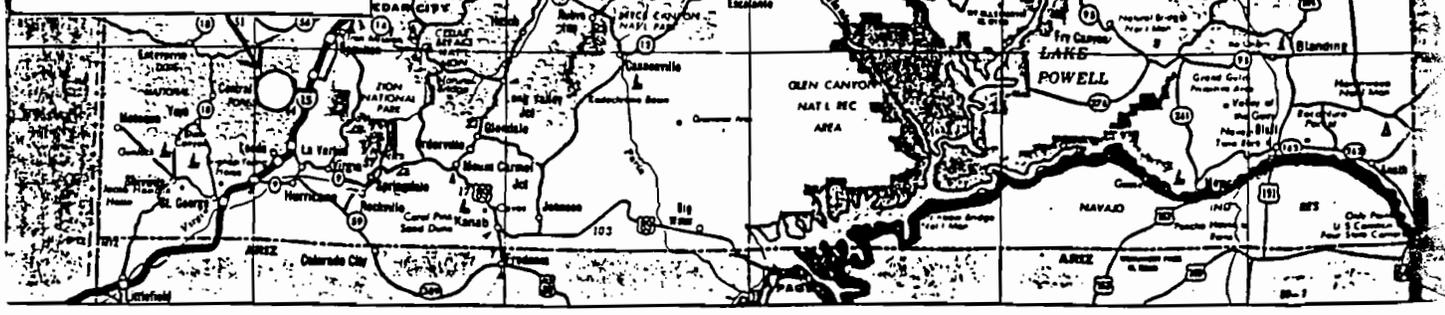
Appendix R – Wildlife Report

UTAH

Scale: 1" = 10 Miles
GRAND INGLETT & CO. PUBLISHERS



Pine Valley Allotment



To R.RUSSELL

From: TOM CONTRERAS

Postmark: Jul 24,91 1:48 PM

Status: Previously read

Subject: Forwarded: PINE VALLEY ALLOTMENT SUITABILITY CRITERIA

Comments:

From: TOM CONTRERAS:

Date: Jul 24,91 1:48 PM

PLEASE PRINT AND FILE IN THE FOLDER WITH THE CRITERIA. AGAIN IT WAS
A SUPERB JOB RANDY!

Message:

From: Robert H. Meinrod:R04F07A

Date: Jul 24,91 3:15 PM

I CONCUR WITH THE SUITABILITY CRITERIA THAT YOU DEVELOPED LAST SPRING
FOR THE PINE VALLEY ALLOTMENT. IT IS INCOMPLIANCE WITH THE FOREST
PLAN AND BASED ON MY KNOWLGE OF THE ALLOTMENT APPEARS TO FIT
CONDITIONS AND THE SITUATION THERE. /S/ ROBERT H. MEINROD RANGE STAFF

United States
Department of
Agriculture

Forest
Service

Pine Valley Ranger District
P.O. Box 2288,
St. George, UT 84771-2288

Reply to: 2210/1950

Date: March 18, 1991

Subject: Range Suitability Criteria

To: Forest Supervisor

The following criteria are submitted for your approval to be used for determining range suitability classification on the Pine Valley Ranger District and Pine Valley Allotment.

I. Vegetative Characteristics

1. Site Productivity. Productivity of a site will be evaluated in pounds of air dry perennial herbaceous forage produced annually per acre. Sites inherently capable of producing less than 100 pounds per acre will be eliminated for further consideration for suitability. The sites that are potentially productive but in a depleted condition, will not be classified as unsuitable just because of low forage production. On these sites, the determination whether rehabilitation is economically feasible, will be made.

2. Soil Surface Cover. Cover consists of vegetation, litter, and rock fragments. The amount, kind, and dispersion of cover determines its efficiency in protecting the soil from accelerated erosion. Rock fragments greater than 3/4 inch in diameter will be counted as effective cover. Litter must be 1/2 inch or thicker to be counted as effective soil surface cover. The basal area of plants will constitute effective ground cover.

II. Soil Characteristics.

1. Soil Stability. Soil stability is the inherent ability of the soils to resist erosion. This includes soil erosiveness, storm frequency, storm intensity, storm duration, length and steepness of slope (topography) and ground cover.

a. Erodibility. Erodibility is the inherent tendency of the soil to erode without consideration of climate, topography, or cover. It is based on:

(1) The strength and size of the surface aggregates.

(2) Profile characteristics, such as texture, depth to restrictive layers, and rock fragments on the surface and in the profile which affect infiltration, percolation, and storage of water.

b. Topography. Slope gradient, length, roughness, shape, and aspect affect erosion hazard. Long slopes build up greater heads of water than short ones. Steep slopes are more subject to erosion by overland flow than are gentle slopes, because the erosion capability of overland flow increases as the rate of flow increases.

c. Current Erosion. This is an indicator of unstable vegetation-site conditions. It is expressed by erosion pavement, observed movement over periods of time, trampling and displacement, remnants-pedestalling, lichen lines, gullies, and wind and water deposits. The suitability of a site will depend on the managers ability to arrest the unstable conditions under an attainable management system.

d. Soil Texture. This will determine the intensity of grazing use allowed on a site. Course-textured soils are easily displaced and young plants can be pulled up or trampled out by excessive grazing. Fine-textured soils usually produce more forage but can be compacted more easily. This can result in lowered infiltration rates, increased runoff, and accelerated erosion rills and gullies.

III. Physical Characteristics

1. Amount and Distribution of Water. Cattle should not be expected to travel over 1/2 mile in mountainous terrain nor over 1 mile on gentler slopes as those found in reseed areas.

2. Steepness and length of slope. Cattle tend to concentrate on slopes of 20% or less. Utah studies indicate that 80% of the use occurs on slopes of less than 20%. One study (Phillips) found the decline in utilization per chain upslope to be as follows: 10% slope - 3.6%; 30% slope - 7.2%; 50% slope - 8.9%. Cattle will contour on steep slopes from the water source but will not work directly up from a canyon bottom, unless forced to do so. Slopes of 25% or less will generally be classed as suitable range.

3. Natural Barriers. Natural barriers prevent or reduce free access of grazing animals. Included in this classification are rock ledges, bluffs, rockslides, bogs, downed timber, heavy brush, or dense timber. Meadows or small areas of suitable range surrounded by natural barriers will be classified as suitable range, but not calculated into the estimated grazing capacity of the allotment. Lack of utilization in isolated areas can be used as a measure of range suitability classification.

I recommend approval.

