EXISTING CONDITION	DESIRED CONDITION
Fisheries: Three streams were sampled in this allotment. No fish were observed or collected in lower **Williams Creek.** This is problematic because stream size was more than adequate to support fish and suitable habitat was present**.** It may lack pool development relative to preferred pool/riffle ratios and width/depth ratios likely exceeded average, but as mentioned, it appeared more than adequate. Stream banks were fully vegetated and no evidence of recent livestock grazing was present except for some slight trailing on the west side of the sample site. However, the site appeared to be recovering from a major disturbance occurring many years ago. The disturbance may have been caused from livestock grazing, given the lack of willow relative to other streams in the area, the appearance of historic "mushrooming" of remnant mature willow, mass wasting/slope failure on the west side of the stream. And as mentioned pool/riffle and width/depth ratios askew. However, the site appeared to be recovering well as young willow sprouts were present, stream banks were stable and the slope failure was almost completely vegetated. **Turkey and Cisneros Creeks** were each sampled just above their confluence. These are both high elevation headwater streams characterized by low discharge volume, steep gradient and large substrate particle size (boulders). These habitats do not support large fisheries, but fish (brook trout) were present.	**Fisheries:** The desired future condition for the Williams Creek allotment would be for Williams Creek to support a high density ($\geq$ 77 kg/ha) native or desirable non-native fish assemblage, increased willow regeneration and canopy cover, appropriate width/depth and pool/riffle ratios and improved meander pattern. Turkey and Cisneros Creeks are likely at the desired future condition.
Range Management: Williams Creek /Greenhorn Allotments Because of drought conditions the last year full numbers have been run on the Williams Creek Allotment was 2000 and 1998 on the Greenhorn Allotment. There has been five years of total nonuse on the Greenhorn Allotment since 1998 and four years	**Range: (*Williams Creek/Greenhorn Allotment*)** – Implement an efficient grazing system. Establish later use dates on the Greenhorn allotment. Relocate and reconstruct fences where needed to manage pastures more efficiently. Continue use of electric fence to manage grazing use and protect riparian areas.

where only fifty percent of the numbers or less were run on the allotment. The 6/16 on date on the Greenhorn allotment appears to be too early because of its higher elevation. Greenhorn and Williams Creek Allotments have been run together since 2002. Electric fence has been used to manage grazing use on Williams Creek Allotment with success. Fences on allotments are not functioning properly because they are old and in need of reconstruction. Current location of pasture division fences is not working efficiently to manage grazing use. Deadfall in the spring of 2007 demolished portions of pasture division fences and created new natural barriers in pastures making it difficult t to implement an efficient grazing system. A cow camp facility is needed to properly manage grazing use on allotments. (***Williams Creek Allotment*) *St. Charles Pasture***-Only sources of water for livestock are in riparian areas. ***Deer Lick Pasture***- Location of Deer Lick /St. Charles boundary fence is contributing to resource problems in the north Bear Creek area. Dividing of the Deer Lick Pasture in the last two years with electric fence has helped riparian vegetation in North and South Bear Creek to recover. Cattle tend to congregate in the riparian area in the northern portion of the Deer Lick Pasture. Water source in this area needs to be relocated to upland area. ***East Williams Pasture***- Good water availability in area. ***Custer Pasture*** **-** Historically congregation of livestock has occurred in the Pole Creek Trailhead area. In the Pole Creek Trailhead area heavy grazing of willows by elk is occurring. Open parks in the Salt Road area have been under utilized because of water availability and location of fences. ***Froze and Back Pastures***- Because of plains larkspur, pastures cannot be used until later in the grazing season. Private in holdings in the Back Pasture are grazed by permitted cattle.	Provide cow camp facility for management. ***St. Charles Pasture*** **-** Install upland water developments to draw cattle away from riparian areas. Develop water away from wet meadow areas. ***Deer Lick Pasture***-Relocate the Deer Lick/St. Charles boundary fence**.** Establish upland water sources away from North and South Bear Creek areas. Relocate water source located in the northern portion of the Deer Lick Pasture. ***Custer Pasture*** – Reduce amount of grazing use in Pole Creek Trailhead area. Develop watering sources away from riparian areas. Establish watering locations near uplands in the Salt Road area. ***Froze, Back and East Williams Pastures-*** May want to consider introduction of sheep to help control plains larkspur. ***Beaver Creek Pasture*** **-** Graze area only during drier years. ***West Plantation Pasture*** -Develop additional water sources.

