

Comanche Creek Watershed Preliminary Assessment Report

by Kirk L. Gadzia
October 2001

A preliminary assessment of portions of Comanche Creek and associated tributaries was performed this fall. The assessment consisted of a horseback ride through the upper watershed and walking other drainages that flow into the middle and lower reaches of the creek.



The following observations were made:

- The upper watershed area from the confluence of Gold Creek upstream towards Clayton Camp, Foreman Creek watershed, the area to Costilla Pass was ridden. Plant species composition and other rangeland health indicators such as plant spacing, age structure and cover were very positive. We saw little evidence of recent erosion from any of these upland areas. Areas of the forest that we rode through, both logged and non-logged, appeared stable in regard to soil movement and ground cover. Understory cover in these forest areas also indicated high ecological site condition.
- Evidence of past damage to the watershed and drainages was abundant. Old road cuts were seen in every major drainage, and several appeared to still be contributing to sedimentation of the creek, particularly during large storm events and spring runoff. Many old water bars had been washed out and direction of runoff was directly towards Comanche Creek drainage. In some cases rill and gully cutting along these closed roads was significant. Old logging roads and log yarding sites within forested areas, although largely stable and vegetated, also showed some signs of contribution to runoff and sedimentation. However, most of these were discontinuous and runoff was filtered through the forest regrowth areas before reaching drainages.
- The gated road from the corrals toward Clayton camp also appeared to be currently contributing to sedimentation. Although this road is normally closed to the public, it is used for access by Forest Service personnel, ranch management personnel, researchers and others.
- The riparian areas along Comanche Creek and the drainages associated with the upper watershed are almost without exception in a stable or improving condition. Evidence of past damage such as down cutting, major loss of soil and vegetation, and other damage was very obvious. However, except in isolated areas such as natural meander cutting and some bank sloughing, no significant current erosion was seen. The point bars opposite any of these cutting zones were stable and vegetated with rushes and other stabilizing riparian vegetation. These areas could best be described as damaged zones that are in the gradual process of rebuilding and healing.
- The Valle Vidal watershed area, from Grassy Creek southward toward Costilla pass also appeared to be in high ecological site condition. Old closed roads in this area also seemed largely stable due to low gradients and vegetation reestablishment.

- Water runoff from upland sites was not causing visible erosion and the riparian vegetation complex forming at the heads of both Grassy and Vidal creeks before exiting into the canyon drainages toward Comanche creek were stable. Some hummocking was observed in these areas, probably caused by livestock or elk grazing patterns in these wet areas.
- Both Grassy and Vidal creek canyon drainages into Comanche creek exhibited significant erosion problems that probably need to be addressed. Trail and road erosion are evident in these narrow access areas to the Valle Vidal.
- Fences in many cases were in poor repair and down in some areas. Small groups of cattle were seen in various areas of the drainage and upland. The majority of the herd was not on the main part of Comanche creek. We were not completely informed of the grazing plan or pasture rotation setup, but cattle were observed being moved from the Little Costilla grazing area to the upper drainage area previously described. From this area they will move to Clayton Corrals and move off the Valle Vidal unit.
- It is difficult to comment on the livestock grazing without a complete knowledge of the grazing plan and overall management direction. However, it did appear that many small groups of cattle were roaming uncontrolled apart from the larger herd. Also the Little Costilla drainage was grazed heavily (80%-90% utilization in riparian areas) by the time the cattle were moved. While this area will be deferred from grazing next year, a large storm event could have caused damage with this level of current utilization. As mentioned, fence infrastructure may be in need of repair to adequately contain cattle and control timing, intensity and frequency of grazing.
- The main road cut from the confluence of Costilla and Comanche creek upwards to the confluence of Gold creek and the gated road previously described appeared to be a major contributor of sedimentation to the creek. New construction including culverts, fill material, water holding areas, water bars and other activities associated with the road were observed. Nowhere along any of the drainages and upland areas we visited was there such a large amount of exposed soil as the road areas being described here.
- The large livestock and elk enclosure has not been effective for elk. The gate into the enclosure is of standard height. Aspen regeneration on the upper portions of the enclosure was dramatic compared to the area outside the fence, but little difference in herbaceous cover was noted. Willow regeneration was also noted in the enclosure.