/S/ Thomas A. Contreras

THOMAS A. CONTRERAS
District Ranger

SOIL MAPPING UNITS
Found on Pine Valley Allotment

<u>MAPPING UNIT</u>	<u>DESCRIPTION</u>
57	Steep, shallow soils, unsuitable
16	Moderately deep, 20-60% slope, steep
44	3-30% slope, potential capacity
25	Steep
64	Unsuitable, rock outcrop and timber
59	Steep, Mtn. Mahogany, brush, rocky, unsuitable, 70-80% slope, low production, no potential for revegetation
3	Steep, oak brush slopes; 20-60% slope
11	Steep basalt sites, 15-60% slope, no mechanical treatment, no potential to carry fire, dry
18	15-60% slope, PJ, mountain brush, low production, steep, 65% slope, shallow soils
2	1-25% slope, rocky, low potential for treatment
30	30-80% slope-very steep, shallow soils and 65% rock, no potential for re-vegetation
20	20-70% slope, basalt type moderately deep soils, low potential for treatment
24	3-15% Potential for mechanical revegetation, better than mapping unit 8
36	Treated or high potential for mechanical treatment, Grass Valley 2-8%
36A	Treated or high potential for mechanical treatment, Grass Valley 2-8%
36B	Treated or high potential for mechanical treatment, Grass Valley 2-8%
35	0-6% Farmland-suitable
8	Basalt benches or basalt mesas and benches, 3-15% slope, moderate potential for revegetation, moderately deep soils
66	10-40% slope, Mountain Mahogany 40% rock outcrop, 35% shallow soils unsuitable, low potential for revegetation, steep, and rocky.
65	30-70% slope, unsuitable, no potential for revegetation
12	Shallow soils (low potential for revegetation), PJ-Black sage, 20%-60% slope
43	Suitable, 3-15% slope, some conifers
38	Steep, unsuitable
63	Rocky outcrop, unsuitable, no potential 30-70% slope - escarpment type
61	Suitable (Whiterocks area)
10	Suitable
42	15-40% slope, shallow soils, distant from water, low potential for revegetation

54 Suitable-high elevation meadows, fragile
56 Dark-timber, unsuitable
62 Unsuitable, 30-70% slope, no potential for revegetation
(20-40 inches soils moderately deep)
37 High potential, 1-25% slope, deep soils 40-60" soil depth or
greater
53 Suitable
28 Steep 20-40% (Dominant 25-40% slopes)
21 Suitable
46 30-75% slopes, steep, and unsuitable

SOIL MAPPING UNITS
CLASSIFIED AS
SUITABLE, UNSUITABLE OR POTENTIAL FOR GRAZING

(FULL CAPACITY)
SUITABLE

POTENTIAL CAPACITY

(NO CAPACITY)
UNSUITABLE

6
35
43
61
54
36B
3C
36A
37
24
53
10
21

44
8

64 TIMBER AND ROCKS
59 STEEP
30 STEEP
65 STEEP
63 STEEP AND ROCKS
56 TIMBER
62 STEEP
46 STEEP
3 STEEP
11 STEEP
18 STEEP
2 EROSION SOILS
20 STEEP
66 STEEP AND SHALLOW SOIL
12 STEEP AND SHALLOW SOIL
42 SHALLOW STEEP
(SOME SUITABLE AREA)
16 STEEP
28 STEEP
25 STEEP
57 STEEP AND SHALLOW
38 STEEP

36 Mapping Units

1991 ANALYSIS
ACRES CLASSIFIED AS SUITABLE RANGE

<u>PASTURE</u>	<u>ACRES</u>
BLACK BENCH	2,728
GRASS VALLEY	2,322
FOUR MILE BENCH	2,601
MAHOGANY BENCH	3,181
MOUNTAIN	6,360
<u>PINE VALLEY</u>	<u>1,657</u>
TOTAL	18,849 Acres

1990 UTILIZATION SURVEY

PINE VALLEY ALLOTMENT

SEASON OF LIVESTOCK USE:

JUNE 1, 1990 TO OCTOBER 15, 1990

1990 UTILIZATION SURVEY CALCULATIONS
PINE VALLEY ALLOTMENT

PASTURE SEASON OF USE	ACTUAL USE AUM'S	ACTUAL AREA USE FACTOR	ALLOWABLE AREA USE FACTOR	ESTIMATED CAPACITY (AUM'S)
<u>Mahogany Bench</u>				
420 cows 6/1/90 to 6/30/90	420	96,185	-	95,850
TOTAL	420 AUM's	420		X
				X - 419 AUM's
<u>Four Mile Bench and Black Bench</u>				
50 cows 6/1/90 to 6/30/90	50	162,590	-	177,590
39 cows 6/15/90 to 6/30/90	21	748		X
677 cows 7/1/90 to 7/30/90	677			
TOTAL	748 AUM's			
				X - 818 AUM's
<u>Grass Valley</u>				
702 cows 8/1/90 to 8/7/90	164	75,835	-	90,205
602 cows 10/6/90 to 10/15/91	201	365		X
TOTAL	365 AUM's			
				X - 435 AUM's
<u>Mountain</u>				
702 cows 8/8/90 to 9/8/90	726	179,235	-	170,720
602 cows 9/9/90 to 10/5/90	542	1,268		X
TOTAL	1,268 AUM's			
				X - 1,208 AUM's
<u>Pine Valley</u>				
30 cows 9/15/90 to 10/15/90	154	44,075	-	56,850
100 cows 9/9/90 to 10/15/90	124	154		X
TOTAL	154 AUM's			
				X - 199 AUM's

GRAND TOTAL 2,955 AUM's

GRAND TOTAL
ESTIMATED CAPACITY 3,079 AUM's
CURRENT MANAGEMENT

ROUNDED UP TO NEAREST 10 - 3,080 AUM's

PINE VALLEY ALLOTMENT
MAHOGANY BEACH PASTURE

UNIT	ACRES	ACTUAL USE	ACTUAL AREA	ACTUAL USE FACTOR	ALLOWABLE USE	ALLOWABLE USE AREA	ALLOWABLE USE FACTOR	JUSTIFICATION
1	188	30	5640	30	30	5640	5640	Adjacent To Key AREA - Reseeding
2	520	60	31,200	60	60	31,200	31,200	Key AREA- MUD Springs
3	250	35	8,750	40	40	10,000	10,000	Adjacent To Key AREA- Reseeding
4	54	65	3,510	60	60	3,240	3,240	Key AREA - Rock Springs
5	82	50	4,100	50	50	4,100	4,100	Adjacent To Key AREA
6	82	20	1,640	20	20	1,640	1,640	Distance From water
7	244	10	2,440	10	10	2,440	2,440	Distance From water
8	410	55	22,550	55	55	22,550	22,550	Adjacent To Key AREA - Reseeding
9	40	50	2,000	50	50	2,000	2,000	Adjacent To Key AREA - Reseeding
10	92	35	3,220	25	25	2,300	2,300	Adjacent To Key AREA
11	79	65	5,135	60	60	4,740	4,740	Key AREA- Reseeding
12	60	80	4,800	60	60	4,800	4,800	Key AREA
13	45	20	900	20	20	900	900	Key AREA- Earl Springs

Pine Valley ALLOTMENT
Mahogany Bench - PASTURE

UNIT	ACRES	ACTUAL USE	ACTUAL USE FACTOR	ALLOWABLE USE	ALLOWABLE USE AREA FACTOR	JUSTIFICATION
TOTAL	2,206		96,185		95,850	

