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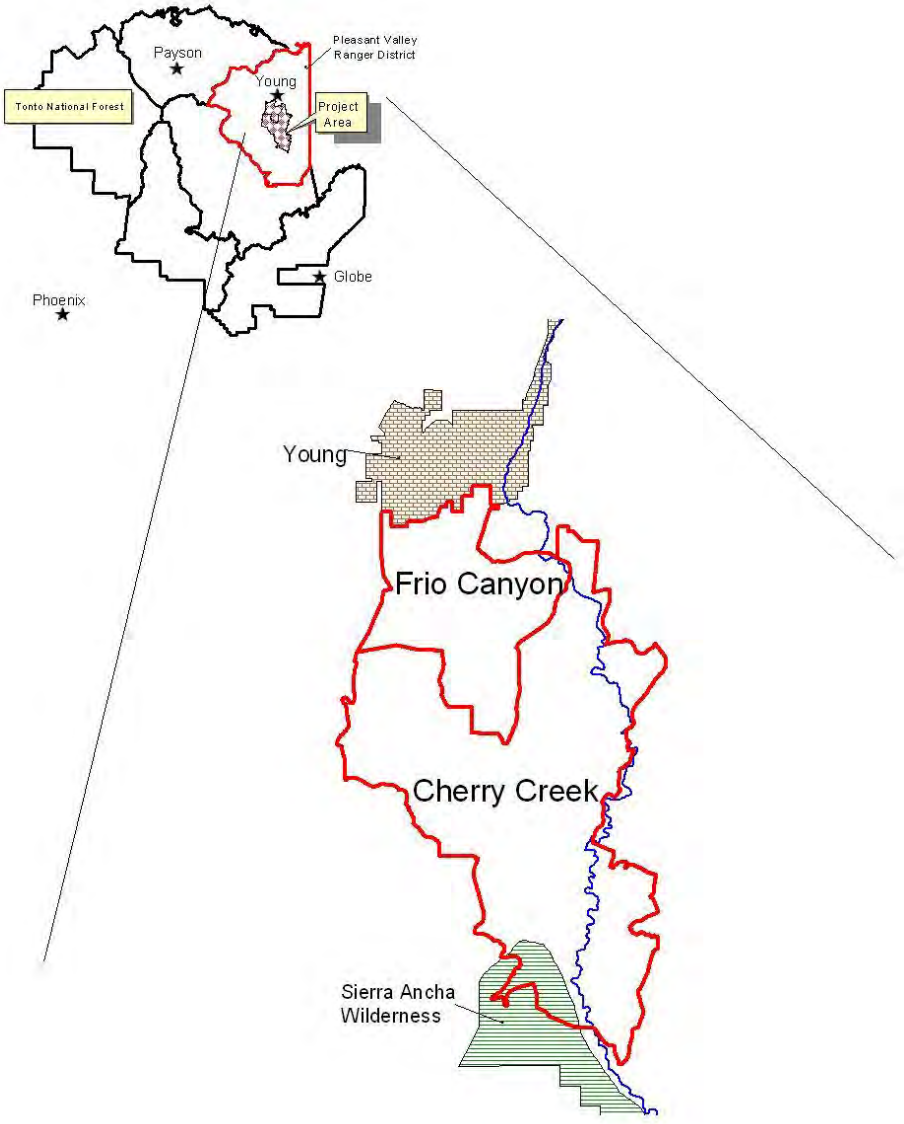
Environmental Assessment

Cherry Creek – Frio Canyon Allotments Analysis

Pleasant Valley Ranger District, Tonto National Forest, Gila County, Arizona



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CHAPTER 1 – PURPOSE AND NEED

Background

The Forest Service has prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This Environmental Assessment (EA) discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. Supporting documentation, including more detailed analyses of project area resources, is on file in the project planning record located at the Pleasant Valley Ranger District of the Tonto National Forest in Young, Arizona. Throughout this EA, references to supporting documentation are shown in parentheses. For example, a reference "(PR V1 T21)" would indicate that a specific section in the EA is linked to information contained in Volume 1 Tab 21 in the project record. Terms in **boldface** type are defined within the "Definitions" section beginning on page 26.

The decision for Cherry Creek – Frio Canyon Allotments was appealed on 10/25/2009. The decision was affirmed with instructions to ensure that the effects of proposed juniper removal are complete and consistent with Forest Plan standards for woodland treatments, as well as a copy of the paper, McBride and Grove, 2002, Riparian Area Management Utilization Guidelines to the project record. To meet this instruction, this EA has been revised to include the following:

- Analysis of the different types of juniper treatments for fire, riparian, wildlife and recreation.
- Specialist report for silviculture.

The changes in the EA are in **boldface** type to make it easier for the reader to locate them.

Purpose and Need for Action

The Cherry Creek – Frio Canyon Allotments encompass lands identified as suitable for domestic livestock grazing in the Tonto National Forest Land and Resource Management Plan (LRMP). Where consistent with the goals, objectives, standards and guidelines of LRMPs, it is Forest Service policy to make forage from lands suitable for grazing available to qualified livestock operators (FSM 2202.1, FSM 2203.1, 36 CFR 22.2(C), Multiple Use and Sustained Yield act of 1960, Wilderness Act of 1964, Forest and Rangeland Renewable Resources Planning Act of 1974).

The purpose of the proposed action is to achieve, or place management on a path which would eventually achieve defined long-term objectives (desired future conditions) for the Cherry Creek – Frio Canyon Allotments. The proposed action would authorize grazing on the allotments in a manner that maintains or improves project area resource conditions and achieves the objectives and desired conditions described in the Tonto National Forest Plan. This action is needed here and now because:

- There is a need to incorporate an adaptive management grazing strategy that will better allow the Forest Service and individual grazing permit holders to respond to changing resource conditions or management objectives in compliance with

Forest Service policy contained in FSH 2209.13, Chapter 90. The current management within the last five years has been light use with conservative stocking and improving conditions are noticeable.

- There is a need to improve less than satisfactory, or maintain satisfactory range and watershed condition and increase productivity of herbaceous vegetation through the reduction of canopy cover of woody species on juniper grasslands and juniper woodlands. There is a need to establish younger age classes within the woodland vegetation type and to identify areas to be maintained in permanent openings. Such actions may reduce bare ground, increase understory composition, diversity, and vigor, and improve the amount and distribution of litter.

- There is a need to bring some fences and earthen stock tanks to serviceable condition. Additional pasture fences, trap fences, and water developments are needed to improve distribution of livestock within pastures.

- There is a need to create additional protection measures for Cherry Creek in the South Cherry and Ridge pastures.

- There is a need to formally combine the allotments and call the new allotment Cherry-Frio allotment.

Existing Conditions

Location and Setting. The Cherry Creek - Frio Canyon allotments consist of 40,823 acres combined, and are located within the Pleasant Valley Ranger District in close proximity to the community of Young, AZ. The allotments have been managed together since 1987. Elevations vary from about 4,000 feet at the southern end in Cherry Creek to 6,600 feet at the top of Squaw Peak. Vegetation consists predominantly of pinyon/juniper and juniper woodland/grasslands, with ponderosa pine found at higher elevations and along canyons. Interior chaparral is found at lower elevations. Important riparian areas are found along Cherry Creek, which bisects the allotment from north to south.

About 55% of this allotment ranges from 0-30% slope. These areas are most accessible to cattle, and effects to vegetation by grazing will be most pronounced. Cattle may access areas from 30-60% slope (32% of allotment), but less frequently, so effects to vegetation are less. Areas of greater than 60% slope are not considered accessible to livestock (13% of allotment), therefore, vegetation in these areas would not be differentially affected by the various management alternatives.

Of the 30+ miles of streams delineated on the National Wetland Inventory maps, six key reaches were designated for riparian monitoring. They include Cherry Creek (3 reaches), Dinner Creek, Turkey Creek, and Ash Creek. Cherry Creek is the largest drainage in the analysis area and it tends to have very large pulses of water through it. The Cherry-Frio allotment occurs about in the middle of this drainage, with private land access throughout the drainage. To add to the complexity of this drainage, upstream of the allotment there have been at least 3 sand and gravel operations with one currently in use.

Management History. The current Allotment Management Plan (AMP) was approved on 1/18/1990. This AMP provided for the two separate allotments to be managed as one unit, although the two were actually combined in 1987. The current Term Permit allows for up to 392 adult cattle yearlong and 100 yearlings for 10 months for a total of 5,404 Animal Unit Months (AUM's). Figure 1 shows the configuration of the pastures on the allotment.