Heavy use by elk occurring in the northeast portion of the Back Pasture. ***Beaver Creek Pasture***- Has not been grazed in the last six years. Resource concerns with using Amethyst and Beaver Creek riparian areas because of wet conditions. Historically drier side slope sites received heavy utilization. ***West Plantation Pasture***- In the past has not been used due to problems with water availability. New Ponds constructed two years ago to address water availability problems.	
Recreation: Numerous roads and trails are present on the allotment. Recreation use is very high. Five trailheads occur on the allotment. Dispersed camping, OHV use, hiking, hunting, mushrooming and snowmobiling all occur in the area. The allotment includes part of the Greenhorn Wilderness area. Illegal motorized use has been a problem in certain areas. Conflicts between livestock and recreation have occurred. Recreational users have used range improvements in the past, including corrals and camps.	**Recreation:** Maintain accessibility of roads and trails. Minimize conflicts that occur between recreation and livestock. Avoid creating avenues for illegal motorized use. Minimize additional impacts to heavily used dispersed recreation sites and trailheads. Do not impede snowmobile routes and winter activities that are present and preserve groomed snowmobile trail width to allow snow cat grooming operations. Maintain and sign range improvements to prevent unauthorized use of range improvements. Maintain wilderness characteristics within the wilderness area if the allotment is still partially within the wilderness area.
Wildlife: TES habitat exists for: boreal toad, northern leopard frog, northern goshawk, boreal owl, olive-sided fly catcher, black swift, peregrine falcon, flammulated owl, American three-toed woodpecker, Mexican spotted owl, Brewer's sparrow, American hog-nosed skunk, wolverine, Canada lynx, American martin, fringed myotis, Rocky Mountain bighorn sheep, and Townsend's big-eared bat; <u>GREENHORN ALLOTMENT</u>	**Wildlife:** *All Areas***:** supportive of active beaver colony(ies)/densities within the Historical Range of Variability (HRV) in applicable potential habitat types/areas; willow carrs and riparian vegetation in lynx habitat at mid-seral or higher condition; and grasses/forbs species composition, densities are within HRV levels. <u>GREENHORN ALLOTMENT</u>

Pasture 2 (headcuts & photo point GHP2-P1) -Headcuts actively eroding, need to be monitored, limiting habitat capability (reference hydrology section) -Effects of road facilitated headcuts by contributing to flow (recovery occurring above and below road tract) -Good composition of forbs and graminoids	*Pasture 2 (headcuts & photo point GHP2-P1)* -Headcuts have healed (potential for watershed improvement project) Elimination of headcuts in uplands
Pasture 2 (wet meadow/transect pair GHP2-T1) -Good composition of forbs and graminoids -Good willow component in area	*Pasture 2 (wet meadow/transect pair GHP2-T1)* -Willow and upland ecotypes maintained by time, timing, salting, fencing, and new water developments
<u>WILLIAMS CREEK ALLOTMENT</u> *Custer Pasture- (Pole Ck. Trailhead-Uplands - Transect pair WCSC-T1 & Riparian area WCSC-P2)* -Graminoid cover has increased in last two years -Compaction, overland flow, soil movement, and active head cuts occurring in valley bottoms -Heavy grazing of willows occurring by elk? -Historical livestock congregation area -Hydrology affected by livestock grazing -Flow patterns, pedastalling, and soil movement occurring -High amounts of bare ground present -Forb composition inadequate	<u>WILLIAMS CREEK ALLOTMENT</u> *Custer Pasture- (Pole Ck. Trailhead-Uplands)* -Existing condition issues at left are remedied and system is functioning within HRV -Riparian area is restored back to a mid-seral stage -Aspen regeneration is meeting lynx habitat requirements/guidelines/standards
Custer Pasture – (Salt Road Area - transect pair WCCU-T3) -No signs erosion present -Very high water holding capacity in area -Excellent grass species composition (tall, healthy Thurber fescue); grasses bordering on decadent -Species composition good for subalpine loam site -Forage production excellent (~2,000 lbs./acre dry wt.)	*Custer Pasture – (Salt Road Area - transect pair WCCU-T3)* Health and vigor of vegetation maintained (good area for a prescribed burn)