PINE VALLEY ALLOTMENT
PINE VALLEY PASTURE

UNIT	ACRES	ACTUAL USE	ACTUAL USE AREA	ACTUAL USE FACTOR	ALLOWABLE USE	ALLOWABLE USE AREA	ALLOWABLE USE FACTOR	JUSTIFICATION
1	165	50	8,250	60		9,900		Adjacent To Key AREA
2	45	65	2,925	0		0		Excluded From GRAZING in Forest plan Key AREA
3	150	50	7,500	0		0		Excluded From GRAZING in Forest plan Key AREA
4	300	25	7,500	50		15,000		Adjacent To Key AREA
5	540	25	13,500	50		27,000		Adjacent To Key AREA
6	110	40	4,400	45		4,950		Distance From water
TOTAL	1,310		44,075			56,850		

PINE VALLEY ALLOTMENT
FOUR MILE GOUCH PASTURE

UNIT	ACRES	ACTUAL USE	ACTUAL AREA	ALLOWABLE USE	ALLOWABLE USE AREA FACTOR	JUSTIFICATION
1	470	60	23,500	60	28,200	Adjacent To Key AREA Reseeding
2	107	30	3210	30	3210	Distance From Water
3	317	65	20,05	60	19,020	Key AREA - Reseeding
4	140	30	4200	30	4200	Adjacent To Key AREA
5	304	45	13,680	50	15,200	Adjacent To Key AREA
6	85	65	5,525	60	5,100	Key AREA - Reseeding
7	100	5	500	5	500	Distance From Water
8	77	25	1925	30	2310	Adjacent To Key AREA
9	47	45	2115	60	2820	Key AREA
10	33	15	495	20	660	Adjacent To Key AREA
11	83	65	6395	60	4980	Key AREA - Reseeding
12	220	15	3300	20	4400	Key AREA - Reseeding
13	40	10	400	10	400	Distance From Water
14						

Pine Valley ALLOTMENT
4 Mile Bench PASTURE

UNIT	ACRES	ACTUAL USE	ACTUAL USE FACTOR	ALLOWABLE USE	ALLOWABLE USE AREA FACTOR	JUSTIFICATION
TOTAL	2,056		86,925		92,980	

PINE VALLEY ALLOTMENT
GRASS VALLEY PASTURE

UNIT	ACRES	ACTUAL USE	ACTUAL AREA	ACTUAL USE FACTOR	ALLOWABLE USE	ALLOWABLE USE AREA FACTOR	JUSTIFICATION
1	625	25	15,625	25	25	15,625	Adjacent To key Area
2	120	60	7,200	60	60	7,200	Key Area
3	495	50	24,750	60	60	29,700	key Area
4	628	45	28,260	60	60	37,680	Key Area (Reseeding)
TOTAL	1,868		75,835			90,205	

PIVE VALLEY ALLOTMENT
MOUNTAIN PASTURE

UNIT	ACRES	ACTUAL USE	ACTUAL USE AREA FACTOR	ALLOWABLE USE	ALLOWABLE USE AREA FACTOR	JUSTIFICATION
1	143	30	4290	40	5720	Key AREA
2	79	20	1580	40	3,160	Key AREA
3	20	10	200	50	1,000	Key AREA- Riparian- Reservoir Canyon Adjacent To Key AREA
4	20	30	600	30	600	Key AREA- Riparian- Mill Flat
5	25	65	1625	50	1250	Key AREA
6	60	40	2400	50	3,000	Key AREA
7	409	40	16,360	40	16,360	Adjacent To Key AREA (Re seeding)
8	138	65	8970	60	8280	Key AREA
9	12	65	780	50	600	Key AREA- Riparian- Sheep Pens Adjacent To Key AREA
10	94	40	3760	35	3290	Key AREA- Riparian- South Fork of Pinto Creek
11	96	65	6240	50	4800	Key AREA- Riparian- South Fork of Pinto Creek
12	62	30	1860	50	3100	Key AREA- Riparian- South Fork of Pinto Creek
13	130	60	7800	60	7800	Adjacent To Key AREA

PINE VALLEY ALLOTMENT
MOUNTAIN PASTURE

UNIT	ACRES	ACTUAL USE	ACTUAL AREA	ACTUAL USE FACTOR	ALLOWABLE USE	ALLOWABLE USE AREA FACTOR	JUSTIFICATION
15	480	40	19,200	35	16,800	Distance from water	
16	61	20	1220	20	1220	Distance from water	
17	185	20	3,700	20	3,700	Distance from water	
18	77	65	5005	60	4620	Key AREA	
19	50	30	1500	30	1500	Adjacent To Key AREA	
20	94	15	1410	15	1410	Distance from water	
21	134	65	8710	60	8040	Key AREA- Riparian- Long Flat	
22	43	65	2795	60	2580	Key AREA- Riparian- The Cove	
23	83	70	5810	60	4980	Key AREA- Riparian- Big Water	
24	25	15	375	15	375	Distance from water	
25	20	65	1300	50	1000	Key AREA- Riparian- Deep Flat	
26	55	20	1100	10	550	Adjacent To Key AREA	
27	40	70	2800	50	2000	Key AREA- Riparian- Quaking Aspen Springs	

Reply to: 2320

Date: September 4, 1991

Subject: Recreational livestock use in the Pine Valley Mountain Wilderness.

To: District Ranger

The Pine Valley Mountain Wilderness offers a unique opportunity to those who wish to enjoy a true back-country experience. The wilderness area is accessible by either foot or horseback. The use of recreational livestock is a popular form of transportation on the mountain. Horse use can have adverse effects on the wilderness resource if that use is not managed properly. This is a report on the recreational livestock use in the Pine Valley Wilderness from June 20 to September 3, 1991. Included in this report will be a description of existing resource damage and suggestions for future management. Each area will be covered individually.

The information on recreational livestock use was gathered through personal observation and communication with federal employees, friends, outfitters and other forest users. The information is not complete as there was not enough time to fully monitor complete use.

Mound Valley

There has not been a great impact there due to the lack of water. Use tends to occur earlier in the season before the water source dries up. Trampling has occurred in a few spots where horses have been repeatedly tied to the same trees for lengthy periods of time. This compacts the soil, destroys vegetation, and can eventually kill the tree. Documented use of the area is seven horses

8/20 4 horses, two nights

? 3 " , one night

Further Water

This is a popular camping spot with a documented total of 50 horses reported to date.

7/5 3 horses, one night

7/18 12 " ,

? 8 " , one night

7/16 6 " ,

8/18 16 " , two nights

8/18 15 " one night

There are two main camps in this valley and considerable damage has occurred near each one. Much of the ground around each site is bare of vegetation and there is additional damage where the horses have been tied. This area presents some difficulty as the slopes come come right down to the valley floor and there is no room to camp back in the trees. The stream banks at the lower end of the valley.

Hidden Valley

There is no documented use of Hidden Valley although there was some evidence that it had been used. There is one campsite located back in the trees. The overall appearance of the area was good.

South Valley

Documented use of South Valley is 21 horses. Overall condition of the area is good as visitors tend to camp in adjoining Whipple Valley. There is one permanent campsite located back in the trees and impacts in and near that site are minimal.

6/16 18 horses, two nights
7/5 3 " , one night

Whipple Valley

This valley is one of the most popular on the mountain. There are several established campsites and some damage has occurred particularly where horses have been tied and where the trail crosses the stream at the lower end. Damage is not as serious as the amount of use would indicate. Documented use is 68 horses.