The current grazing strategy utilizes separate pastures for yearling and adult herds. There are 3 summer pastures (Olligar, Dinner, and Dump) for the adult herd, used in a **deferred rest-rotation grazing system**. There is one large winter pasture for the adult herd (South Cherry), which equals almost a quarter of the total allotment.

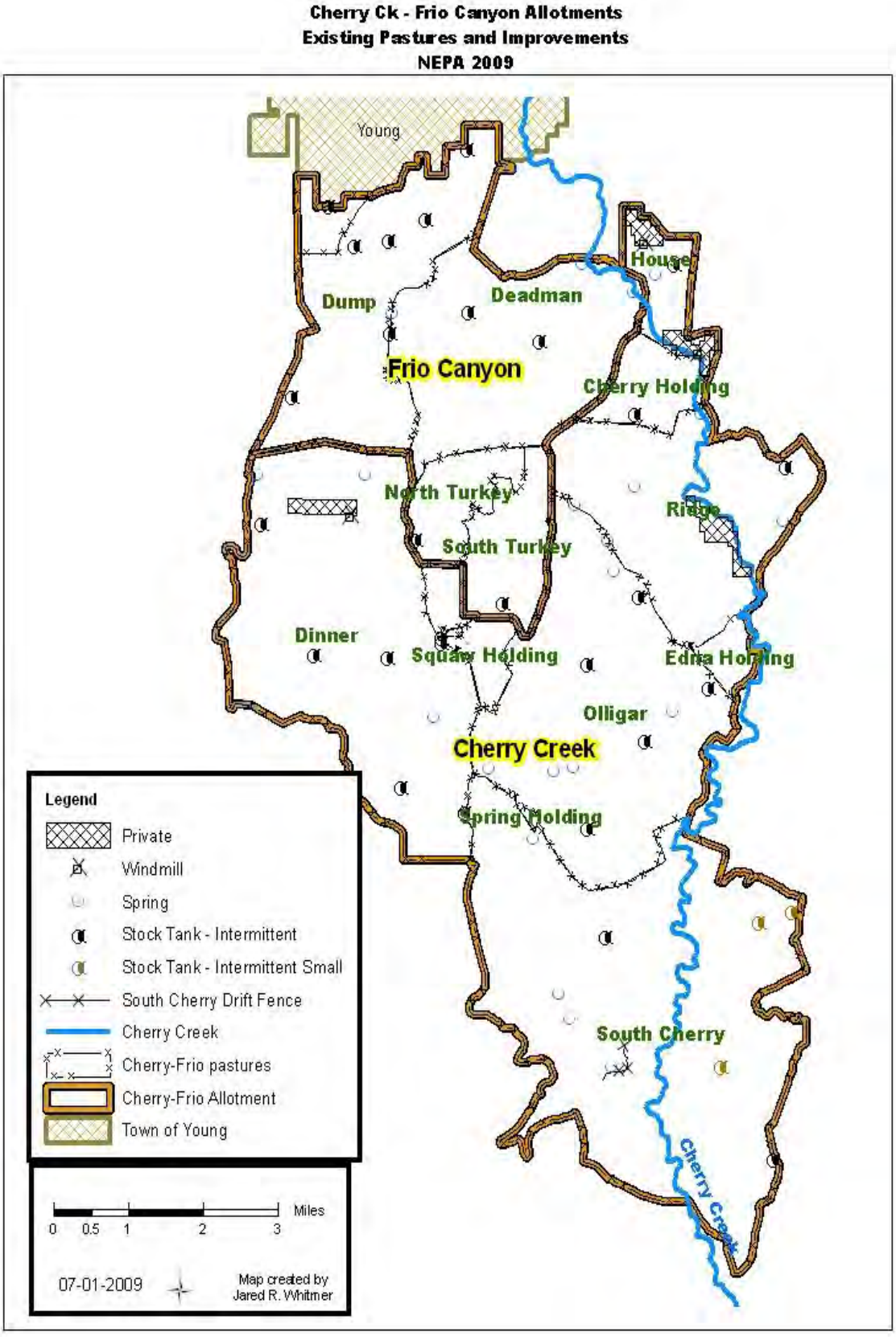
South Cherry is used as a winter pasture (November through May) due to the higher percentage of browse in the pasture and the steeper slopes. The cattle typically travel higher up the ridges and tend not to hang out in the drainages and riparian areas due to the colder temperatures. There are few man-made water sources in this pasture which typically is a concern. However, there are greater chances for dispersed water throughout the drainages that are typically dry in the summer but tend to have pockets of water in the winter due to fall and winter precipitation.

There are 6 pastures to be used by the yearling herd: House, Cherry Holding, Ridge, Deadman, North Turkey, and South Turkey. North and South Turkey, Deadman, and House are to be used in spring and summer in a deferred rest-rotation system. Since 1999, however, Deadman pasture has been used as a summer pasture for the adult herd in combination with the Dump pasture. This was done to provide additional forage to correct over-utilization problems in the Dump pasture. Past ranch managers reported that they rarely use the North and South Turkey pastures for the yearling herd because of the difficulty of getting the animals there. Natural barriers prohibit driving the cattle from the other yearling pastures to these pastures.

In 2002, the allotment was de-stocked due to drought. Several unauthorized cattle were removed from the allotment during 2003 and spring 2004. In 2005, a new permittee acquired the Cherry Creek - Frio Canyon allotments. The pastures were rested until cattle were put on the allotment starting in 2006. The permittee has worked hard to repair miles of fence that have been in disrepair for years. Due to fence issues in the past, cattle have only been allowed in a pasture once repairs have been made and an inspection performed to document repairs. Additionally, yearlings and adult cattle have been combined into one herd for ease of management. The permittee has not used every pasture on the allotment since it was acquired. As such, there are some unknowns about cattle distribution and patterns for this new herd on the allotment. Some assumptions have been made based on historic use patterns and issues identified in past range reports and inspections.

Past use on the allotment indicated some potential issues with Cherry Creek. The pastures with concerns are South Cherry pasture (winter only use) and Ridge pasture which is typically used in the summer. South Cherry and Ridge pastures did not receive any use from spring 2002 until spring/summer 2009.

Figure 1. Allotment Map



During the fall of 2008, concerns were raised by the Riparian Ecologist and the Hydrologist regarding the South Cherry Pasture and the riparian areas tied to Cherry Creek that runs through the pasture. Also of interest is that during a pasture inspection by the Range Assistant and the Cherry Creek Ranch manager in December 2008, an old drift fence was found that had not been maintained for several years. It was decided to bring this existing drift fence back up to Forest Service Standards including the replacement of an old wire gate with a powder coated steel gate across Forest Road 203 to minimize/reduce impact to Cherry Creek. The drift fence enables the operator to control access into Cherry Creek. There are only a couple of other access points into Cherry Creek which are much more difficult and remote. With this drift fence in place, there was only a trace use in Cherry Creek.

After talking with the Ranch Manger and Owner during the annual allotment meetings in January 2009, further discussion of the importance of Cherry Creek were addressed. The Ridge pasture on the allotment is typically used during the summer growing season. However, the permittee has yet to use the pasture since the allotment was acquired in summer of 2005, therefore there is no actual monitoring tied with the Ranch's current management. Through further collaboration with the permittee, it was determined that if monitoring indicates a need, a riparian pasture may need to be created within the Ridge pasture along the west side of Cherry Creek. The permittee is currently working on fencing the old Ruger property that was acquired in 2007. If needed, based on monitoring, a fence would be added on the north and the south of this property that will tie into existing pasture fences (see Figure 2). The proposed fence would be about 2 miles of new construction. Cultural resource clearances would be obtained prior to implementation. Several access points (water lots) to water would also need to be created with specific sites to be determined as needed. Water sources on the Ruger private land also provide watering points.

The created riparian pasture would still be allowed to be grazed lightly under the Forest's riparian utilization guidelines. This pasture would be approximately 1,450 acres in size. Other options include skipping this pasture from rotation every other year while still grazing the remaining 3,280 acres of the Ridge pasture.

These mitigation measures should allow for a more robust adaptive management strategy while including special measures for the improvement of Cherry Creek riparian areas.