Deer Lick Pasture – (NF Bear Creek; WCDL-X1) -Lateral and vertical instability in channel -Head cutting occurring -Good vegetative cover -Riparian area in worse condition than St. Charles riparian area -Uplands becoming drier due to drop in water table resulting in more cinquefoil -Deer Lick/St. Charles boundary fence location contributing to resource problems in North Bear Creek area -Hummicking of ground present -Torpedo tank has damaged area around it *East Williams Pasture – (Historical Transect Pair – WCEW-C5)* -Upward trend -Good cover of native vegetation and litter -Loss of bare ground compared to transect reading in 1963 -Good water availability in area -No resource concerns in area *St. Charles Pasture – (Upland transect pair – WCSC-C3)* -Soil compaction rates different between sites with/without cinquefoil (change in cinquefoil density between 1963 photo vs. current difficult to measure) -Good composition of native grasses (Parry's oatgrass and Arizona fescue) -Lead out from road goes into transect -Stable trend (area appears similar to1961 historical photo)	*Deer Lick Pasture – (NF Bear Creek; WCDL-X1)* -Channels are stabilized and head cuts are healed -Willow component is well established and at mid-seral or higher condition -Raw banks are minimized -Shrubby cinquefoil cover percent reduced and within HRV levels *East Williams Pasture – (Historical Transect Pair – WCEW-C5)* Current condition maintained *St. Charles Pasture – (Upland transect pair – WCSC-C3)* -Forage production is improved -Water developments are located away from wet areas -Rehabilitated road is located away from transect -Cinquefoil cover is within HRV (2-3% vs. current 8-9%) -Water table is raised -Willow cover percent is increased along streambanks and at mid-seral or higher vegetative condition

St. Charles Pasture (Riparian area/St. Charles Creek) -Bank slumping evident -Hummicking present from hoof shearing -Willows present but being impeded to early seral condition or growth stage; potential for better willow development present -Hydrophilic condition causing lower grass composition and production than what potential could be present -Riparian area currently only source for livestock water -Water velocity upstream of road is increasing -Stream held up from significant storm event	-Litter and ground cover are maintained -Streambank stability is increased to be within HRV -Moist micro-climate sites are available in uplands for Northern leopard frog *St. Charles Pasture (Riparian area/St. Charles Creek)* -Green area WIZ is expanded -Water developments in uplands are installed to move livestock out of riparian areas -Riparian area vegetation is in mid-seral or higher condition -Streambanks and streambeds are stabilized -Water infiltration increased and bare ground is decreased in uplands which has improved riparian overland flow -Bare ground is at or below 10% (characteristic of subalpine loam soil sites) -Moisture content in riparian and upland areas is maintained at HRV levels
Vegetation: ***Williams Creek and Greenhorn Allotment*** **-** Areas have a wide variation in vegetation going from pinyon-juniper vegetation types to sub-alpine. Significant amount of historical information on the allotment. Overall, the upland areas in the Williams Creek Allotment have good ground cover. Majority of allotment in a static or upward trend. Overall allotment upland areas of allotment are in good condition. Areas where there are resource concerns are located in riparian areas. Daryl Mergan has installed several cover frequency plots, constructed exclosures in mesic meadows and other riparian areas on allotments which can be used to monitor impacts of grazing on vegetation. **(*Williams Creek Allotment)* - *Saint Charles Pasture*--** Willows are present but are being held back to an early growth stage in St.	**Vegetation: (*Williams Creek Allotment)*** - Establish apparent (using professional judgement and available data) static or upward trend in all areas. Maintain good ground cover and healthy condition of grasses in the upland areas. Establish healthy riparian vegetation throughout the allotment. ***Saint Charles Pasture*** – In the St. Charles Creek area improve width of green area . Improve riparian vegetation to upper mid-seral stage. Maintain no more than ten percent bare ground. Maintain moisture content in riparian areas and uplands. Improve cover of native grasses near the Meadow Divide /Greenhorn Road areas. Improve forage production in uplands. Decrease cover of cinquefoil. ***Deer Lick Pasture*** – In North Bear Creek establish willow