6/16 18 horses, one night
6/23 18 " , three nights
7/5 3 " , one night
7/19 3 " , two nights
? 17 " , one night
8/10 9 " , ?

North Valley

There is no documented use of North Valley although there is clear evidence of recreational livestock use. One campsite in particular has considerable damage from horse tethering to trees on the edge of the meadow. The ground has been compacted and there is little grass left along the edge. Stream crossings before and upon entering the valley have lost bank stability and are subject to erosion.

Katie Valley

There is physical but no documented evidence of horse use in Katie Valley. This valley is small with one narrow entrance. It is ideal for keeping horses contained and therefore is a popular camp spot. A stream originates from the meadow and there is some gullying occurring. There is a probability of a lowered water table as the gully cuts further into the meadow. The trail entering the valley crosses the stream and a large mud hole has formed.

Mill Flat

There are five trails entering this flat making it one of the most used areas on the mountain. This area is also open to cattle grazing. Allowable forage use was exceeded long before August 1st when cattle were due on the mountain. There are a few spots which have been grazed and trampled to bare earth. There are several established campsites here, all of which show considerable resource damage. As with other areas on the mountain, damage has occurred where horse have been tethered to trees.

There is some gullying occurring because of heavy use in the past by both horses and cattle. There is documented use of 74 horses.

7/4	4	horses,	three	nights
7/19	3	"	,	one night
7/27	15	"	,	?
8/1	16	"	,	three nights
?	12	"	,	one night
8/5	24	"	,	four to six nights

Anderson Valley

There is documented use of 20 horses to present in this area. There has been serious gullying in the past and a log fence was constructed to prevent grazing in much of the meadow. This greatly reduces the amount of available forage. This area probably cannot support a great deal of grazing pressure. There is some damage, especially near the cabin, where horses have been tethered and some loss of stream bank stability.

7/5	3	horses,	one	night
8/3	7	"	,	two nights
8/10	10	"	,	?

White Rocks Area (Wood Bench, Big Water, The Slough, Rock Springs, etc.)

Recreational livestock use in these areas is usually low except during the hunting seasons. Most of the documented use here is by the trail crew.

8/1	4	horses,	one	night	(Bench Spring)
8/2	4	"	,	"	" (White Rocks)
8/2	7	"	,	two	" (Comanche Cabin)

Reservoir Canyon/Bare Valley

There is no documented horse use in Bare Valley and little obvious impact. Reservoir Canyon has been impacted by both cattle and horse use. Two campsites show impacts similar to other areas on the mountain. Stream crossings show signs of wear and potential for further damage exists.

7/4	4	horses,	two	nights	(Reservoir Canyon)
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First and Second Water

There is little evidence of overnight horse use in these areas. One reason may be the lack of water later on in the season. The greatest use most likely occurs during the hunting seasons.

9/1 4 horses, two nights

The Pine Valley Mountain Wilderness Area offers some unique challenges to the resource manager. Many areas are being over-utilized and this problem will continue to increase yearly as more and more people take advantage of the recreational experience this mountain offers. Areas, such as Mill Flat, which are already over-utilized may have to be closed to recreational livestock use until they recover. A permit/reservation system may also have to be implemented in order to regulate and keep forest users to an acceptable level.



PAUL CASO
Wilderness Ranger

Forest RW Staff:

Spring 1991
R. Rust

I know that each summer those of you with Wilderness Areas to administer receive letters from wilderness recreationists complaining about livestock grazing; ie., grazing shouldn't be allowed in wilderness, grazing too close to campsites, grazing/trampling too close to water sources, trail damage by livestock, manure in the trails, etc.

Following is a white paper that I provided to a couple of Supervisors that you might find useful in replying to some of your user complaints.

* * * *

You should not treat livestock grazing in wilderness any differently than in non-wilderness. If you have an over-stocking, poor livestock management, or range condition problem you should correct it, preferably ASAP. If not, grazing should be allowed to continue. Grazing in wilderness actually has a stronger legal basis than in non-wilderness. On non-wilderness NFS land, managed under the Multiple Use - Sustained Yield Act, range (grazing) is simply identified as one of the uses for which National Forest land will be managed (Sec. 1.. "It is the intent of Congress that the National Forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes").

Grazing in wilderness is specifically addressed (mandated) in the Wilderness Act (Sec. 4(d)(4)(2)... "the grazing of livestock, where established prior to the effective date of this Act, shall be permitted to continue subject to such reasonable regulations as are deemed necessary by the Secretary of Agriculture"... emphasis mine). Congressional intent regarding wilderness grazing is further defined in the Congressional Grazing Guidelines (reprinted in FSM 2323.22). The guidelines go into considerable discussion of wilderness grazing, which I am sure you are familiar, but I want to re-emphasize a couple of paragraphs.

"There shall be no curtailments of grazing in wilderness areas simply because an area is, or has been designated as wilderness, nor should wilderness designations be used as an excuse by administrators to slowly "phase out" grazing. Any adjustments in the numbers of livestock permitted to graze in wilderness areas should be made as a result of revisions in the normal grazing and land management planning and policy setting process, giving consideration to legal mandates, range condition, and the protection of the range resource from deterioration" (emphasis mine).

The guidelines are summarized in the last paragraph which states..."In summary, subject to the conditions and policies outlined above, the general rule of thumb on grazing management in wilderness should be that activities or facilities established prior to the date of an area's designation as wilderness should be allowed to remain in place and may be replaced when necessary for the permittee to properly administer the grazing program. Thus, if livestock grazing activities and facilities were established in an area at the time Congress determined that the area was suitable for

wilderness and aced the specific area in the wilderness system, they should be allowed to continue. With respect to areas designated as wilderness prior to the date of this Act, these guidelines shall not be considered as a direction to re-establish uses where such uses have been discontinued" (emphasis mine).

Ray

Reply to: 2200

Date: August 16, 1991

Subject: Mountain Unit-Pine Valley Allotment

To: Supervisor, Dixie National Forest

The enclosed writeup was made by Regional Ecologist Al Winward after reviewing a video tape taken on the main portions of the Mountain Unit of the Pine Valley Allotment. The video was taken by Randy Russell and Julianne Thompson on August 8, 1981. Livestock had been on the allotment about 8 days. Video coverage included Wood Bench, Rose Bud, White Rocks, Big Water, The Cove, and Long Flat.

/s/Randall R. Hall

RANDALL R. HALL
Director
Range and Watershed Management

MOUNTAIN UNIT-PINE VALLEY ALLOTMENT-DIXIE NATIONAL FOREST

My impression, after viewing the video, is that this unit has been severely impacted at some earlier time period, but has been able to partially recover. The deeper gullies that now show considerable healing are remnant evidence of the earlier impacts.

The wetter portions of the allotment where hydric species have been able to recover and function appear to be in relatively good health. The associated drier riparian areas and the adjacent non-riparian settings, still appear to be severely impacted.