In summary, the preliminary assessment of Comanche creek and tributaries shows an area that was heavily impacted from human activities and severely deteriorated at one time. Today the condition of both the watershed and riparian areas appears to be largely improving and stable.

The main road, active restricted access roads, and closed old roads appear to be the largest contributing factors to current sedimentation and water quality. Livestock grazing, and to an unknown degree, elk grazing, may also be contributing factors that should be addressed. Monitoring transects to be established as a part of this project will provide data on trend and status of both the upland and riparian areas mentioned in this preliminary assessment.

Comanche Creek Assessment Report

Presented by: The Quivira Coalition

Written and compiled by: Tamara Sherburn, Kirk Gadzia and Craig Conley

For: The Environmental Protection Agency and the New Mexico Environment Department – Soil Water Quality Bureau

Grant Title: Comanche and Cordova Creeks Watershed Restoration Action Strategy, Education and Restoration Project, Project Number C9-996101-009-01; Contract Control # 02 667 5000 0007

Assessment Location and Site: Valle Vidal unit of the Carson National Forest, east of Amalia, NM. Comanche Creek and drainages and tributaries from Comanche Point along Forest Road 1950 then up stream to Costilla Pass through Clayton Camp. Tributaries include: Fernandez Canyon, Chuckwagon Canyon, Little Costilla Creek, Springwagon Creek, Gold Creek, Holman Creek, Grassy Creek, La Belle Creek, Foreman Creek, and Vidal Creek.

Objective: The objective of this assessment was to evaluate the overall ecological condition of the Comanche Creek Watershed.

Goals: The goal of this assessment was to:

- 1 Identify contributing sources of sediments to Comanche Creek.
- 2 Identify upland and in creek locations for permanent monitoring plots.
- 3 Identify appropriate monitoring methodologies.
- 4 Produce photo baseline documentation.
- 5 Evaluate effectiveness of current grazing regime.
- 6 Initial survey of potential locations for installation of BMPs (best management practices).

Introduction: This assessment of Comanche Creek was conducted on foot during the first weeks of October, 2001. Weather conditions were partly cloudy and temperatures in the mid to upper 70's with light winds. Observations and decisions made during this assessment were based on the 2000 Technical Reference 1734-6 (version 3) *Interpreting Indicators of Rangeland Health*, published by the U.S. Department of the Interior's Bureau of Land Management and the United States Geological Survey; and, the U.S. Department of Agriculture's Natural Resources Conservation Service and Agricultural Research Service. The assessment was conducted by: **Craig Conley**, Bionomics Southwest, 1411 2nd Street, Santa Fe, NM 87505, 505-982-3966; **Kirk L. Gadzia**, Resource Management Services, PO Box 1100, Bernalillo, NM 87004, 505-867-4685; **Tamara E. Sherburn**, Projects Manager, The Quivira Coalition, 551 Cordova Rd. #423, Santa Fe, NM 87505, 505-820-2544; and **David Trew**, Trew Earth Care, PO Box 880, Ranchos de Taos, NM 87557, (505) 986-1101.

Background Information: Soil Maps and Soil Types were obtained from *Soil Survey of Taos County and parts of Rio Arriba and Mora Counties New Mexico*, published by the United States Department of Agriculture, Soil Conservation Service and Forest Service and United States Department of the Interior Bureau of Indian Affairs and Bureau of Land management in cooperation with the New Agricultural Experiment Station.

Soils Map sheets #35, #36, #44 and #45 were utilized to identify soil types along and upland of Comanche Creek. See Attachment #1. Appropriate soil types included:

Cryoborolls-Cryaquolls complex (CTC) pg 16-17: creek bed/riparian soils; 0 to 8 percent slope. This complex consists of small areas of Cryoborolls and Cryaquolls that are so intermingled that they could not be mapped separately at the scale selected. These soils formed in alluvium in high mountain valleys at an elevation of 9,000 to 11,000 feet. The mean annual precipitation is 30 inches, and the mean annual temperature is 34 degrees F. Frost-free season is less than 60 days. Cryoborolls make up about 50 percent of the complex. These are deep, well drained soils that have slopes of 3 to 8 percent. Cryaquolls make up about 30 percent of the complex. These are deep, poorly drained soils that have slopes of 0 to 5 percent. Included in mapping are soils that have muck and peat as much as 20 inches thick over moderately fine textured gravelly material. These soils make up about 20 percent of this map unit. Cryoborolls have a dark-colored surface layer 10 to 20 inches thick. They are stratified gravelly sandy loam and gravelly loam to a depth of 60 inches or more. The content of gravel and cobbles ranges from 15 to 50 percent. Permeability is moderate to moderately slow. The available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. Cryaquolls have a dark-colored surface layer of silty clay loam, clay loam, or loam that is 7 to 20 inches thick. The underlying material is gravelly clay or gravelly clay loam to a depth of 60 inches or more. The seasonal water table is within a depth of 20 inches. Permeability is moderately slow to very slow. The available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The dominant vegetation on Cryoborolls is sedges, Kentucky bluegrass, tufted hairgrass, timber oatgrass, silverweed cinquefoil and other forbs. A few Engelmann spruce and subalpine fir are scattered on these soils. Cryoborolls are used for grazing and for wildlife habitat. The dominant vegetation on Cryaquolls is sedges, shrubby cinquefoil, skunkcabbage, western yarrow, and Kentucky bluegrass. A few Engelmann spruce and subalpine fir are scattered on these soils. Cryaquolls are suited to use as native grazing land. They provide limited summer grazing for domestic livestock and wildlife. A management system is needed that periodically defers grazing to maintain a balanced plant community. Cryoborolls have high potential for use as habitat for rangeland wildlife. Cryaquolls have high potential use as habitat for wetland wildlife.

Wellsville-Ess association, moderately steep (WEF) pg. 58-59 creek/meadow or parklands adjacent or Above riparian areas. This association consists of soils on the sides of high mountain valleys at an elevation of 9,000 to 10,500 feet. The mean annual precipitation is 25 inches, and mean annual temperature is about 38 degrees F. The frost-free season is less than 60 days. Wellsville gravelly loam makes up about 55 percent of this association, and Ess gravelly loam makes up about 30 percent. The Wellsville soil is strongly sloping to moderately steep. Mapped areas generally are elongated and are parallel to drainageways. Included in mapping are areas of Cryaquolls, Cryoborolls, and Rock outcrop, each making up about 5 percent of the association. The Wellsville soil is deep and well drained. It formed in colluvium and alluvium that derived from acid igneous rock. Typically, the surface layer is dark grayish brown gravelly loam about 8 inches thick. The subsoil is dark grayish brown and brown gravelly clay loam and gravelly sandy clay loam about 34 inches thick. The substratum is light brown very gravelly sandy clay loam to a depth of 60 inches or more. Permeability is moderately slow. The available water capacity is moderate to high. The effective rooting depth is 60 inches or more. Runoff is medium. The hazard of water erosion is moderate. The Ess soil is deep and well drained. It formed in colluvium and alluvium that derived from acid igneous rock. Typically, the surface layer is brown gravelly loam about 8 inches thick. The subsoil is brown very gravelly sandy clay loam about 25 inches thick. The substratum is brown very gravelly sandy loam to a depth of 60 inches or more. Permeability is moderately slow. The available water capacity is moderate. The effective rooting depth is 40 to 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. These soils are suited to use as native grazing land for domestic livestock and for wildlife. Proper grazing use improves the plant cover, results in the accumulation of residue, and helps prevent soil erosion. A management system is needed in which the seasons of grazing and resting of pastures vary in successive years. This system results in a balance plant community of vigorous and productive forage plants such as Arizona fescue, mountain muhly, prairie junegrass, and bottlebrush squirreltail. If the condition of the plant community deteriorates, the desirable forage plants decrease in number and are replaced by oak, brush, and sedges. Installing pipelines and constructing fences, trails, and access roads to facilitate grazing management are feasible in the less sloping areas of this association. In some places the use of machinery is not feasible because of the moderately steep slopes. The mountain grasslands supported by these soils are important to the habitat of woodland wildlife, including elk, mule deer, blue grouse and turkey.