Charles Creek. Potential for willow growth is present. The riparian areas in the southeast portion of the St. Charles Pasture have a good cover of riparian vegetation with sedges and willows dominating. Several different species of carex are present. Hydrophilic vegetation (grass composition and production is lower than potential). In uplands there is a good composition of native grasses (Parry's oatgrass and Arizona Fescue). Uplands near the Meadow Divide Road and Greenhorn Road have changed very little since 1956 and 1963. Cinquefoil is present throughout the entire area. More grass cover is needed in this area. ***Deer Lick Pasture*** –The riparian area is in worse condition than the riparian area in St. Charles Creek. In North Bear Creek there is a good cover of vegetation which in the process of getting established. Riparian area is wide with cinquefoil common. Only a few willow plants observed in area. Uplands in the North Bear Creek area are becoming drier because of drop in the water table resulting in more cinquefoil. Riparian area in the northern portion of the Deer Lick Pasture has very few willows. A good cover of carex is present. In the Deer Lick exclosure area dominant native grass inside the exclosure is (Parry's Oatgrass) and outside the exclosure is (Arizona Fescue) with no differences in litter and bare ground cover compared to historical data. Areas outside exclosure have abundant grass and litter cover with very little bare ground. ***East Williams Pasture-*** No resource concerns in pasture. Historical transect pair information shows trend is upward. Good cover of native grasses and litter. The uplands at the headwaters of the Saint Charles River have had significant improvement since 1963. Less of bare ground compared to the 1963 transects reading**.** There has been a substantial increase in forage density	component to upper mid-seral stage. Reduce the percentage cover of shrubby cinquefoil. In North Bear Creek allow vegetation to continue to get established. Establish willow regeneration. Establish more willows in the riparian area in the northern portion of the Deer Lick Pasture. Maintain and improve cover of carex. Maintain riparian vegetation condition in the southeast portion of the St. Charles Pasture. Maintain grass and litter cover and minimal bare ground in the Deer Lick exclosure area. ***East Williams Pasture*** -Maintain current vegetative conditions. Maintain current upward trend. Maintain cover of native grasses and litter with minimal bare ground cover. ***Custer Pasture*** - In Pole Creek Trailhead area restore riparian back to a mid-seral stage. Continue improvement in cover of graminoids and reduce bare ground. In the Salt Road areas maintain and improve health and vigor of grasses. Maintain composition of native grasses in uplands. Reduce litter accumulation to prevent decadence in grasses. ***Back Pasture/ Froze Pasture*** – Maintain cover of willows and carex in riparian areas. Maintain cover of native grasses in uplands. ***West Plantation Pasture -*** Reduction of conifers in open parks to maintain and improve forage production. Improve cover of native grasses. ***Beaver Creek Pasture-*** Continue to allow improvement in condition of vegetation in riparian areas and surrounding drier side slopes in Amethyst and Beaver Creek. ***(Greenhorn Allotment)*** - Maintain condition of riparian and upland ecotypes in uplands and mesic meadows in all pastures. In uplands and mesic meadows maintain a good composition of

and composition with a decrease in bare soil in these uplands. ***Custer Pasture*** **-** In the Pole Creek Trailhead area the cover of graminoids has increased in the last two years. Cover of bare ground needs to be reduced. Composition of forbs could be improved. In the Salt Road area there is an excellent composition of native grasses in uplands. Litter accumulation is occurring and grasses (Thurber's Fescue and Parry's oatgrass) are becoming decadent. Species composition is good for a sub-alpine loam site. Forage production is good to excellent (2000 1bs. acre dry wt.) Cinquefoil is dying out. ***Back Pasture/ Froze Pasture*** **-** Plains larkspur found in the pastures. In the Back Pasture there is a good cover of willows and carex in riparian areas. . ***West Plantation Pasture****:* Ponderosa Pine/pinyon juniper vegetation type. Area has been disturbed in the past. Hydro-axe projects have greatly increased forage production. Gumweed and Helimeris plant species dominate the site. ***Beaver Creek Pasture-*** Riparian vegetation and surrounding drier side slope vegetation in Amethyst and Beaver Creek are recovering from historical heavy grazing use. *A* good cover of willows and carex is becoming established. Good willow regeneration is occurring in these areas. ***(Greenhorn Allotment)*** – No major resource concerns with vegetation in these pastures. Pastures on the allotment are very similar vegetatively. Historical vegetation data for pastures on allotment not available. In uplands and mesic meadows there is a good composition of forbs and graminoids. There is a good willow component in riparian areas.	forbs and native grasses with high plant vigor. Maintain a healthy regenerating willow component in all riparian areas.