Stocking Levels. Since Cherry Creek and Frio Canyon Allotments were combined in 1987, the average stocking rate has been 3,679 **Animal Unit Months** (AUMs), or about 68% of the term permitted number of livestock. An Animal Unit Month is the amount of forage required by an animal unit (one adult cow) for one month, and is an expression of grazing capacity (PR V1 T14 and T26). The allotment was entirely de-stocked in the early summer of 2002 due to severe drought conditions. With the exception of some unauthorized cattle in 2003 and 2004, livestock did not return to the allotment until 2006. The current permittee is increasing numbers slowly as range improvements are brought into compliance with Agency standards, and range conditions improve. The current permitted numbers for 2009 are 170 adult cattle and 15 horses and 40 yearlings (10 months; equivalent to 2,500 AUM's).

Rangeland Capability. Determination of rangeland capability and suitability is a two-step process. The first step involves the determination of those areas that can support domestic livestock grazing (capability). Capable rangelands are defined as rangelands under 60% slope and capable of producing 100 pounds per acre of dry forage. The second step refers to the appropriateness (suitability) of livestock grazing in an area relative to all other competing resource values and management objectives. Suitability is determined both during the Forest planning process and at the project level. Although a project area may be located in a management area considered broadly suitable in the Forest Plan, analysis at the project level may identify additional areas (e.g. campgrounds, wetlands, etc.) considered unsuitable for grazing because other resource values are emphasized.

Current Conditions. Range conditions are evaluated over time by monitoring several related vegetation, soil, and watershed resource values. These may be improved by changing cattle distribution, fencing waters, juniper thinning, creating new stock tanks or prescribed fire.

Table 1. Summary of Allotment Acreage and Actual Use Records

Allotment	NFS Acres	Stocking Range	Average Stocking
Cherry Creek – Frio Canyon	40,823	0-5,404 AUM's (0-450 adult cattle) from 1987-2009	3,626 AUM's from 1987-2009 (302 adult cattle)*

*This number refers to actual use.

Year	Actual Use Cow/Bull	Actual Use Horses/Mules	Actual Use Yearling	AUM's
2009	205	10	40	3722
2008	185	10	86	3727
2007	185	10	50	3475
2006	135	10	9	2314
2005	46	6	0	826
2004	0 (drought)	0 (drought)	0 (drought)	0
2003	0 (drought)	0 (drought)	0 (drought)	0
2002	334(6 months)	11(6 months)	100 (6 months)	3162
2001	334	11	100	6219
2000	334	10	100	6219
1999	334	10	100	6219
1998	334	10	100	6219
1997	334	10	100	6219

The Tonto Forest Plan states that "range condition is a subjective expression of the status or health of the vegetation and soil relative to their combined potential to produce a sound and stable biotic community. Soundness and stability are evaluated relative to a standard that encompasses the composition, density, and vigor of the vegetation and physical characteristics of the soil" (p. 59). Condition classes may be classified as excellent, good, fair, poor, and very poor for both vegetation condition and soil/watershed condition with its associated trend (up, down, stable). Fair or above condition classes

with an upward or stable trend are equivalent to satisfactory range and watershed condition (see definitions on p. 26).

Monitoring: Vegetation condition and soil/watershed condition with associated trend for each were evaluated at **key areas** on the Cherry Creek and Frio Canyon Allotments using the **Parker Three-Step Method**. This evaluation method gives a relative range condition rating based on cattle preferences for forage species. It also gives an indication of plant species density, diversity, and groundcover. Key areas typically are placed at least ½ mile from water sources, roads or fence lines (concentration areas) and have vegetation that is representative of the pasture that it is located in.

There are 9 permanent cluster sites on the Cherry Creek Allotment, and 3 on the Frio Canyon Allotment. Clusters were established in 1954, 1959, or 1960 on Cherry Creek, and in 1959 on Frio Canyon. Eleven of the 12 clusters were monitored from 1998 to 2007. Drought conditions during the past decade have led to a downward trend in some areas on the allotments. Six of the 11 cluster sites are within ½ mile of a known water source, therefore some of the data maybe skewed.

Vegetation condition is fair with a stable trend at 2 cluster sites in Dinner and Olligar pastures and is on the cusp of poor/fair at the site in South Cherry. Vegetation condition rates poor at 8 of the 11 cluster sites, with a downward trend at 4 sites, and a stable trend at 4 sites. Key areas rated as poor vegetation condition occur in the following pastures: House (2), Cherry Holding, Olligar (1), Edna Holding (used with Olligar pasture), Dinner, Deadman, and Dump. The poor vegetation condition observed is a result of poor forage plant density and species diversity. Some of the key areas rated had only one primary forage plant species, curly mesquite grass. This one grass species may adequately protect the soil, but more forage species should be present to provide ecological health and diversity. Several sites have shown an increase in juniper density and overstory cover during the last 10-20 years. The C-6 site in Olligar pasture had significant overstory cover from juniper and catclaw, which contributed to the poor composition rating.

Most pasture key areas are located in woodland/grassland habitat types including the 2 that showed fair range condition and the one on the cusp of poor/fair condition. The one monitoring site within the ponderosa pine habitat type showed poor vegetation condition with a stable soil condition. No change is expected unless thinning occurs at most of these key areas. Deadman, Dump, Dinner, Turkey, Olligar and House pastures are highly influenced by canopy cover from juniper encroachment. Pinyon-juniper age classes do not have a balanced distribution across the landscape. The distribution of woodland age classes is thought to be skewed toward mature and over-mature stands. Areas to be maintained in permanent openings have not been identified within the allotment.

Soil/watershed condition is considered fair to good for 8 of 11 key areas surveyed with a stable trend. Soil/watershed condition is rated poor at 3 sites in the following pastures: House, Deadman, and Dump pastures. Trend is down at 2 of these sites due to juniper encroachment, and stable at 1 site.

In 2007, five long term monitoring sites (key areas) were created on the Cherry Creek/Frio Canyon Allotment. This data has been collected in cooperation with Gila County Cooperative Extension, NRCS, the permittee, and the Forest Service. The five

key areas are as follows: two key areas are within ½ mile of the Parker clusters (Dinner and Olligar pastures); two key areas are in pastures that have no previous Parker clusters established (Ridge and South Turkey); the last key area is on the opposite side of a pasture with an established cluster site (Deadman pasture).

The initial monitoring data from 2007-2008 indicates that range conditions are improving and/or moving towards forest plan standards. Some key forage species present on the allotment include side-oats grama (*Bouteloua curtipendula*), hairy grama (*Bouteloua hirsuta*), blue grama (*Bouteloua gracilis*), Plains lovegrass (*Eragrostis intermedia*), three awns (*Aristida* spp.), shrubby buckwheat (*Eriogonum wrightii*), and vine mesquite (*Panicum obtusum*). Stocking rates have been light during that time period due to extended drought.

Effective groundcover is a measure of the percentage of ground area covered by live basal vegetation or persistent litter. These serve to protect the soil surface from accelerated erosion. It is a Tonto Forest Plan guideline to "maintain a minimum of 30% effective groundcover for watershed protection and forage production". It is also a Plan guideline to "manage vegetation to achieve satisfactory or better watershed condition." Effective groundcover is in excess of 30% at 9 of 11 key monitoring areas. Only the sites in Deadman and South Cherry pasture did not meet this management guideline.

Soil condition is an evaluation of soil quality based on an interpretation of factors which affect vital soil functions. These functions are: the ability of the soil to hold and release water (hydrologic function), the ability of the soil to resist erosion and degradation (soil stability), and the ability of the soil to accept, hold and release nutrients (nutrient cycling). Categories of soil condition are satisfactory, impaired, and unsatisfactory.

Soil condition is satisfactory on over three quarters of the allotment (see Table 2). Areas considered to have impaired or unsatisfactory soil condition comprise about 21% of the allotment.

The **satisfactory soil condition class** covers 32,159 acres (79%). Generally, these soils have not been heavily impacted and have highly effective vegetative ground cover. Plant species density and diversity are high.

Table 2. Soil Condition Acres

Category	*Acres*	*Relative Percent*
Satisfactory	32,159	79%
Impaired	6,136	15%
Unsatisfactory	2,476	6%
Total	40,823	100%

Fifteen percent of the soils (6,136 acres) have **impaired soil condition**. Most of these soils occur on open mesas or juniper woodlands on slopes ranging from 0 to 15%. These soils have not been compacted as much as the heavily used soils in unsatisfactory condition. Vegetation diversity and species composition is relatively low.

The **unsatisfactory soil condition class** makes up 2,476 acres (6%) in the allotment. Most of the unsatisfactory soils occur in the flat open grasslands. These soils have high amounts of surface compaction and poor soil porosity and root distribution resulting in moderate to high amounts of sheet, rill, and gully erosion, very poor diversity, density, and composition of perennial grasses with little litter cover.