Fortunately, Nebraska sedge (Carex Nebraskensis) and other robust sedges and rushes have maintained their dominance in the wet meadows and on the stream sides. Otherwise, the cutting would have continued and the lowered water tables could have resulted in a loss of most of the riparian portions of this unit. There appears to be some loss of vigor of these major hydric species. Nebraska sedge should approach 3/4 inch width at the ground surface, and two or more feet in height. It's general appearance on the video appeared to be down about 20 to 30 percent.

Species on the drier sites were not identifiable on the screen, but ground cover appeared low. These are the areas currently receiving the most livestock impact. It would be interesting to have some soil compaction measurements made on these areas.

Based on portions of the video, some of the drier meadows and adjacent upland types were once brush treated and seeded to wheatgrasses. It appears that these earlier (1960's?) treatments are now reverting back to a dominance of shrub and trees. Much of the grazing capacity of the unit is gradually being lost as the sagebrush, rabbit brush, and pinion/juniper increases in cover and density. I suspect a 20 year assessment would indicate a continual downward trend of available forage since the 1960's re-vegetation work. It is likely some of the recovery observed in the riparian areas happened during the time period the treated areas were producing at their best.

As the available forage continues to decrease on the allotment, due primarily to shrub/tree competition and in part to current livestock grazing, the impact likely will again carry into the wetter meadow sections of the Unit. The result could be a renewed cutting in some of the old healing gullies.

Apparently the utilization figures quoted on the tape, and presented in the written statement accompanying the tape, were made mostly on the drier portions of the Unit. Where they were made on Nebraska sedge, the values must not have considered fall re-growth. It would be difficult for me to believe these sedges could maintain themselves as well as indicated had they been receiving a prolonged period of use greater than 70%.

Recommendations:

1. Establish a one acre or larger enclosure in one of the key areas. Locate it so the exclusion effect covers the following settings:
 - 1.) hydric-riparian, 2.) dry meadow, 3.) adjacent sagebrush, and, if possible, 4.) a section of the channel between meadows that have greater than .5 percent gradient.

We need to know the recovery potential of the herbaceous species in settings 1 through 3, and the shrub, especially willow, regeneration potential, in setting 4.

2. Season Adjustment:

I doubt that a reduction of animal numbers will provide much of a recovery effect on this Unit. The fewer animals will spend more time in the areas currently impacted, with a very similar overall effect on the health of these areas. Instead, there may be more value in removing the animals from the Unit earlier in the fall. The current three month season is not allowing some of the areas to maintain adequate health. As the allotment capacity continues to be reduced through shrub/tree encroachment, damage to the allotment will intensify.

The early mid-summer use should allow the animals to keep themselves dispersed as much as possible since both the riparian and upland portions will have lush feed. The longer fall rest will allow greater recovery of vigor in the herbaceous riparian species, and may favor regeneration of willows or other woody species along the steeper, non-meadow portions of the allotment. The enclosure should be built to coincide with the shortened grazing season so effect of over use and adjusted use can be evaluated together.

3. Reduce Competition

Search out possible opportunities to reduce some of the shrub/tree encroachments. Prescribed burning should be a possibility for treating some areas. Most of the areas near the bottom of drainages appear to be rapidly dominated by rabbit brush. Although these have highest potential for non-riparian herbaceous growth, the rabbit brush competition and difficulty of controlling livestock use next to riparian settings may preclude their treatment. Look for opportunities on suitable lands further back from the riparian areas, both sagebrush and pinion/juniper areas.

If shrub/tree encroachment is not regulated, the allotment capacity will eventually decrease and an eventual reduction in livestock grazing will be required.

If a rotation or rest/rotation grazing system is implemented, emphasize reduced livestock grazing during the late-summer/early-fall season. An effort should be made to reestablish some of the herbaceous forage in the treated areas so that late season grazing can be emphasized on the treated areas.

I appreciate the video coverage by Randy and Julianne. It was next best to being there in person.

/s/A. H. Winward

A. H. WINWARD
Regional Ecologist

Reply to: 2210

Date: July 8, 1991

Subject: Pine Valley Grazing Allotment

To: District Ranger, D1

Fisheries within the Pine Valley Allotment include the Santa Clara River, Water Canyon, Reservoir Canyon, and the upper portion of Pinto Creek. All of these streams are Class 3 trout streams according to the Utah Division of Wildlife Resources (UDWR). Class 3 trout streams are considered important since they comprise about half of the total stream fishery habitat in Utah and therefore support a significant portion of stream fishing pressure.

The Santa Clara River is a wild brown trout stream. It receives significant fishing pressure because it originates and flows through a high use recreational area (Pine Valley). Grazing effects are limited to the headwater area upstream from the steep gorge the river flows through. There are some unstable banks and sedimentation problems due to recreation and grazing impacts in this headwater area.

Water Canyon flows off the west slopes of the Pine Valley Mountain down into Grass Valley. Pure strain Bonneville cutthroat trout were verified by electrophoresis in 1986 by UDWR. The stream is small and experiences extreme low flows during dry years. There are some unstable stream banks and sedimentation problems due to grazing effects. Grazing has also changed some of the riparian plant species to less desirable ones. Re-establishing a healthy riparian area along this stream would enhance bank storage of water which would in turn augment late summer stream flows.

Reservoir Canyon also flows off the west slopes of the Pine Valley Mountain down into Grass Valley. In 1986 the population of cutthroat trout was verified as pure strain Bonneville by electrophoresis by UDWR. The quality of fish habitat varies in Reservoir Canyon. In areas of dense timber stands, dead-fall, and/or large boulders, the trout habitat is excellent. There is an abundance of pools and stable stream banks with good riparian vegetation. In areas where the surrounding vegetation is more open such as meadow areas, overgrazing and subsequent fish habitat degradation is evident. However, grazing effects are not severe in this stream.

The South Fork of Pinto Creek originates on the west side of the Pine Valley Mountains and flows towards Newcastle Reservoir. It contains populations of wild rainbow and cutthroat trout. There are some unstable stream banks and sedimentation effects from grazing and roading.

Current riparian and associated fishery habitat conditions in all of these streams could be improved. Sediment is degrading fish habitat and impacting trout survival. Research has documented that in stream sections where livestock use is light or is eliminated, production of trout increases by as much as 200% (Bowers and Hosford 1979). To preserve the fisheries, the level of utilization occurring in the riparian areas is the key consideration. Strict utilization standards on riparian vegetation should be used.

Clary and Webster (1989) recommend that a "minimum herbage stubble height be present on all streamside areas at the end of the growing season, or at the end of the grazing season if grazing occurs after frost in the fall. The residual stubble or regrowth should be at least 4 to 6 inches in height to provide sufficient herbaceous forage biomass to meet the requirements of plant vigor maintenance, bank protection, and sediment entrapment. The stubble height criterion should be adhered to regardless of the grazing system used."