Hydrology: The Williams Creek C&H allotment is comprised of 17 pastures totaling approximately 35,300 acres (55.2 square miles). Appendix A of the hydrology report contains maps which show the open parks area for each pasture. Each map displays the wetter and drier portions of the pasture by climatic zones, improvements, and roads/trails. Known soil disturbances are also indicated on the existing condition maps by the small, red circles. Appendix B of the hydrology report contains a spreadsheet of the field observations made by the hydrologist; descriptions of the soil disturbances can be found there if observed. While this allotment covers a large land area, the riparian corridors, grasslands and shrublands, collectively referred to as 'open parks' on the original Williams Creek portion of the allotment occupy nearly 9,900 acres. These open parks are the primary areas grazed by livestock, and 82% of the open parks are accessible to livestock. In round figures, 39% of this area is riparian, 50% is grassland, and 11% is shrubland. Open parks on the Greenhorn portion of the allotment occupy nearly 3,200 acres; 2800 of these acres are accessible by cattle. In round figures, 58% of this area is riparian, 32% is grassland, and 10% is shrubland. Appendix A of the hydrology report contains maps which show the open parks area for each pasture. Each map displays the wetter and drier portions of the pasture by climatic zones, improvements, and roads/trails. Known soil disturbances are also indicated on the existing condition maps by the small, red circles. Appendix B of the hydrology report contains a spreadsheet of the	**Hydrology:** The main objective is to maintain the uplands and the riparian and stream corridors at desired condition. The following bullets summarize some of the related guidance discussed in the Forest Land & Resource Management Plan, the Watershed Conservation Practices (WCPs), and other key, hydrologic concepts: • Maintain all riparian ecosystems in at least an upper mid-seral stage based upon the R2 Riparian Ecosystem Rating System (PSICC LRMP, III-50). Provide healthy, self-perpetuating plant communities, meet water quality standards, provide habitats for viable populations of wildlife and fish, and provide stable stream channels and still water-body shorelines (PSICC LRMP, III-203). • Achieve desired condition of riparian areas by following the standards set forth in the Watershed Conservation Practices (WCP) Handbook, FSH 2509.25. Section 12 deals specifically with Riparian Areas. Management measure (3) of this section states, "In the water influence zone (WIZ) next to perennial and intermittent streams, lakes, and wetlands, allow only those actions that maintain or improve long-term stream health and riparian ecosystem condition." Adherence to the design criteria within this standard will help to sustain riparian areas at or move them toward their desired conditions. • To provide healthy uplands and riparian communities and stable stream systems in order to sustain the flow of high quality water to the forest boundary under current climatic conditions. • To ensure that grazing does not negatively alter the

field observations made by the hydrologist; descriptions of the soil disturbances can be found there. Of the accessible acreage on the original Williams Creek portion of the allotment, 40% occurs in the subalpine, 39% occurs in the montane, 18% occurs in the lower montane and two percent occurs in the semi-arid climatic zones. Of the accessible acreage on the Greenhorn portion of the allotment, 84% occurs in the subalpine, 6% occurs in the montane, 4% occurs in the lower montane and 6% occurs in the semi-arid climatic zone. The accessible open park within the subalpine zone is mostly underlain by soil map units 100F, 610G and 701M. Parent material of 100F is comprised of alluvium and slope wash; this soil map unit is wet and it supports riparian communities. Parent material of 701M is comprised of colluvium and residuum; this soil unit is drier and supports the subalpine fir and Englemann spruce ecological unit. Parent material of 610G is comprised of glacial till and fluvial valley fill; this soil unit is also drier and it too supports the subalpine fir and Englemann spruce ecological unit. A large percentage of the open park within the subalpine zone is mesic meadows, riparian shrub complex and upland grasses associated with riparian; this holds true on the Greenhorn pastures yet alpine shrub complex appears due to the increase in elevation. These areas tend to be wet, year-round based on field observations. These riparian communities, as previously stated are underlain by soil map unit 100F (71% of accessible pasture in	hydrologic processes in the uplands and along the riparian corridors, and to maintain the pattern, profile and dimensions of the stream network. • To protect the hydrologic integrity and functionality of all riparian communities, particularly the subalpine, mesic vegetative community types by reducing livestock use in these areas, and by improving distribution onto and increasing the utilization of the mountain grasslands. • To ensure that current water sources are adequately watering the livestock in a manner that is protecting those sources and the watershed. Where this is not occurring use tools available under current management or adaptive management to provide sufficient water in a manner that protects these resources. Develop springs in a manner that provides for their long-term sustainability.

subalpine). As these soils are subject to compaction and rutting in wet areas, not surprisingly soil disturbance was observed in many places in these riparian, subalpine pastures. The interdisciplinary team (IDT) identified the following special areas of concern: • Beaver Creek Pasture • St. Charles Pasture • Horse Pasture (cow camp) within East Williams Pasture • Cisneros Pasture near Pole Creek Trailhead • Millset, Greenhorn, Snowslide Pastures Soil disturbance was also noted at two locations in N. Fork Bear Creek on soil map unit 701M. Within the Beaver Creek pasture, the majority of livestock impacts to date occur on the South Fork and main stem of Amethyst Creek (above Marion Lake); approximately 30% of the stream reach (1400 of 4800 feet) and 30 acres of mesic meadow have been negatively impacted. This area is recovering nicely as the pasture hasn't been used over the last few years. One watershed improvement project was done on the South Fork of Amethyst Creek; and other improvement projects on this reach could be done, if needed. Evidence of pedestalled plants and hummocky ground occurs on 15 acres of mesic meadow between the Beaver Creek and Amethyst Creek drainages. No adverse cattle effects presently exist on Beaver Creek and only one small disturbance was noted on North Fork Amethyst Creek. A recent two-track scar was created (because of saturated soils) along Beaver Creek within the pasture, yet this was not livestock related. North Fork Bear Creek and St. Charles Creek drain significant	