Range improvements: Range structural developments are presently inadequate to utilize the entire allotment for livestock management. During the past year, most of the fences have been brought up to Forest Service standards. However, the allotment boundary fence bordering Flying V & H and Center Mountain Allotments are still in need of repair, and should be repaired or reconstructed to Forest Service standards. There appears to be a lack of water in the Dump, Dinner, Deadman and North Turkey pastures, which likely limits livestock distribution. Two of the stock tanks in South Cherry Pasture are no longer functioning. Trap fences are needed around stock waters to improve livestock distribution.

Management Direction

The Tonto National Forest Land Management Plan (1985, as amended) identifies the following goals for the range program on the Forest (PR V1 T1).

Management Prescriptions – All Management Areas

Maintain a minimum of 30% **effective ground cover** for watershed protection and forage production, especially in primary wildlife forage producing areas. Where less than 30% exists, it will be the management goal to obtain a minimum of 30% effective ground cover. (p. 40-1)

Forage use by grazing ungulates will be maintained at or above a condition which assures recovery and continued existence of threatened and endangered species. (p. 42)

Provide wildlife access and escape on all livestock and wildlife water developments. (p. 42)

Management Area 5A – That portion of the Sierra Ancha Wilderness located in the southern portion of the Pleasant Valley Ranger District- This management area makes up about 3% of this analysis area.

Emphasis: Manage for wilderness values while providing livestock grazing and recreation opportunities that are compatible with maintaining wilderness values and protecting resources.

Direction related to Grazing Management - Manage suitable rangelands at level B to maintain permitted use within forage capacity (p. 243). Rangeland in less than satisfactory condition will be treated with improved grazing management. Minimal range improvements for protection of forage and soil resources commensurate with wilderness values. Maintain utilization at acceptable levels within key forage producing and

wilderness use areas. Minimal range improvements, i.e., boundary fences and essential interior division fences deemed necessary for level B management.

Management Area 5D – Mogollon Rim-Sierra Ancha area, Pleasant Valley Ranger District - This management area makes up about 33% of the analysis area.

Emphasis: Manage for a variety of renewable resource outputs with primary emphasis on intensive, sustained yield timber management, timber resource protection, creation of wildlife habitat diversity, increased populations of emphasis harvest species, and recreation opportunity. Visual quality is to be emphasized.

Direction related to Grazing Management – Manage suitable rangelands at level D. Management seeks to optimize production and utilization of forage allocated for livestock use consistent with maintaining the environment and providing the multiple use of the range. From all existing range and livestock management technology, practices may be selected and used to develop effective methods for achieving improved forage supplies and uniform livestock distribution and forage use. Cultural practices such as brush control, type conversion, fertilization, site preparation and seeding of improved forage species may be used to improve quality and quantity of forage. Cultural practices may be combined with fencing and water developments to implement complex grazing systems and management methods (p. 243).

Rangeland in less than satisfactory condition will be treated with improved grazing management. Allotment management plans (AMPs) and rotation schedules will be formulated and implemented to avoid elk displacement from identified calving areas.

Management Area 5G – All other lands on the Pleasant Valley Ranger District
This management area makes up about 64% of the analysis area. It is comprised of all other lands not included in management areas 5A through 5D on the Pleasant Valley Ranger District. Vegetation consists of riparian, semi-desert grassland, chaparral/pinyon-juniper and scattered ponderosa pine-juniper.

Emphasis – Manage for a variety of renewable natural resources with primary emphasis on wildlife habitat improvement, livestock forage production, and dispersed recreation. Watershed will be managed so as to improve them to a satisfactory or better condition. Improve and manage the included riparian areas (as defined by FSM 2526) to benefit riparian depended resources.

Direction related to Grazing Management – Manage suitable rangelands at level D (see Management Area **5D** above) to optimize production and utilization of forage while maintaining the environment, and providing for multiple use of the range (p. 243). Rangeland in less than satisfactory condition will be treated with improved grazing management along with the installation of structural and non-structural improvements. Develop structural improvements in association with AMP to maintain utilization at levels appropriate with management intensity and AMP objectives.

Maintenance is performed on re-vegetation acres as determined in Allotment Management Plans to retain optimum forage production. Methods will be appropriate to vegetation and terrain of treatment areas and could include prescribed fire, chemical and/or mechanical means.

Desired Conditions

Based on Forest Plan guidance and site-specific knowledge of the allotments, the following objectives constitute the desired condition for the analysis area:

Rangeland/Watershed

- Maintain vegetation to achieve, or be moving toward, satisfactory **watershed condition** (LRMP p. 44) and at least 30% effective ground cover (TNFP p. 40).
- Satisfactory soil conditions should be maintained. Impaired soil condition (15%) should be in an upward trend, moving towards satisfactory conditions within one decade in areas where the potential exists to restore soil productivity and hydrologic function. Unsatisfactory soil condition (6%) should be moving towards impaired condition within one decade in areas where the potential exists to restore soil productivity and hydrologic function. Soils should have the ability to accept, hold, and release water and nutrients.
- Soils are well protected by vegetation, litter, or rock and show minimal evidence of current sheet or rill erosion. Soil compaction and disturbance is minimized to maintain resource values and sustain outputs.
- Livestock are evenly distributed in pastures to avoid areas of high impact and concentrated use and to allow for uniform conservative utilization (30-40%). Improve livestock distribution through creating new waters and adding trap fences to existing and newly created water sources.
- Pinyon-juniper age classes should have a balanced distribution across the landscape
- Reduce juniper density in the juniper savanna and juniper woodland vegetation types to increase livestock and wildlife forage and improve effective ground cover. Maintain existing or newly created openings to retain optimum forage production (LRMP p. 154,166-167).

Wildlife

- General wildlife resource goals for the Tonto National Forest are outlined on page 20 of the Tonto National Forest Plan (USDA 1985) and include providing for species diversity, maintaining viable populations of existing species, improving habitat for selected species, and managing to increase population levels of threatened and endangered species. Forage used by grazing ungulates will be maintained at or above a condition which assures recovery and continued existence of threatened and endangered species. In riparian areas across the allotment, regeneration of vegetation to achieve multiple age classes and complex vegetative structure for fish and wildlife habitat is desired.
- Specific management objectives for big game species are identified in the Tonto Resource Land Management Plan and the Wildlife 2006 Strategic Plan (AGFD 2001). Strategic Plan goals for game species (including big and small game) include the following: 1) Maintain, enhance, and restore populations of game wildlife to provide for recreational opportunities, including wildlife viewing. 2) Minimize adverse impacts to wildlife and wildlife resources.
- Occupied habitats for threatened, endangered, sensitive and management indicator species are maintained or improved and recovery objectives are being met.

- 60% of key forage species produce seed heads that are carried through winter into the spring in key Merriam's turkey habitat (TNF MIS Report, p 26).
- Dependable water sources every 1 mile, preferably every ½ mile.
- Browse species are abundant and robust.

Riparian and Hydrologic features

Desired conditions for key reaches include both short-term and long-term timeframes. The most important short-term desired conditions are to:

- Maintain residual herbaceous vegetation along the greenline or streambank whenever precipitation is expected;
- Minimize the annual impacts to seedling and sapling riparian woody species; and
- Limit physical impacts to alterable streambanks and greenlines.

The most important long-term desired conditions are to:

- Optimize riparian tree and shrub establishment, especially following episodic, regional winter storms;
- Increase the density, vertical and horizontal canopy cover of woody riparian tree species;
- Increase the proportion of obligate and facultative riparian species;
- Maintain or increase canopy cover of herbaceous species to at least 5% to 25%;
- Decrease the greenline to greenline width;
- Optimize the establishment of floodplains and streambanks; and
- Improve stream channel function and stability.

Reaching desired conditions for riparian areas and stream channels will depend not only on management activities, but on climatic events. Both drought and floods have the potential to affect riparian areas and stream channels. High flows (> 10 year recurrence interval) are likely to scour impaired or unstable channels. Even moderate flows (> 2 year recurrence interval) could cause unstable channels to widen or incise.