Nambe cobbly loam (NaF) upland wooded areas (pg. 36), 15 to 40 percent slopes, This is a very deep, well drained, moderately steep to steep soil that formed in colluvium. This soil is on mountain slopes at an elevation of 10,000 and 12,000 feet. The mean annual precipitation is 35 inches, and the mean annual temperature is 40 degrees F. The frost-free season is less than 60 days. Included in mapping are areas of Marosa soils, which make up about 15 percent of this map unit. Typically, the surface layer is light yellowish brown cobbly loam about 5 inches thick. The subsurface layer is light yellowish brown very cobbly sandy clay loam about 11 inches thick. The subsoil is light brown cobbly sandy clay loam and pale brown and grayish brown very cobbly sandy

loam about 39 inches thick. The substratum is yellowish brown extremely gravelly sandy loam to a depth of 60 inches or more. Permeability is moderately rapid. The effective rooting depth is more than 60 inches. The available water capacity is low to moderate. Runoff is moderate, and the hazard of water erosion is moderate. The dominant vegetation is Engelmann spruce and subalpine fir. The understory is mainly grouse whortleberry. This soil is used for timber and for wildlife habitat. It has medium potential for the production of Engelmann spruce and subalpine fir. Conventional methods can be used to harvest trees. Regeneration of Engelmann spruce is hampered by the high intensity of light at high elevations and by frost heaving. If stands are clear-cut, special management is needed to keep soil erosion to a minimum. Because of moderately steep to steep slopes, management should be designed to prevent accelerated erosion. The risk of erosion is serious on steep slopes because of the high elevation and the slow regeneration rate. This soil has medium potential for use as habitat for woodland wildlife.

Marosa-Nambe association (MTE) moderately steep (pg. 33-34). This association consists of moderately steep soils on north-facing mountain side slopes in the northern part of the survey area. The elevation is 9,000 to 11,000 feet. The mean annual precipitation is 35 inches, and the mean annual temperature is 40 degrees F. The frost-free season is less than 60 days. This association is about 45 percent Marosa gravelly sandy loam and 30 percent Nambe gravelly sand loam. The Marosa soil is at the lower elevations, and the Nambe soil is at the higher elevations. Included in mapping are Rock outcrop, making up about 15 percent of this association, and Cryaquolls, making up about 10 percent. It formed in colluvium and residuum of acid igneous rock. The Marosa soil is deep and well drained. Typically, the surface layer is light gray gravelly sandy loam about 26 inches thick. The subsoil is yellowish brown very gravelly clay loam that extends to a depth of 60 inches or more. Permeability is moderate. The effective rooting depth is 60 inches or more. The available water capacity is low. Runoff is medium. The hazard of water erosion is moderate to high. The Nambe soil is deep and well drained. It formed in colluvium of rhyolite. Typically, the surface layer is light brownish gray gravelly sandy loam about 15 inches thick. The subsoil is light brown cobbly sandy loam about 34 inches thick. The substratum is very pale brown very cobbly sandy loam to a depth of 60 inches or more. Permeability is moderately rapid. The effective rooting depth is 60 inches or more. The available water capacity is low to moderate. Runoff is moderate to very rapid, and the hazard of water erosion is moderate to high. The dominant vegetation on the Marosa soil is Douglas-fir and Engelmann spruce and some scattered subalpine fir, white fir, and aspen. The main understory is kinnikinnick and grouse whortleberry. On the Nambe soil, the dominant vegetation is Engelmann spruce and subalpine fir. The understory is mainly grouse whortleberry. These soils are used mainly for timber production and wildlife habitat. They have medium potential for the production of Douglas-fir, Engelmann spruce, white fir, and aspen. Conventional methods can be used to harvest trees. Soil disturbance should be kept to a minimum during harvest. Managing the Marosa soil to favor aspen increases timber production and improves the habitat for wildlife. These soils have low potential for the development of habitat for openland and woodland wildlife.

Non-Photo Historical Reference Points (HRP):

Fernandez Canyon; notes by Craig Conley

HRP #3 Canada thistle UTM 470891/4075239

HRP #5 Canada thistle UTM 470997/4074486

Right fork of Little Costilla Creek; notes by Kirk Gadzia and Tamara Sherburn.

HRP A UTM 0475361/4073614

Stream bank cut with cow impact, elevation 9445 feet

HRP B UTM 0475601/4073725

55 degrees NE up the valley towards Little Costilla Peak, cow trail, meadow grazed down, trailing and high utilization levels, grasses show signs of overgrazing.