To help achieve this stubble height goal they listed the following guidelines:

- 1) On most National Forest pastures grazed in spring only, utilization of streamside herbaceous forage should be limited to about 65% of current growth, and livestock should normally be removed by July 15 to allow sufficient time for plant regrowth.
- 2) Streamside utilization of herbaceous forage in summer-grazed pastures should not exceed 40 to 50% of the current growth.
- 3) Fall use of streamside vegetation should not exceed about 30%, and the herbaceous stubble remaining at the end of the grazing period should meet the 4 to 6 inch criterion.
- 4) Season long grazing should be limited to those situations where animal use and distribution can be carefully controlled, such as by the use of riparian or other special use pastures, and where the stubble height requirements can be met.
- 5) Special situations such as critical fisheries habitats or easily eroded streambanks may require stubble heights of greater than 6 inches.

(Clary and Webster 1989)

These recommendations should be prescribed for the riparian areas of the Santa Clara River, Reservoir Canyon, and upper Pinto Creek in the revision of the Pine Valley AMP. An additional recommendation for Reservoir Canyon would be the construction of a foot bridge to reduce impacts from the Water Canyon Trail crossing. In following all of these recommendations, fishery values on these fisheries can be maintained and/or enhanced.

However, in order to protect and enhance fishery values in Water Canyon, grazing exclusion along the stream and additional spring protection is recommended. Water Canyon experiences severe low flows during dry years and consequently requires riparian area protection to achieve optimal conditions for stream bank

stability and bank storage of water to augment late summer stream flows. Stream flows could be further enhanced by protecting the spring area above the Water Canyon Trailhead. This area could be fenced and the Water Canyon Trail rerouted to avoid all of the springs.

Daniel J. Duffield

DANIEL J. DUFFIELD
Forest Fisheries Biologist

References:

- Bowers, W. and B. Hosford. 1979. Native Trout. In Wildlife Habitats in managed rangelands: the Great Basin of Southeastern Oregon. USDA Forest Service General Technical Report PNW - 84, 16 p. Pacific Northwest Forest and Range Experiment Station, Portland Oregon.
- Clary, W.P. and B.F. Webster. 1989. Managing grazing of riparian areas in the Intermountain Region. USDA Forest Service General Technical Report INT - 263.



United States Department of the Interior



FISH AND WILDLIFE SERVICE
FISH AND WILDLIFE ENHANCEMENT
UTAH STATE OFFICE
2078 ADMINISTRATION BUILDING
1745 WEST 1700 SOUTH
SALT LAKE CITY, UTAH 84104-5110

In Reply Refer To

(FWE)

June 27, 1991

Mr. Thomas A. Contreras
U.S. Forest Service
Pine Valley Ranger District
1996 E. Tabernacle
P.O. Box 2288
St. George, UT 84771

Dear : Mr. Tomas A. Contreras

We have received your letter of May 16, 1991 on the Pine Valley Cattle Allotment Management Plan. The materials provided have been reviewed and we find nothing of significant concern to the Fish and Wildlife Service. Therefore we will offer no comments.

We would be pleased to address specific issues identified by you if necessary at a later date.

Sincerely,

Clark D. Johnson
Assistant Field Supervisor

RECEIVED PINE VALLEY RD.		
JUN 03 '91		
Action	To	Info
	Ranger	
	S.S.S.	
	S. Range Ccn	RR 7/10/91
	S. Forester	
	Range Con	
	FMO	
	For. Tech.	
	For. Tech.	
	File Clerk	
	Other	

Reply to: 2210

Date: September 4, 1991

Subject: Pine Valley Allotment Management Plan - Hydrology Report

To: District Ranger, D1

On August 6 and 8, 1991, Randy Russell and I evaluated livestock impacts on riparian areas in the Pine Valley Allotment. On August 6, we examined several sites on the Santa Clara River, Grass Valley Reservoir, Pinto Creek, and The Dairy near Pinto Creek. On August 8, we rode part of the Mountain Unit to evaluate the ponds and wet meadows at Wood Bench, Rosebud, White Rocks, Big Water, The Cove, and Long Flat. Specific observations and photos of these areas are located in my project files. During these field trips I was also able to evaluate upland watershed condition across much of the allotment.

This report contains my observations and recommendations for your allotment management plan. The recommendations are fully supported by the Dixie National Forest Land and Resource Management Plan (LRMP) as specifically referenced or generally through LRMP direction cited at the end of this report. Recommendations are also supported by Clary and Webster, 1989; Platts, 1990; and communication with Al Winward, Regional Plant Ecologist.

WATERSHED CONDITION

Watershed condition has improved on much of the allotment. Many of the gullies we observed on the Mountain Unit are no longer actively eroding and appear to be revegetating well. Past gully erosion lowered the water table and resulted in loss of riparian habitat on this allotment as dryland species invaded the meadows. This type of erosion is commonly associated with heavy grazing and depletion of groundcover (DeBano and Schmidt, 1989).

Active erosion can still be found, particularly along the trail and road system in the Mountain Unit. The trail we rode from the Rencher Ranch to White Rocks Reservoir on to Big Water lacks proper drainage. Recreation and livestock use on these trails is increasing erosion. Forest Road 011 adjacent to Pinto Creek is located too close to the stream and is actively eroding during storm events. Recent maintenance did not alleviate resource damage caused by this road.

Excessive bare ground is a problem throughout the allotment. On the Mountain Unit much of the upland has very little groundcover, which accentuates the palatability of the riparian areas for feed. This makes riparian management very difficult on this remote unit. Near The Dairy a dramatic difference between the riparian meadow and the adjacent pinyon juniper forest was observed. There was almost no groundcover adjacent to the riparian area. This condition has also been observed along the Santa Clara River, Pinto Creek, and Water Canyon.

RECOMMENDATIONS: Implementation of Best Management Practices on roads and trails will improve watershed condition and minimize water quality degradation. Uplands adjacent to riparian areas have an immediate influence on water quality and should be managed accordingly. Practices which improve palatability and use of upland watershed areas can alleviate pressure on riparian areas.

1. Improve drainage on roads and trails. Relocate and rehabilitate where necessary (LRMP IV-48 Items 1C, 1G, and 2 under Soil Resource Mgt.).
2. Evaluate seasonal closure or other ways of minimizing resource damage from Forest Road 011 (LRMP IV-49, Items 2 and 3 under Transportation System Mgt.).
3. Incorporate several years of rest through a rotation system or use of exclosures to evaluate the potential for improving groundcover on uplands adjacent to riparian areas. Implement rehabilitation measures if erosion is occurring from these areas.
4. Improve palatability and use of upland areas by using earlier in season, increasing available forage and/or herding practices. This may be especially important on the Mountain Unit, where most use seems to be concentrated in riparian areas.
5. Implement watershed improvement projects for gully stabilization where needs are identified.

RIPARIAN CONDITION

Some riparian areas along the Santa Clara River do not meet LRMP groundcover requirements due to heavy recreation use. Lack of groundcover is also a concern in riparian areas along Water Canyon and Pinto Creek but it is unknown what the potential groundcover could be on these sites.

In general, streambanks are stable throughout the allotment. Exceptions have been noted on Pinto Creek and Water Canyon where bank instability is contributing sediment to these streams. Banks are actively eroding on the private land along the Santa Clara River through Pine Valley.