Timber

- **Improving age class distribution;**
- **Reducing juniper densities in the juniper savannas and pinyon-juniper types to increase forage and improve ground cover;**
- **Improving health and vigor of woodland tree species and moving it more toward historical conditions;**
- **Use of prescribed fire to improve forest health, age class diversity, and reduce fuel loadings to a more manageable level while allowing fire to play a natural roll in the ecosystem.**

Proposed Action

In compliance with Forest Service policy and Forest Plan objectives, the Pleasant Valley Ranger District proposes to continue to authorize grazing on the Cherry Creek – Frio Canyon Allotments. Grazing authorizations would be accomplished through the issuance of new 10-year term grazing permits in accordance with FSH 2209.13. New allotment management plans (AMPs) would be prepared for the allotments and would be included as Part 3 of any new term grazing permits issued. The AMPs will describe: 1) the management objectives for the allotments; 2) livestock management practices, including

allowable use levels, necessary to achieve the management objectives; 3) mitigation measures necessary to comply with Forest Plan standards and guidelines and with applicable terms and conditions of biological opinions; and 4) monitoring requirements necessary to determine if management objectives are being achieved. The AMPs will incorporate an adaptive management strategy under which the duration, timing and frequency of grazing, as well as the number of livestock authorized annually, may be continually modified in response to changing resource conditions and achievement of management objectives.

The proposed action is described in more detail in Chapter 2.

Decision Framework

Given the purpose and need, the deciding official reviews the proposed action and the other alternatives in order to make the following decisions:

The Pleasant Valley District Ranger is the official responsible for the decision regarding management of the Cherry Creek – Frio Canyon Allotments. Based in part on the results of the NEPA analysis, the Ranger will issue a decision document that includes a determination of the significance of the environmental effects and whether an environmental impact statement will be prepared. If the deciding officer determines that there are no significant impacts, the decision will be documented in a Decision Notice and implemented through the issuance of a new 10-year Term Grazing Permit and an Allotment Management Plan. If there is a finding of significant impacts, an environmental impact statement will be prepared. The decision(s) will also include a determination of consistency with the Forest Plan, National Forest Management Act, National Environmental Policy Act and applicable laws, regulations and executive orders.

If the District Ranger determines it is not necessary to prepare an environmental impact statement, the Ranger will decide whether or not livestock grazing will continue to be authorized. If grazing continues to be authorized, the Ranger would determine which management actions, mitigation measures and monitoring requirements would be prescribed in the AMP, including permitted number of animals, season of use, allowable utilization standards and the term of the permit(s).

Public Involvement

The proposal for the development of an Allotment Management Plan for Cherry Creek – Frio Canyon allotments has been listed in the Schedule of Proposed Actions since May 2005. A scoping document for the proposed action was sent to the public on February 13, 2008, along with a notice published in the Payson Roundup on February 15, 2008. The purpose of the document was to describe the proposed action to any interested/affected parties, and solicit comments from those who may have concerns with the proposed action. The scoping document was sent to the following: 28 individuals, 17 private organizations, 9 tribes, 1 university professor, 12 state/county/community officials, 3 federal agencies and 4 congressional delegates. From these scoping activities, 9 letters were received. The Forest performed a content analysis on this information as well as information gained through internal scoping. The comments received and content analysis is located in the project record (PR V1 T23 and V2 T7). A second scoping document including the draft EA was sent out to the public on June 9, 2008, along with a second notice published in the Payson Roundup on June 6, 2008. The purpose of the document was to further describe the proposed action along with a preliminary effects analysis to previously interested/affected parties. The scoping document was sent to the

following: 12 individuals/private organizations, 9 tribes, and 5state/county/community officials. From these scoping activities, 5 letters and or emails were received. The Forest performed a content analysis on this information as well as information gained through additional internal scoping. The comments received and content analysis is located in the project record (PR V2 T12-16 and V3 T5).

Issues

The Forest Service separated the issues into two groups: significant and non-significant issues. Significant issues were defined as those directly or indirectly caused by implementing the proposed action. Non-significant issues were identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council for Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)…" A list of non-significant issues and reasons regarding their categorization as non-significant may be found in the project record (PR V1 T23, V2 T7, T12-16, and V3 T5).

Chapter 2 – Alternatives, including the Proposed Action

This chapter describes and compares the alternatives considered for the Cherry Creek-Frio Canyon allotments. This section presents the alternatives in comparative form, in order to define the differences between each alternative and provide a clear basis for choice among options by the decision maker and the public. Mitigation and monitoring measures incorporated into the alternatives are also described.

Alternatives Eliminated From Detailed Study

No additional alternatives were proposed or considered because scoping efforts did not result in identification of significant issues that could not be addressed through project design or mitigation measures. Additional protection measures for Cherry Creek were added into the proposed action since the initial scoping was sent out.

Alternatives Considered in Detail

Alternative 1: No Action

No Action – No Grazing

Under this alternative the Term Grazing Permit currently authorizing use on the Cherry Creek - Frio Canyon allotments would be cancelled following guidance in 36 CFR 222.4 and Forest Service Manual 2231.62. Twenty percent of the permitted numbers on the face of the permit would be removed from the allotment each year until no more grazing is permitted (5 years). In the event that all cattle are removed from the allotment at the time of implementing this decision, due to drought or some other circumstances, the permit would be canceled. If a reduced number of cattle were on the allotment due to range conditions at the time of this decision, twenty percent of that stocking level would be reduced each year until no more grazing is permitted (5 years). No range improvements or burning are proposed. Structural range improvements without value for wildlife habitat would be removed from the allotments. Removal activities would depend upon availability of Agency funding and personnel.

Alternative 2: The Proposed Action

The Proposed Action – Adaptive Management

The Pleasant Valley Ranger District, Tonto National Forest, proposes to continue livestock grazing on the Cherry Creek-Frio Canyon allotments under the following terms:

The name will formally change to Cherry-Frio allotment. The grazing system will be a yearlong 7-pasture deferred rest rotation with an upper limit of 5,404 AUM's (equates to 450 cattle year long or 392 adult cattle yearlong and 100 yearlings for 10 months). Additional actions include: creating 1 new pasture from 3 smaller pastures; trap fencing on waters; up to 3,250 acres of juniper treatment on historic juniper savannahs and juniper woodlands; 5 new road stock tanks; the modified use of riparian habitat contained within the South Cherry pasture, and an option to create a riparian pasture within Ridge pasture if future monitoring indicates. This action is summarized in Table 3.

Table 3. Summary of Grazing Management

Allotment (Main Pastures)	**Grazing System**	**Upper Limit for Animal Unit Months**	**Authorized numbers in 2009; (% of permit)**	**Change from Current Permit**
Cherry - Frio (Deadman, Dinner, Dump, Olligar, Ridge, South Cherry & Turkey (created from North & South Turkey & Squaw Holding))	Yearlong, 7-pasture deferred rest rotation	5,404 AUM's which equates to 392 adult cattle yearlong and 100 yearlings for 10 months	170 adult cattle, 40 yearlings (10 months) & 15 horses; (46%)	Same upper limit as current permit; create 1 new pasture from 3 smaller pastures; trap fencing on waters; up to 3,250 acres of juniper treatment on historic juniper savannahs and juniper woodlands; 5 new road stock tanks; the modified use of riparian habitat contained within the South Cherry pasture; and an option to create a riparian pasture in Ridge pasture if monitoring indicates.

Authorization

Livestock grazing would be authorized under the following terms and conditions.

Duration and timing of grazing. Use on the Cherry - Frio allotment would continue with yearlong grazing. Yearlings will run with the herd and not separately. A deferred rest-rotation grazing strategy will be employed. No pasture should be grazed at the same time during the growing season in consecutive years under this strategy, and periodic growing season rest would be employed. The northern and central pastures, which include Deadman, Dump, Dinner, Olligar, Ridge & Turkey (created from North & South Turkey, Holding & Squaw Holding pastures), will typically be used in the spring to fall time period (May through November). However, any one of these pastures may be used during the winter time period to allow rest for the South Cherry pasture. Various holding pastures may be used for holding/gathering cattle or for sorting and shipment of calves or yearlings.

Concerns for riparian areas along Cherry Creek were identified by the ID Team and in collaborative discussions with the permittee and ranch manager. The following protection measures are included in the proposed action to address these concerns.

The southernmost pasture, South Cherry, will typically receive 4-5 months of use within the fall to spring time period (November through May). This pasture has had limited use from the spring of 2002 until early spring 2009 (7 years). The re-built drift fence (see Figure 2) creates a modified – use riparian area. This term is used to describe the resulting area that has restricted access due to the re-built drift fence combined with topographic barriers. The result is limited cattle access on 60% of the pasture including

Cherry Creek. During the life of the permit, the drift fence will be used to limit livestock access to Cherry Creek. In addition, since a few cattle may find their way into Cherry Creek, they will be actively herded out of the riparian area by the permittee. This should allow for the best chances of improvement of this riparian area. After this time, seasonal use in this portion of the pasture will start after riparian obligate woody species (willows, cottonwoods, and velvet ash) have lost their leaves, and will end when leaves emerge (green-up starts). This use period will be highly variable from year to year depending upon weather patterns and climatic events. The drift fence will continue to be used as a management tool to minimize overall impacts to the riparian areas.