HRP C *No GPS point*

Point where road curves over pass and into next drainage (marked on map).

Elevation 9840 feet. Culvert at stream crossover and utilization of forage is high.

Cattle were seen grazing at upper end of meadow.

HRP D *No GPS point*

Head are of Springwagon Creek, heavily grazed with High utilization, similar to other areas in this section. SE hill side had been logged. Meadow area is heavy with dandelions, thistles and Kentucky bluegrass.

HRP E UTM 0476733/40730188

Looking down Springwagon creek below aspens of last HRP: Damage by livestock trampling to creek through middle meadow with species conversion to bluegrass
UTM 0476573/4072773 red painted monitoring T post below logged hill off of Springwagon Creek road. Area 9725 feet elevation.

HRP F UTM 0475586/4072089

The road crosses over into the next drainage through a cattle gate/fence line. Grass looks better. Followed road over to where it meets the main road at Holman Creek. We followed the main road back to corrals at starting point. Saw Wranglers gathering cattle from Little Costilla Creek drainage and gathering them down on Comanche Creek in the area above the corral. We counted about 250 head athered in Comanche Creek up stream from Little Costilla Corrals.

Monitoring Photo Points

The following photos are represented by codes: Monitoring Photo Point (**MPP**), Historical Photo Point (**HPP**), and Historical Reference Point (**HRP**). These photo points do not represent the entire watershed, but areas of immediate or potential concern for watershed stability and contributing factors to erosion. Concerns included road and culvert erosion, erosion control structures, utilization levels by livestock and wildlife, riparian vegetation, and invasive species.

Discussion: Reported by Kirk L. Gadzia

A preliminary assessment of portions of Comanche Creek and associated tributaries was performed this fall. A preliminary assessment consisted of a horseback ride through the upper watershed; and the assessment consisted of walking tributaries and drainages that flow into the middle and lower reaches of the creek.

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- Fences in many cases were in poor repair and down in some areas. Small groups of cattle were seen in various areas of the drainage and upland. The majority of the herd was not on the main part of Comanche creek. We were not completely informed of the grazing plan or pasture rotation setup, but cattle were observed being moved from the Little Costilla grazing area to the upper drainage area previously described. From this area they will move to Clayton Corrals and move off the Valle Vidal unit.
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Conclusions:

At the assessment end, the team concluded by selecting sites to install permanent monitoring plots as well as the types of monitoring methods to be used. The Comanche Creek Watershed was divided into 3 main areas and then monitoring sites were chosen based on 1) representative soil type 2) how representative each site was of the selected reach, and 3) accessibility by vehicle or foot. These three areas are designated as Lower Comanche Creek (**LCC**) from Comanche Point to Little Castillo Creek, Middle Comanche Creek (**MCC**) from Springwagon Creek Corrals to Corral Box Canyon from Vidal to Grassy Creek, and Upper Comanche Creek (**UCC**) includes the Box of Comanche Creek and the Heart of Valle Vidal. See Table #1 (page 25) for selected monitoring sites.

Methods for quantitative monitoring will be taken from the *Monitoring Manual for Grassland, Shrubland and Savanna Ecosystems* Co-developed by: USDA-ARS Jornada Experimental Range in cooperation with US-EPA Office of Research and Development, the Natural Resource Conservation Service and the Bureau of Land Management; heretofore called The Jornada Method. Suggested Jornada quantitative monitoring methods include but are not limited to: Photo points, Line point intercept, Gap intercept, Soil Stability, and a Belt transect in CTC sites with high areas of shrubby vegetation.

It was also decided that gazing management for livestock would be a valuable tool and a more comprehensive overview of the current grazing management plan would be necessary. It would therefore be necessary to obtain a written grazing plan, a fencing/pasture map, and a meeting with the livestock wranglers and land managers.