portions of the St. Charles pasture. The headwaters of St. Charles Creek also drain the easternmost portion of the East Williams Creek pasture. Within the East Williams Creek pasture approximately 30% of the stream reach (1000 of 3500 feet) and 25 acres of mesic meadow have been negatively impacted. Approximately 40% of St. Charles Creek (2350 of 5600 feet) and 50 acres of mesic meadow within the St. Charles pasture have been negatively impacted. Approximately 80% of N. Fork Bear Creek (5760 of 7200 feet) and 50 acres of mesic meadow within the St. Charles pasture have been negatively impacted. The proposed horse pasture (cow camp) has not been negatively impacted to date. The mesic meadow associated with this pasture was the reason the ID team identified it as an area of concern. Approximately 30 acres in the vicinity of the Pole Creek trailhead have been negatively impacted from livestock. Twenty of these acres exist in the Cisneros pasture, and ten acres exist in the Snowslide pasture. These acres are tributary to the South Fork St. Charles Creek. As previously mentioned the Millset, Greenhorn and Snowslide pastures were also identified as special areas of concern due to their mesic conditions. Within the Snowslide pasture, approximately 30% of the West Fork Cisneros Creek (1200 of 4200 feet) and 40 acres of mesic meadow on the west side of the creek have been negatively impacted. Approximately 20% of North Fork Greenhorn Creek (900 of 4500 feet) and 25 acres of mesic meadow within the Millset pasture have been negatively impacted. Less than 5 acres have been negatively impacted within the Greenhorn pasture which is likely related to the amount	

of use it has received in the past. The accessible open park within the montane zone is mostly underlain by soil map units 101F, 702M and 703M. Parent material of the 101F is comprised of alluvium; as expected this soil map unit is also wet and it supports riparian communities. Parent material of 702M is comprised of colluvium and residuum; this soil unit is drier and supports the Thurber fescue and Parry oatgrass ecological unit. Parent material of 703M is same as 702 but includes some slope wash; this soil unit is also drier and it supports the aspen and subalpine fir ecological unit. Soil disturbance was noted at a few locations underlain by soil map unit 702M. One location is of a headcut in the Custer pasture near the Pole Creek Trailhead. The others were in the East Williams pasture and are cattle trail and cattle trail/road related. The mesic meadows, riparian shrub complex, and upland grasses associated with riparian account for the majority of the riparian vegetation in the montane climatic zone, too. Aspen riparian stringers are also significant in this climatic zone. Limited hydrology surveys were conducted in these riparian communities. The accessible open park within the lower montane zone is mostly underlain by soil map units 102F, 520M, 715M and 716M. Parent material of the 102F is comprised of slope wash and alluvium. This map unit is obviously drier than 100F and 101F, yet can be wet in places; this soil map unit supports the blue gramma and needlegrass ecological unit. Parent material of 520M is comprised of slope wash and residuum; this soil unit is	

drier and also supports the blue gramma and needlegrass ecological unit. Parent material of units 715M and 716M is comprised of residuum, and they both are also drier and support the pinyon pine, ponderosa pine and Gambel oak ecological unit. When moving down in elevation (hotter and drier), roughly one-third of the riparian community is comprised of mesic meadows, riparian shrub complex and upland grasses associated with riparian. Aspen riparian stringers are still important; cottonwood stringers also appear and are important, as well. No hydrology surveys were conducted in this climatic zone. The accessible open park within the semi-arid zone is predominantly underlain by soil map unit 524M. Parent material of 524M is comprised of slope wash and residuum; this soil map unit is dry and it supports the pinyon pine and blue gramma ecological unit. Riparian shrub complex, cottonwood, aspen and evergreen riparian stringers dominate in this climatic zone. No hydrology surveys were conducted in this climatic zone.	
Soils: **Williams Creek Pastures:** *Back Pasture* has 1215 acres of capable grazing, 87% of the total grazing area. *Beaver Creek Pasture* has 2174 acres of capable grazing, 82% of the total grazing area. *Custer Pasture* has 5578 acres of capable grazing, 69% of the	**Soils:** **Combined Williams Creek/Greenhorn Pastures:** *Back Pasture* has 850 acres of capable grazing, 83% of the total grazing area. *Bear Creek Pasture* has 1190 acres of capable grazing, 81% of the total grazing area. *Beaver Creek Pasture* has 2288 acres of capable grazing, 82% of