If needed, based on monitoring, a riparian pasture would be created within the Ridge pasture along the west side of Cherry Creek. The fence would be added on the north and the south sides of the Ruger private property, and will tie into existing pasture fences (see Figure 2). The proposed fence would be about 2 miles of new construction. Cultural resource clearances would be obtained prior to implementation. Several access points (water lots) to water would also need to be created, with specific sites yet to be determined. Water sources on the Ruger private property are also planned by the permittee, but are not part of this decision.

If both of the improvements are implemented, about 80% of Cherry Creek would receive some level of restricted use.

It is anticipated that this pattern will be generally followed for the allotments, understanding that herd size and observed resource conditions will ultimately dictate how many and which pastures are used. Grazing management would insure that pastures receive periodic summer growing season rest or deferment in order to provide for grazed plant recovery. The sequence and timing of pasture rotations would be set annually based on monitoring of range readiness, ecological condition, and utilization.

Adaptive Management. Within this overall strategy, annual adjustments may be made to the number of livestock that will graze (intensity), the length of time they spend in a pasture (frequency, intensity), the time of year a pasture is grazed (timing), or the degree at which they are distributed in a pasture (intensity, frequency). The basis of adaptive management is a "stock and monitor" approach used to adjust the timing, intensity, frequency, and duration of grazing in order to meet resource goals. Two types of monitoring will be conducted, both effectiveness and implementation monitoring. Implementation monitoring determines if activities are implemented as designed. This would include measuring utilization patterns annually to ascertain if the stocking level was meeting objectives for light to moderate grazing intensity. Effectiveness monitoring determines if management is effective in meeting the goals for desired resource conditions. This type of monitoring is typically done at 5 to 10-year intervals and would include ecological status and/or range condition monitoring.

Intensity of grazing. Forage utilization would be managed at a level corresponding to **light to moderate grazing intensity** in order to provide for grazed plant recovery, increases in herbage production, and retention of herbaceous litter to protect soils. **Conservative use** equates to 30-40% on herbaceous species and < 50% use on browse (current year's leaders). Consistent patterns of utilization in excess of 40% of key herbaceous species and 50% of browse species in key areas would be used as a basis to modify management practices or take administrative actions necessary to reduce utilization in subsequent grazing seasons. The document entitled "Principles of

Obtaining and Interpreting Utilization Data on Southwestern Rangelands" will provide guidance and direction for utilization monitoring.

Grazing intensity can be measured before and during the growing season. Grazing intensity can be utilized to manage livestock so that expectations of end of growing season utilization measurements will not be exceeded.

Riparian use guidelines are as follows: *obligate riparian tree species* – limit use to < 50% of terminal leaders (top 1/3 of plant) on palatable riparian tree species accessible to livestock (usually ≤ 6 feet tall); *deergrass* – limit use to < 40% of plant species biomass; *emergent species* (rushes, sedges, cat-tails, horse-tails) – maintain an average of six to eight inches of stubble height during the grazing period. Riparian utilization will be measured seasonally, when livestock are in the pasture. Livestock will be moved from the critical area or pasture when recommended guidelines are met.

Administrative action necessary to implement the decision. The following administrative actions would be used to implement the NEPA-based decision to authorize grazing.

- **Permit Issuance.** New 10-year term grazing permits would be issued for the allotment for the following numbers and under the following terms.
    - Yearlong grazing would be permitted on the Cherry Creek-Frio Canyon allotment with an upper limit of 5,404 AUM's, which is the equivalent of 450 adult cattle yearlong or 392 adult cattle yearlong and 100 yearlings for 10 months.
    - Proposed permitted use is based on forage production and utilization surveys, on records of actual use on the allotments over the past 30 years, and the effects of this use on resource conditions. Permitted use reflects the estimated average annual forage production available for livestock on the allotments considering the duration, timing, frequency and intensity of grazing proposed, and assumes proper livestock distribution. Specific numbers of livestock to be grazed would be set each year based on resource condition and management objectives. The initial stocking rate for the current proposed action would be somewhere around 46% of the proposed permit. This is based on historical use, documented utilization levels, and in cooperation with the permittee.

- **Allotment Management Plans.** Allotment management plan (AMP) would be developed for the allotment and would be incorporated into the grazing permit. The AMP would identify specific goals and objectives of management, management strategies, range improvements and monitoring requirements. The AMP would incorporate an adaptive management strategy described below.

- **Annual Operating Instructions (AOI).** On an annual basis the Forest and permittee would jointly prepare an annual plan, referred to as the AOI, that sets forth:
    - The numbers, class of livestock, and the timing and duration of use for the current season.
    - The planned sequence of grazing in pastures on the allotment(s), and the monitoring criteria that would be used to make changes.
    - Structural and non-structural improvements to be constructed, reconstructed, or maintained and who is responsible for these activities.
    - Allowable use or other standards to be applied and followed by the permittee to properly manage livestock.

- Monitoring for the current season that may include, among other things, documentation demonstrating compliance with the terms and conditions in the grazing permit, AMP and AOI.

Improvements

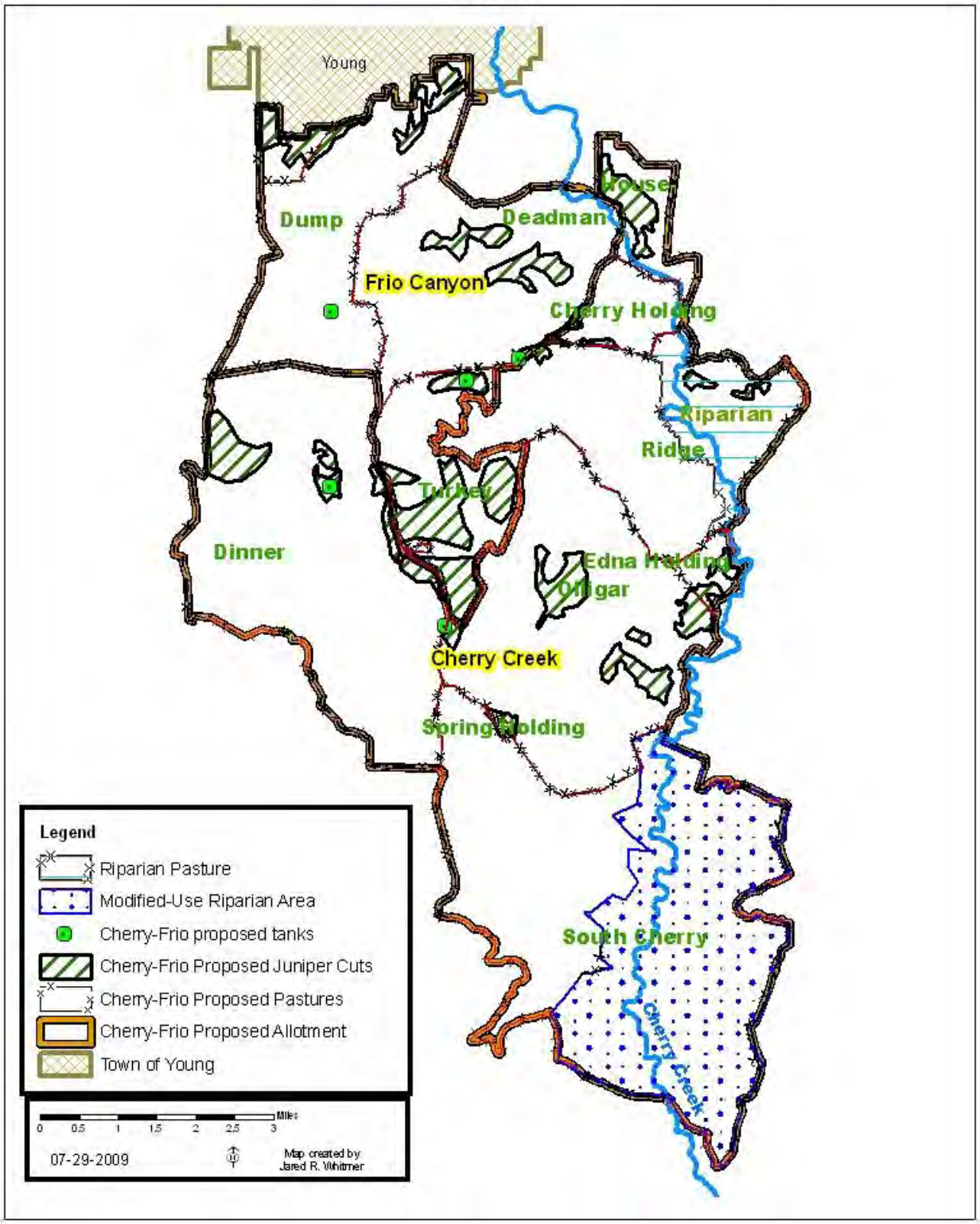
Improvements proposed to promote achievement of desired conditions were developed in coordination with the grazing permittee and are listed in Table 4. Figure 2 shows approximately where the improvements will take place. These improvements have been proposed in the context of adaptive management, meaning that they have been identified as possible practices to assist in the achievement of desired conditions if management alone is not sufficient. Future monitoring may indicate that the projects are not necessary, in which case they would not be implemented. However, if some or all improvements are not implemented, the upper limits of permitted livestock numbers may not be achievable. Funding will be a cooperative effort between the permittee, the Forest Service, and other partner organizations or agencies.