Items

Fernandez Creek

MPP#1 South Side Facing 25° NNE NAD 27
UTM 47 1970/4075673 for drainage cut



MPP#2 South Side Facing 70° ENE
Gravel bars upstream on Comanche Creek



HPP #1 UTM 47 1870/4075631



HPP#2
UTM
471941/4075032
Road cut erosion

HRP#4 UTM 470997/4689 yarding area



HPR#6 UTM 470896/4074313 Logged area



HPR#7 UTM 471126/4073720 Fernandez Creek Looking Down Meadow, Browsed *potentilla*
Spring flowing @ approximately 0.2 CFS
Spring UTM 471103/4073690



HPR#8 UTM 471126/4073720 Fernandez Creek Looking Up Meadow



HPR#9 UTM 471406/4073925 Top of Fernandez Creek



HPR#10
UTM
471817/4074027
Deposition, does sediment come from side cut?

HPR#11 UTM 472075/4073999 Fernandez Creek Healing, bank erosion looking down Creek



HPR#12 UTM 472075/4073999 Fernandez Creek Healing bank erosion, looking up Creek



HPR#13 shows bank-cut with upper cut healing



HPR#14 UTM 472351/4074045 side cut stopped by vegetation



HPR#15 UTM 472351/4074045 side cut stopped by vegetation



HPR#16 UTM 472636/4074110 Big eroding slope



Comanche Point South East:

Both sides of the main road from Fernandez Canyon to Chuckwagon Canyon had Canada thistle. Side cut erosion on main road adding sediment to Comanche.

Chuckwagon Canyon:

HPR #17-19 UTM 4728773/4073025 culvert/erosion



HRR #20 UTM 472322/4072846



HPR #21 UTM 472290/40072756 Grazed



Little Costilla Creek:
From Comanche Creek up below the fork

HP#22 Meander recovering on eroded banks



HP#23 Exposed Culvert



(HPP#24) MMP#3 UTM 474506/4072853 Photo taken from road above side drainage, valley bottom 50-60% utilization, cattle need to be moved, cattle spread out though valley, grazing on slopes light to moderate, some trailing up slope **HPP#25** grazing cattle



HPP#26 Little Costilla—gravel stream bottom, stable flood plane, healing eroded slopes, Kirk Gadzia showing grazing level. **HPP#27** UTM 47 4876/4073404—exposed culvert.



Little Costilla Creek:

Left Fork Drainage North down No Name Canyon (East on other side of Comanche Creek from Fernandez)

HPP #28 Little Costilla—N—grazing moderate to heavy



HPP #29 UTM 47 4965/4073822 Grazed creek bank, overgrazed by cattle & elk



HPP #30 UTM 47 5189/4074332
Along creek/narrow/hammered by cattle



HPP#31 UTM 47 5358/4074390 head cut at spring bog could be lowering the water table in meadow



HPP#32 UTM 475358/4074390 head cut at spring bog could be lowering the water table in meadow



HPP #33 UTM 475554/407444 Upper meadow approximately 30 head parked; pasture grazed heavily probably move into canyon during hot part of the day



HPP #34 UTM 475554/407444 overgrazed plant with elk droppings



HPP#35 Panoramic



HPP #36 UTM 475353/4076437 water bar



HPP #37 UTM 475453/4076581 water bar adding to erosion



HPP #38 UTM 4762137/4076366 Heavily logged area.



HPP #39 UTM 476639/4076234 Grazed area from livestock and elk.



HPP#40-41 UTM 474172/4075903 Head of Elk Run (across from Fernandez Canyon)



HPP#42 UTM 0473839/4075640 Pond



HPP#43 UTM 443621/4075206 Head of Elk Run



HPP#44 UTM 473582/407 4956 head of Elk Run



Grassy Creek

HPP#45 (MPP#4) UTM 0475423/4070350 9250 Ft. 245 degrees WSW looking across creek bank cut with trees



UTM 474172/4075903 Canada thistle



HPP#46 (MPP#5) UTM 476129/4069641 eroded bank Canada thistle browsed along trail UTM 76465/4069833 Small spruce trees growing in creek; Zeedyk erosion controls needed on road along creek/big and small side cuts



HPP#47 UTM 476732/4069950 Channel cuts on grazing area



HPP#48 mini erosion point



HPP#49
UTM
476156/4069678
Erosion channel

Comanche Creek

HPP#50 UTM 475861/4068004 Water crossing on Comanche Creek



HPP#51 UTM 476874/4067861 Cattle drinking spot with water moderately turbid



Vidal Creek up from Clayton Camp

HPP#52 UTM 477052/4067901 Erosion cut on Vidal Creek



HPP#53 UTM 477307/4067914 Cutting on Vidal Creek





HPP#54 UTM 477465/4067968 Heart of Valle Vidal Monitoring location 9432 Ft. Close to wood platform at confluence, heavily grazed area at end of canyon road. For WEF monitoring site will go up hill next to CTC site. CTC site probable for a soil sta-