total grazing area. *Deer Lick Pasture* has 3703 acres of capable grazing, 59% of the total grazing area. *East Williams Pasture* has 1850 acres of capable grazing, 96% of the total grazing area. *Froze Creek Pasture* has 999 acres of capable grazing, 98% of the total grazing area. *St. Charles Pasture* has 3214 acres of capable grazing, 79% of the total grazing area. *West Plantation Pasture* has 2088 acres of capable grazing, 93% of the total grazing area. **Greenhorn Pastures:** *Pasture 1* has 517 acres of capable grazing, 100% of the total grazing area. *Pasture 2* has 1300 acres of capable grazing, 91% of the total grazing area. *Pasture 3* has 898 acres of capable grazing, 76% of the total grazing area.. *Pasture 4* has 1608 acres of capable grazing, 86% of the total grazing area. *Pasture 5* has 1291 acres of capable grazing, 33% of the total grazing area. *Pasture 6* has 652 acres of capable grazing, 42% of the total grazing area. No capable grazing areas are found on slopes greater than 40% or in areas of highly erodible soils. **Total pasture size:** **Williams Creek Pastures:**	the total grazing area. *Cisneros Pasture* has 2429 acres of capable grazing, 74% of the total grazing area. *Custer Pasture* has 2555 acres of capable grazing, 75% of the total grazing area. *Deer Lick Pasture* has 1628 acres of capable grazing, 76% of the total grazing area. *East Williams Pasture* has 1736 acres of capable grazing, 95% of the total grazing area. *Froze Creek Pasture* has 999 acres of capable grazing, 98% of the total grazing area. *Greenhorn Pasture* has 1522 acres of capable grazing, 91% of the total grazing area. *Horse Ranch Pasture* has 1023 acres of capable grazing, 37% of the total grazing area. *Lower Turkey Creek Pasture* has 519 acres of capable grazing, 38% of the total grazing area. *Millset Pasture* has 1300 acres of capable grazing, 91% of the total grazing area.. *Pole Creek Pasture* has 2377 acres of capable grazing, 59% of the total grazing area. *Snowslide Pasture* has 1162 acres of capable grazing, 99% of the total grazing area. *St. Charles Pasture* has 1076 acres of capable grazing, 99% of the total grazing area. *Upper Turkey Creek Pasture* has 1031 acres of capable grazing, 74% of the total grazing area. *West Plantation Pasture* has 2125 acres of capable grazing, 91% of the total grazing area. No capable grazing areas are found on slopes greater than 40% or

Back Pasture has 1391 total acres. *Beaver Creek Pasture* has 2664 total acres. *Custer Pasture* has 8091 total acres. *Deer Lick Pasture* has 6233 total acres. *East Williams Pasture* has 1928 total acres. *Froze Creek Pasture* has 1015 total acres. *St. Charles Pasture* has 4060 total acres. *West Plantation Pasture* has 2252 total acres. **Greenhorn Pastures:** *Pasture 1* has 518 total acres. *Pasture 2* has 1434 total acres. *Pasture 3* has 1177 total acres. *Pasture 4* has 1861 total acres. *Pasture 5* has 3868 total acres. *Pasture 6* has 1561 total acres. **Williams Creek Pastures:** ***Back Pasture*** Good ground cover is present. No obvious soil issues are present. ***Beaver Creek Pasture*** This pasture has not been grazed in six years. The pasture was grazed in drier years because it is primarily riparian in nature. Very wet grazing areas force cattle to graze on the drier, south-facing slopes. No soil issues at present. ***Custer Pasture*** In meadow area near WCSC-P1 and WCSC-T1 some stream bank undercutting and nick point migration which appears to be stabilizing. There is evidence of surface compaction, and shallow rooting depth. At transect site WCCU-T3 soils are deep (pachic cryoborolls) with a dark "A" horizon. Surface cover is excellent. ***Deer Lick Pasture*** Vegetative cover is fair. Soils need to be	in areas of highly erodible soils. **Total pasture size:** **Combined Williams Creek/Greenhorn Pastures:** *Back Pasture* has 1018 total acres. of capable grazing. *Bear Creek Pasture* has 1475 total acres. *Beaver Creek Pasture* has 2778 total acres. *Cisneros Pasture* has 3266 total acres. *Custer Pasture* has 3396 total acres. *Deer Lick Pasture* has 2155 total acres. *East Williams Pasture* has 1822 total acres. *Froze Creek Pasture* has 1015 total acres. *Greenhorn Pasture* has 1678 total acres. *Horse Ranch Pasture* has 2787 total acres. *Lower Turkey Creek Pasture* has 1352 total acres. *Millset Pasture* has 1434 total acres. *Pole Creek Pasture* has 4042 total acres. *Snowslide Pasture* has 1178 total acres. *St. Charles Pasture* has 1085 total acres. *Upper Turkey Creek Pasture* has 1385 total acres. *West Plantation Pasture* has 2345 total acres. **Combined Williams Creek/Greenhorn Pastures:** ***Back Pasture*** Continued maintenance of good ground cover and stable soil condition. ***Bear Creek Pasture*** (East one-third of old Deer Lick Pasture) For this portion of the old Deer Lick Pasture, continue to maintain good ground cover and stable soil condition. ***Beaver Creek Pasture*** Continued maintenance of good ground cover and stable soil condition.