Table 4. Proposed Range Improvements for Cherry – Frio Allotment

Improvement Type	Purpose and Need
Construct 1 new water development in Dinner, Dump, Olligar, Turkey, and Ridge pastures (5 total).	Improve livestock distribution and increase reliability of pastures/rotations.
Construct fenced traps around stock waters (approx. 1/4 mile each).	Improve livestock distribution and better control pasture usage patterns.
Create 1 new pasture from 3 smaller pastures	Improve operation efficiency and facilitate timely pasture rotation.
Juniper treatment may occur on approximately 3,250 acres. Reduce density of juniper trees through mechanical treatment (chainsaws, pushing with dozer, fuelwood sale, hydraulic tree shear) and/or prescribed fire.	Improve/maintain range and watershed condition and effective ground cover; improve forage plant production. Reduce density of junipers on historic juniper savannahs and juniper woodlands. Maintain existing or newly created openings to retain optimum forage production.
Create a modified-use riparian area in South Cherry pasture using re-built drift fence.	Allow for the best chances of improvement of riparian areas. This management strategy should allow upland vegetation complete summer's growing season rest and should minimize impacts to riparian.
Adds an option to create riparian pasture within Ridge pasture, if monitoring indicates. Fence would run on the west side of Cherry Creek. Several access points (water lots) to water would also need to be created with specific sites to be determined as needed.	This fence would allow control over access to the majority of Cherry Creek in this pasture. This will create additional protection measures for Cherry Creek while still allowing grazing in the remaining portions of the pasture.

Figure 2. Allotment Map with proposed improvements

Cherry - Frio Allotment
Proposed Pastures and Improvements
NEPA 2009



Management Practices

Management practices include measures to reduce or avoid resource impacts that are incorporated into the project design. These measures have been used on previous projects and are demonstrated to be effective at reducing environmental impacts. They are consistent with applicable Forest Plan standards and guidelines. Implementation of these practices in combination with the duration, timing and intensity of proposed grazing is intended to avoid the occurrence of adverse environmental impacts.

- **Soil, Water and Vegetation –** The objective is to mitigate effects of livestock grazing and facility construction through the use of Best Management Practices (FSH 2509.22) and adaptive management. Practices include, but are not limited to the following.

    - Utilization of key upland herbaceous forage species in key areas will be managed to achieve the goal of light to moderate grazing as a pasture average. The objective is to protect plant vigor, provide herbaceous residue for soil protection and to increase herbage producing ability of forage plants. A utilization guideline of 30-40% use of key species and <50% of current year's growth of desirable browse species in key areas will be used to achieve this objective.
    - The Forest and permittees will jointly prepare annual operating plans that consider current conditions and management goals. Periodic field checks including stock counts, range readiness and utilization monitoring will be used to identify needed management adjustments. This is to assure achievement of resource and management objectives.
    - Management practices will be used to achieve proper distribution or lessen the impact on sensitive areas. Practices include herding, salting and controlling access to waters. Salt will be placed on good feed, one quarter to one half mile from waters and salting locations will be moved annually. Placement of liquid or bulk supplements will require prior approval of the District Ranger.
    - Mechanical treatment to reduce juniper density in the juniper savannah and juniper woodland vegetation types to increase forage and improve effective ground cover. Maintain existing or newly created openings to retain optimum forage production
    - No hay will be placed on Forest lands to help minimize the introduction of weed seeds.

- **Wildlife –** The objective is to mitigate impacts to wildlife from livestock grazing and from disturbance associated with construction of range facilities.

    - All water developments will include wildlife access and escape ramps. Waters will be kept available to wildlife year round.
    - All reconstructed fencing will be built to Forest Service standards to provide for wildlife passage through the fence. At a minimum, this will be a 4-strand fence with smooth bottom wire 16 inches off the ground and a total height of 42 inches or less.
    - An average of 60% of standing herbaceous vegetation will be left for wildlife forage and cover.
    - Reduce juniper density in the juniper savannah and juniper woodland vegetation types to increase wildlife forage and improve effective ground cover. Maintain existing or newly created openings to retain optimum forage production.

- The Forest will follow the best management practices for tanks and stock pond maintenance as outlined in the Chiricahua Leopard Frog Recovery Plan by US Fish and Wildlife Service (April 2007) should the species be present in the area. The objective is to minimize short-term impacts to frogs while allowing maintenance activities within occupied habitats. Surveys within the project area have shown no Chiricahua leopard frogs to be present at this time.

- **Heritage Resources –** The objective is to protect heritage resources (historic and prehistoric sites) from impacts caused by range construction projects or livestock concentration.

  - Archaeological surveys will be conducted prior to construction of any new range improvements and locations selected where impacts to heritage resource sites are avoided.
  - Existing range facilities (water troughs, corrals) where cattle regularly congregate are periodically inspected to determine whether livestock are causing damage to known heritage sites.
  - Salting locations are placed outside the boundaries of heritage resource sites.

Monitoring

The objective of monitoring is to determine whether management is being properly implemented and whether the actions are effective at achieving or moving toward desired conditions.

Effectiveness monitoring includes measurements to track condition and trend of upland and riparian vegetation, soil, and watersheds. Monitoring would be done following procedures described in the interagency technical reference, the Region 3 Rangeland Analysis and Training Guide, and the 1988 R3 Range Analysis and Management Handbook . These data are interpreted to determine whether management is achieving desired resource conditions, whether changes in resource condition are related to management, and to determine whether modifications in management are necessary. Effectiveness monitoring would occur at least once over the ten-year term of the grazing authorization, or more frequently if deemed necessary. Changes in riparian vegetation and stream channel geomorphology condition and trend will be measured at five to 10 year intervals. Protocols are described in the Interagency Technical Reference (1996), Cowley and Burton (2002), or the most current acceptable method.

Implementation monitoring would occur yearly and would include such things as inspection reports, forage utilization measurements in key areas, livestock counts, and facilities inspections. Utilization measurements are made following procedures found in the Interagency Technical Reference and with consideration of the Principles of Obtaining and Interpreting Utilization Data on Southwest Rangelands. Utilization measurements in riparian areas are made following the Interagency Technical Reference (1996), McBride and Grove (2002), and Cowley and Burton (2002) or the most current acceptable method.

Utilization would be monitored on key forage species, which are native perennial grasses that are palatable to livestock. At a minimum monitoring would include use in **key areas**, but may include monitoring outside of key areas. The Pleasant Valley District Range Staff Officer and the permittees would be responsible for monitoring livestock grazing utilization. Over time, changes in resource conditions or management may result in changes in livestock use patterns. As livestock use patterns change, new key areas may be

established and existing key areas may be modified or abandoned in cooperation with the permittee.

The permittee would be encouraged to participate in monitoring activities. Records of livestock numbers, movement dates and shipping records would be kept by the permittee and would be provided to the District Range Staff annually.