LRMP standards for overhanging vegetation appear to be met in most of the allotment except for the section of Santa Clara River just above the gorge. Livestock use in this narrow riparian area may be limiting riparian shrub recovery from past heavy grazing. The riparian shrub component is relatively healthy along Pinto Creek and the upper Santa Clara River.

Substantial loss of riparian habitat occurred many years ago on the Mountain Unit as a result of the gully erosion described above. Most of the riparian areas remaining are relatively healthy stable meadows. They receive

concentrated heavy use by livestock every year. Reduced vigor and groundcover may be a problem at White Rocks. Gully erosion could be rejuvenated in response to a storm event in this area.

RECOMMENDATIONS: Historically, riparian areas have been valued primarily as stockwater and forage sites, particularly on the Mountain Unit. Practices which reduce the level of livestock use in riparian areas will benefit other riparian values such as water quality and wildlife habitat.

1. Evaluate impacts from camping and recreation along the Santa Clara River. If impacts are unacceptable, implement LRMP direction for protecting riparian ecosystems (LRMP IV-29, 30 Items 2 and 4 under Dispersed Recreation Mgt., LRMP IV-141, Item 3B under Water Resource Improvement and Maintenance).
2. Measure and document proper use in riparian areas and remove livestock from pasture when (or before) proper use is achieved, regardless of upland use.
3. Give riparian areas high priority during annual inspections. Pay particular attention to species composition, plant vigor and groundcover conditions and document with photographs.
4. Use stubble-height utilization standard for measuring proper use along streams and in meadows. Four to six inches of stubble should remain in the riparian area at the end of the growing season.
5. Add more rest to the riparian area by managing separately from the upland. This could involve permanently or temporarily fencing a streamside corridor or meadow to exclude livestock during pasture use, or fencing off a riparian pasture to allow limited use.
6. Avoid consistent late season grazing in units with riparian areas when riparian shrubs are more palatable than grasses and upland areas are not as palatable as riparian areas.
7. Generally, stocking reductions are not effective in improving riparian conditions. However, it should be noted that recent stocking reductions during drought resulted in lighter use of riparian areas in the Mountain Unit. Therefore, stocking reductions may be a practical means of meeting utilization standards and guidelines on this unit of the allotment.
8. Use riparian-upland exclosures to evaluate potential forage production, vigor, soil compaction, groundcover, species diversity and wildlife use. The Water Canyon area may be a good exclosure since it has high value as a fishery. At least one of the meadow areas on the Mountain Unit would also be a good choice to emphasize wildlife values.

9. Explore options for beaver habitat management and transplant with Wildlife Biologist, particularly in Pinto Creek. Beavers can be a valuable asset to the riparian area in many ways.
10. Work with private landowners to improve riparian condition through Pine Valley.

WATER QUALITY

The Pine Valley Allotment contains portions of the Virgin River headwaters in the Colorado Basin and Pinto Creek headwaters in the Great Basin. The Utah Division of Environmental Health has classified these waters as Beneficial Use Class 3A. Class 3A waters are to be protected for cold water species of game fish and the aquatic organisms in their food chain (Utah Dept. of Health, 1988, revised).

Macroinvertebrate communities have been sampled periodically in Water Canyon (1981 and 1987), Forsyth Canyon and Reservoir Canyon (1987), and the Santa Clara River (1987 and 1989). While water quality monitoring on the Pine Valley Allotment has not been intensive enough to conclusively evaluate the impacts of livestock grazing, this data provides a "snapshot" indicator of water quality trend at the sample site. Macroinvertebrates are useful bioindicators of water quality degradation because some species are less tolerant of such impacts than others. Dominance of sediment-tolerant species in a community indicates excessive sediment impacts (Mangum, 1985; Rinne, 1990).

The use of macroinvertebrates as Management Indicator Species for aquatic habitat is supported by the LRMP (p. II-17). The minimum viable population of macroinvertebrates in a stream is defined as a Biotic Condition Index (BCI) of 70 (LRMP II-16a). All of the sites sampled on the Pine Valley Allotment had BCI's above 70 and received a fair to good rating for supporting a resident fishery with the exception of the Santa Clara River below Pine Valley. This site had a BCI of 66 and received a poor rating, reflecting the heavy sediment impacts from the poor riparian conditions immediately upstream on private land.

Sediment tolerant species dominated most of the sites. Clean water species were well represented in Reservoir Canyon and the upper Santa Clara site, but were absent from the lower Santa Clara site (Mangum, 1981; 1987; 1989).

RECOMMENDATIONS: All of the recommendations listed above are methods of improving watershed and riparian condition. These practices will indirectly and directly improve water quality in the Pine Valley Allotment.

SUMMARY

Conclusive information on potential groundcover, riparian condition and water quality under un-grazed conditions is unavailable because of the long history of uncontrolled grazing on much of the Pine Valley Allotment. It is clear that little consideration has been given to uses other than livestock until very recently. Changes in livestock management to alleviate the heavy use on

riparian areas will enhance riparian values and benefit both water quality and wildlife habitat, particularly on the Mountain Unit. Specific watershed improvement needs unrelated to grazing have also been identified on the allotment.

Monitoring techniques such as exclosures, riparian inventory, photopoints, and carefully documenting utilization in riparian areas during annual inspections will enable us to specifically define and manage for the desired future condition of this allotment.

Please let me know if I can be of further help.

Julianne E. Thompson

JULIANNE E. THOMPSON
Forest Hydrologist

cc:

R.Meinrod

R.Russell

FOREST PLAN DIRECTION
FOR WATER QUALITY, RIPARIAN CONDITION AND AQUATIC HABITAT
IN LIVESTOCK GRAZING ALLOTMENTS

Forestwide. The forestwide desired future condition is to maintain or improve riparian conditions (p. IV-20, 22), ensure that livestock grazing only moderately impacts riparian areas (p. IV-21), maintain and monitor water quality (p. IV-22), and improve fish habitat (p. IV-20).

Forestwide direction applicable to these resources is summarized as follows.

Range (p. IV-36, 37)

- Remove livestock from allotments when proper use is reached.
- Restore soil and vegetation to pre-grazing condition by the same point in the next year's cycle.
- Place salt blocks to minimize riparian impacts.

Riparian (p. IV-41)

- Give special protection to land and vegetation for a minimum of 100 feet from the edges of all perennial streams or to the outer margin of the riparian ecosystem if wider than 100 feet.
- Prescribe grazing systems to achieve riparian objectives.

Soils (p. IV-48, 49)

- Prevent livestock and wildlife grazing which reduces plant cover to less than that necessary for watershed protection.
- Repair and improve degraded watershed areas.
- Identify upland areas adjacent to riparian areas and design mitigation and restoration practices to reduce erosion and restore vegetative cover after disturbance.

Water (p. IV-42, 43)

- Improve or maintain water quality to meet State standards.
- Evaluate management activities within 100 feet of springs for impacts on riparian habitat and soil disturbance.
- Rehabilitate disturbed areas that are contributing sediment directly to streams as a result of management activities.

Fish and Wildlife (p. II-14, 15; IV-33, 34)

- Maintain shade, stable streambanks, low substrate embeddedness, and suitable habitat conditions.
- Wildlife Management Indicator Species (MIS) include the yellow breasted chat in riparian shrub-tree areas and resident trout and macroinvertebrates in streams and lakes.