La Belle Creek

HPP# 55-56 UTM 0475723/4069308 9300 ft. La Belle exit, amount of soil loss contributing factors, 4 to 6 feet depth of soil loss, note slope failure



HPP#57 UTM 0475694/4069004 320 degrees NW 9300 ft. First split in La Belle UTM 0475405/4069170 Cattle everywhere; gate and fence down.



Photo points La Belle below Labelle Lodge. Cut and rills into wet meadow complex. No water above, wet below, cattle grazing. **HPP#58** 9333 Ft. (260 degrees W) **HPP#59** UTM 0475109/4068849 (30 degrees NNE)



HPP#60 at split to lodge 5-6 ft cut healing



HPP#61 at split down La Belle, cutting evidence, mostly healing



HPP#62 UTM 0473268/4068408 La Belle Lodge—earth dam in danger of breaching, cut lower than spillway—view NE 50 degrees



HPP#63 La Belle Creek North Fork, extreme soil loss and head cutting:



HPP#64 La Belle North Fork Right: where left fork of the north fork come together, 200 yards up from main fork, significant head cuts 3 to 4 feet drops in stair step forma-



HPP#65-66 Left fork of the north fork of La Belle: #65 road cut, grass over but bottom showing gravel and soil movement, drops into drainage with major head cuts, #66 up hill from bottom of road.



HPP#67 Stock pond, right side of north fork, silted in with very little water and washing out, soil movement with stair step head cuts 8 inches to 2 feet.



HPP#68-69 Photos taken from permanent range condition transect cluster FS-3 bearing from transect 048 SE on 4/18/96; site on ridge between 2 forks of La Belle and near the top.



Gold Creek

HPP #70-71 Bank stabilization structure at bridge crossing Comanche Creek.



HPP#72 Base of Gold Creek showing channel in recovery.



HPP#73 UTM 479276/4070451 Bank erosion on Comanche Creek



HPP#74 UTM 475232/4070583 Bank erosion point inside enclosure



HPP#75 old erosion control structure



HPP#76 Willows growing in elk ex-closure



HPP#77 Culvert damage from enclosure



HPP#78-79 Dead Pole plantings



HPP#80 bank erosions stabilization structure



HPP#81 Gate into ex-closure is to low! 4 feet high Elk can easily cross into ex-closure area; there are lots of elk droppings



HPP#82
Road cuts on
Comanche Creek.



HPP#83-85 UTM 474736/4070603 Aspen regeneration on inside of elk enclosure
Is this MTE soil? Change in vegetation Thurber Fescue?



HPP #86 Culverts



HPP #87
Recent culvert and holding
pond installation
contributing to sediment



Table 1. Possible Jornada Monitoring Sites

Area	Location	UTM	Soil Type
LCC on Comanche Creek	Across from Comanche Creek where Chuckwagon Canyon drains	47336/4072880	CTC
LCC Monitoring Photo Point	45° NE 9129 Ft. Showing sediment cobbles eroded out of drainage	473348/4072991	
LCC on Comanche Creek	Northern point along Comanche creek near Comanche Point	472168/407566	CTC
MCC Upper Springwagon Canyon	Lower Marsh Area near logging		CTC
MCC Upper Springwagon Canyon	Uplands area in open meadow		WEF
MCC Inside Exclosure	Creek area	474954/4070770	CTC
MCC Inside Exclosure	Uplands near dead shrub	474719/407086	WEF
MCC Outside Exclosure	upland	475305/4070172	WEF (or MEF?)
MCC Outside Exclosure	Area just up stream on Comanche Creek from Exclosure; below parking area	475365/4070318	CTC
UCC	Heart of the Valle Vidal where it opens up into the big valley on the side of hill		WEF
UCC	Heart of the Valle Vidal where it opens up into the big valle near an old plank board		CTC
UCC	Box of Comanche Creek, right fork of La Belle just east of the old stock pond		WEF