stabilized better in area around photo point WCDL-P1 in Northeast portion of pasture. Some channel damage with soil loss. ***East Williams Pasture*** There is good vegetative/litter cover. No apparent soil issues noted. ***Froze Creek Pasture*** This pasture is primarily grazed in the fall and is used lightly. The ground cover is good. No soil issues were noted. ***St. Charles/Cisneros Pasture*** Grazing predominates in the open meadow/riparian areas. Overall good meadow vegetative cover. Stable soils in open meadows. Some pedestalling and stream bank undercutting in the riparian areas. ***West Plantation Pasture*** This pasture was not visited. However, it has not been used for cattle grazing in a while. **Greenhorn Pastures:** ***Pasture 1*** In the meadow area of transect pair GHP2-T1 there is evidence of soil compaction with decreased rooting depth and finer root masses. Surface vegetative cover is fair. ***Pasture 2*** Soils are stable for the most part except near remnant road. Vegetative cover needs to be improved in area near remnant road. ***Pasture 3*** Did not visit. The pasture has not been grazed in a while. ***Pasture 4*** Overall, condition of soils is good in open pasture area. ***Pasture 5*** Did not visit. This pasture is to be removed from the grazing rotation.. ***Pasture 6*** Did not visit.	***Cisneros Pasture*** (Lower two-thirds of old St. Charles Pasture) Improved vegetative cover. Elimination of pedestalling in riparian areas. Stabilize stream bank undercutting in riparian areas. Maintenance of stable soils in meadows. ***Custer Pasture*** (East half of old Custer Pasture) Stabilize stream bank undercutting in effected riparian areas. Decrease compaction and improve rooting vigor. Continue to maintain overall good surface cover and protection of soil resource in rest of pasture. ***Deer Lick Pasture*** (Northwest one-third of old Deer Lick Pasture) Improved vegetative/litter cover; stabilize soils where needed in open meadows; improved channel stability ***East Williams Pasture*** Continued maintenance of good ground cover and stable soil condition. ***Froze Creek Pasture*** Continued maintenance of good ground cover and stable soil condition. ***Greenhorn Pasture*** (Old Pasture 4) maintenance of good vegetative/litter cover and stable soil condition in open pastures ***Horse Ranch Pasture*** (Southern one-third of old Deer Lick Pasture) Continued maintenance of good ground cover and stable soil condition. ***Lower Turkey Creek Pasture*** (Old Pasture 6) Continued maintenance of good ground cover and stable soil condition. ***Millset Pasture*** (Old Pasture 2) Improved vegetative cover near and on closed road. Continued maintenance of stable soils. ***Pole Creek Pasture*** (West one-half of old Custer Pasture) Improved vegetative/litter cover; stabilize soils where needed in open meadows; decreased soil compaction in compacted areas. ***Snowslide Pasture*** (Old Pasture 1 plus a small Northern portion of old Custer Pasture) improved surface vegetative/litter cover and decreased soil compaction in open parks and meadows.

	St. Charles Pasture (Upper one-third of old St. Charles pasture) Improved vegetative cover. Elimination of pedastalling in riparian areas. Stabilize stream bank undercutting in riparian areas. Maintenance of stablized soils in meadows. ***Upper Turkey Creek Pasture*** (Old Pasture 3) Continued maintenance of good ground cover to maintain stable soil condition. ***West Plantation Pasture*** Continued maintenance of good ground cover to maintain stable soil condition.