Special Direction Management Areas. Forest direction for Fish and Aquatic Habitat Management Areas (4A) and Riparian Management Areas (9A) is also applicable to the Pine Valley Allotment in Water Canyon (4A), Pinto Creek (9A) and Santa Clara River (9A). The LRMP describes these areas as the aquatic ecosystem (the water and its associated biota), the riparian ecosystem immediately adjacent to the water (characterized by distinct vegetation), and adjacent ecosystems within approximately 100 feet of both edges of perennial streams, lakes and other water bodies (p. IV-73, 135).

The desired future condition for these areas places greater emphasis on maintaining healthy, viable riparian areas and stable stream channels (p. IV-73, 135). 4A areas should be able to support in excess of minimum viable populations of riparian dependent wildlife and fish species (p. IV-73).

Management Area direction incorporates all of the forestwide direction and places emphasis on a level of livestock grazing that assures maintenance of vigor and regeneration capacity of riparian plant communities (p. IV-73, 135). Management Area standards and guidelines incorporate all of the forestwide standards and guidelines and, in addition, place greater emphasis on maintaining vegetative ground cover (p. IV-79, 141), minimizing and rehabilitating trampling damage and improving fish habitat in coordination with Utah Division of Wildlife Resources (p. IV-76, 138).



United States
Department of
Agriculture

Forest
Service

Dixie N.F.

RECEIVED
PINE VALLEY RD.

SEP 09 '91

Reply to: 2210/1950

Date: ~~September 5, 1989~~

Subject: Pine Valley Cattle Allotment

To: Tom Contreras, Pine Valley District Ranger

ASST. DIR.		
Ranger		
S.S.S.		
S. Range Ccn		
S. Forester		
Range Ccn		
FMO		
For. Tech.		
For. Tech.		
File Clerk		
Time		

On July 2, 1991, I reviewed portions of the Pine Valley Cattle Allotment with Randy Russell. Listed below are my observations as they pertain to wildlife and overall ecological relationships of the area.

Our first stop was in the White Rocks area in the "Mountain Unit". I observed very little deer sign (scat) in the area while I did observe an abundance of livestock sign. Primary browse species observed were: Artemisia tridentata vaseyana (Mountain big sagebrush), Amelanchier utahensis (Utah seruceberry), Purshia tridentata (Antelope bitterbrush), Quercus gambelii (Gamble oak), and Cercocarpus ledifolius (Curleaf mountain mohogany). All of the above species exhibited signs of use by both deer and livestock, however livestock use was the dominant use. Deer utilization appeared to be from late fall use as opposed to summer use. This determination was made by: 1) observing what individual parts of the plants were eaten, 2) age of scat piles, and 3) how old utilization appeared. Livestock/deer utilization was differentiated by what parts of the plant were eaten, how much of the wood material was eaten, how much of the plant had been eaten, and scat piles observed around the plant. Deer use appeared to be random throughout the entire area and random in relation to where on the plant utilization occurred. Livestock grazing has had an influence on the vigor of all browse species mentioned, however most browse species are in an acceptable condition where as many species are still producing viable seed. There is evidence of stand replacement and recruitment for some of these species, however this generally occurs in the upland complexes away from riparian areas. Replacement and recruitment occurs in these uplands because there is less use by livestock. Riparian areas experience more concentrated livestock use than uplands and therefore browse condition is poor around riparian areas. Wildlife has had a slight impact on the vigor of some browse species, however use is very old (5-10 years). Overall range condition is poor, however this condition would have a slightly higher rating if we were not experiencing our 5 seasons of drought. Evidence of drought related plant stress was noted throughout the entire vegetative community. This evidence is visible with relation to overall plant vigor, seed production, and growth. Although overall range conditions is poor and browse species have been heavily utilized, wildlife populations (determined through vegetative use) appear to be stable and therefore the vegetative component still meets the needs of current wildlife populations. Overall wildlife use appeared to be sparse and patchy, with the exception of Paradise Ridge. Pellet group transects analyzed this spring (1991) had an unusually high group count. Utilization appeared to be from late fall use. Vegetative quality, quantity, and vigor did not correlate with the total number of pellet groups counted. Pellet group trend data indicates that last



year's (1990) deer use was unusual. It is speculated that the change in deer use on the Paradise transect area was directly related to climatic conditions (drought).

As previously stated, overall range condition is poor with the exceptions of small riparian communities associated around springs and ponds. Wildlife impacts to these riparian communities is negligible. Uplands surrounding these riparian complexes contain very marginal livestock range due to the present vegetative base and the amount of bare ground present. Many of these uplands are located in harsh rocky sites, shallow soils, steep slopes, many of which result in unsuitable cattle range.

RECOMMENDATIONS

Listed below are recommendations that could be considered during the preparation of the environmental document.

1. Continue to manipulate upland habitats away from their present climax condition. Convert more of your Pinyon/Juniper, rabbitbrush habitat into seeded grass, forb, shrub pastures. Contact Wildlife Resources and private Wildlife Federations for partnerships in accomplishing this.
2. Develop additional water sources using guzzlers, ponds, and trick tanks. Water developments along with habitat manipulations in the Pinyon/Juniper, rabbitbrush areas would aid in distributing livestock over a more broad range. These developments and manipulations would reduce some of the intense pressure the riparian complexes are now undergoing.
3. I recommend installing a fenced enclosure to identify wildlife and livestock use. Associated with the enclosure should be permanent vegetative line transects to monitor use. This enclosure could also help determine what the vegetative potential could be without livestock use and what the potential would be with only wildlife use. This enclosure should be installed within one of the riparian complexes.
4. Big Water and Grass Valley Reservoir have good year round waterfowl habitat potential. I recommend that both sources be fenced off to all livestock grazing with the exception of watering corridors leading out into the pond. These corridors must be fenced and the travel lane graveled to maintain water quality. Maintaining water quality will benefit livestock and wildlife. Water quality will be critical for the production and maintenance of a healthy viable invertebrate population. These invertebrates provide valuable food sources to waterfowl. Another option would be to pipe water from the ponds to watering troughs to spread livestock distribution out over a large area.

The current vegetative composition around Grass Valley Reservoir is lacking important hydric species. Transplanting hydric species along the edge of the reservoirs would enhance its habitat effectiveness. Ducks Unlimited has expressed interest in developing waterfowl complexes in southern Utah, so they could be possible partners along with UDWR and some of the Wildlife

Federations. Grass Valley Reservoir could be a first in Utah and in the Region regarding waterfowl habitat enhancement on National Forest System Lands.

5. Water Canyon provides habitat for the Bonneville Cutthroat Trout, a Regionally Sensitive Species and a Dixie National Forest Management Indicator Species. I would recommend that Water Canyon be excluded from livestock grazing to protect and maintain or enhance its habitat.

I appreciate the opportunity to comment on this and regret not having had more time to spend on the project. If you have any questions regarding these comments or recommendations, please feel free to call.



RONALD L. RODRIGUEZ
Forest Wildlife Biologist

cc:
R. Russell