Adaptive Management

Adaptive management uses the results from monitoring to provide feedback to adjust management actions in order to achieve specific desired conditions over the long-term. Management objectives are chosen that will be used to document whether desired conditions are being achieved. The proposed action is designed to provide sufficient flexibility to allow for changes in management when resource conditions show that changes are needed. Changes in management may include administrative decisions such as the specific number of livestock authorized annually, specific dates for grazing, class of animal or modifications in pasture rotations. However, such changes would not exceed the limits for timing, intensity, duration and frequency defined in the term grazing permit. Adaptive management would be implemented through annual operating instructions, which would adjust livestock numbers and the timing of grazing so that use is consistent with current productivity and is meeting management objectives.

Adaptive management also includes monitoring to determine whether identified structural improvements are necessary or need to be modified. In the case that changing circumstances require physical improvements or management actions not disclosed or analyzed herein, further interdisciplinary review would occur. The review would consider the changed circumstances and site-specific environmental effects of the improvements in the context of the overall project. Based on the results of the interdisciplinary review, the Ranger would determine whether correction, supplementation or revision of the EA is necessary in accordance with Forest Service Handbook direction at FSH 1909.15(18) and FSH 2209.13(96.1), or whether further analysis under NEPA is required.

Management Objectives

Management objectives are measurable parameters that can be used to describe attainment of desired conditions. The achievement of these objectives is highly dependent upon adequate precipitation levels and implementation of range improvement practices and other planned vegetation management practices. The anticipated timeframe to achieve objectives is 5-10 years, or 3-5 years after thinning or burning activities. If trends are upward towards the stated objective when monitored, then management may be considered effective in moving towards the desired condition. Vegetation or watershed condition may not improve substantially in key areas with moderate to thick woody overstory until vegetation management projects such as thinning or burning are implemented.

- Maintain or improve **range condition** to fair or better levels, or demonstrate an upward trend towards this objective where herbaceous vegetation is predominant in pastures.
- Improve livestock distribution to allow more uniform conservative utilization of forage resources and diminish concentration areas through trap fencing and added water sources.

- Reduce canopy cover of woody species on historic grasslands and juniper woodlands to improve or maintain satisfactory range and watershed condition and increase productivity of herbaceous vegetation.

- Improve/maintain **satisfactory watershed conditions** and effective groundcover.

Future Review of the Decision

In accordance with Forest Service Handbook direction [FSH 1909.15(18) and 2209.13(96)], an interdisciplinary review of the decision will occur within 10 years, or sooner if conditions warrant. If this review indicates that management is meeting standards and achieving desired condition, the initial management activities would be allowed to continue. If monitoring demonstrates that objectives are not being met and management options beyond the scope of the analysis are warranted, or if new information demonstrates significant effects not previously considered, a new proposed action would be developed and further analysis under NEPA will occur.

Comparison of Alternatives

This section provides a preliminary summary of the effects of implementing each alternative. Information in Table 5 is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Table 5. Comparison of Alternatives

Attribute	Alternative 1	Alternative 2
National Forest Policy and Forest Plan (LRMP) Consistency	Consistent with LRMP. Not consistent with policy (FSM 2202.1, 2203.1).	Consistent with LRMP and policy.
Meets Purpose and Need	Does not authorize grazing, but achieves LRMP resource objectives, with possible exception of satisfactory watershed condition, which may not be achievable in areas of dense juniper overstory unless thinning occurs. Adaptive management would be precluded.	Authorizes grazing and achieves LRMP objectives. Provides for adaptive management to respond to changing conditions or to meet management objectives. Should allow for increased forage production in areas currently suppressed due to woody overstory.
Effects on soil condition	Nearly all compacted soils will begin to improve. Some soils will recover to acceptable levels over the next 10 – 15 years while other soils may take longer.	Soil compaction to remain stable and in some places recover over the next 10 - 20 years. Recovery will be slower than under Alternative 1.
Effects on Wildlife and Plants	Overall, primary diversity and productivity would increase. Foraging, hunting, nesting, fawning, hiding and thermal cover should improve, increasing	Spotted owl may be affected but not likely. Leaves 60% to 70% forage for wildlife. All potential habitat for Chiricahua leopard frog has not been surveyed, but

Attribute	Alternative 1	Alternative 2
	survival rates for many big and small game, management indicator, threatened, endangered and sensitive species. General wildlife habitat and corridor maintenance would be improved. No effect to spotted owl. Likely to leave the most available forage for wildlife, however, may be reduced due to juniper densities increasing on savannas and juniper woodlands.	adverse effects unlikely following mitigation measures and terms and conditions from Biological Opinions. The proposed management should allow for adequate cover and forage values for wildlife. Likely to increase forage and effective cover in juniper treatment areas.
Riparian Areas and Stream Channels	Riparian areas and stream channel conditions will improve to the greatest extent and at the fastest rate under this alternative.	This alternative should allow the stream channels and riparian areas to move toward or meet desired conditions, though at a slower rate than Alternative 1.
Effects on upland vegetation and watershed condition	Herbaceous vegetative condition is most likely to improve in openings where livestock typically congregate, although ungulate use from elk will continue. In area of high density overstory of pine and juniper, herbaceous vegetation may show no measurable improvement. In areas treated by prescribed fire, herbaceous cover should increase. Watershed condition will improve or remain stable in most areas. In areas of thick juniper, where there is little cover in the interspaces, erosion likely to remain high since herbaceous production is suppressed.	Vegetative condition most likely to remain stable or improve slowly. High density pine/juniper areas will not improve until 1-5 years after some thinning or prescribed burning treatments are implemented. Watershed condition remains satisfactory in openings, and will improve in areas thinned of juniper or pine as herbaceous production increases.
Heritage Resources	No effect on Heritage Resources.	Managed grazing is not considered in and of itself to constitute an effect on heritage resources when the grazing strategy is designed to match herd size with capacity and distribute livestock as evenly as possible across the allotment.
Socio-Economics	Removal of the livestock would result in an initial reduction in gross economic returns to the permittee, unless the cattle could be placed on private land.	Personal characteristics such as self sufficiency, independence, hard work and other traits associated with the ranching lifestyle would likely be protected under this alternative.

Attribute	Alternative 1	Alternative 2
Recreation and Special Management Areas	Would be in accordance with wilderness values. However, if selection of this alternative was based on eliminating grazing from wilderness, that would not be in accordance with the Wilderness Act. Those rivers with potential for a wild, scenic or recreational river are accessible; therefore, future eligibility may be impacted. The section of an inventoried roadless area would not be impacted because nothing would change regarding management of existing roads. No conflicts between recreational users and livestock; existing range improvements remain in wilderness areas until FS can arrange for removal.	Potential conflicts with recreational users mitigated through project design; would be in accordance with wilderness values. Those rivers with potential for a wild, scenic or recreational river are accessible; therefore, future eligibility may be impacted. The section of an inventoried roadless area would not be impacted because nothing would change regarding management of existing roads.

Definitions

Animal Unit Month (AUM): The amount of forage required by an animal unit for one month, often calculated as 26 lbs. of forage per day by dry weight. The term is an expression of grazing impact and is related to forage removed. When estimating stocking rates for grazing allotments, express the amount of forage available in AUMs of forage. This gives an idea of how many animals of a certain class or kind can graze. A cow/calf pair requires an average of 1.32 AUMs of forage for one month, a dry cow (no calf) 1 AUM, a yearling steer or heifer is .7 AUM. An AUM is the proper basis for documenting estimated grazing capacities and estimating and describing grazing impacts.

Conservative Use: Forage utilization is maintained between 30-40% of annual forage production by weight in pasture key areas. Qualitative indicators of conservative use can be described by the following; forage plants have abundant seed stalks; areas more than a mile from water show little use; about one-third to one-half primary forage plants show grazing on key areas (Holechek *et. al*. 1999).

Deferred Rest-Rotation Grazing Strategy: A grazing system in which the same pasture is not grazed at the same time during the growing season in consecutive years (deferment), with a rest period also added in which the pasture is not grazed at all during the growing season. A typical 3-pasture scenario using this system would have pasture A grazed May-July in year 1, August-October in year 2, and rested in year 3. The schedule then repeats.

Desired Plant Community is determined through the interdisciplinary planning process based on desired conditions for vegetation within a planning unit. The desired community may be a lower successional stage within a potential natural community that is a forested type in order to maximize forage output. Ecological Site Descriptions for certain range sites may describe the desired plant community (R3 Rangeland Analysis and Management Training Guide, 1997).

Effective Ground Cover is a measure of the percentage of ground area covered by live basal vegetation or persistent litter. These serve to protect the soil surface from accelerated erosion. It is a Tonto Forest Plan guideline to "maintain a minimum of 30% effective groundcover for watershed protection and forage production".

Key Areas: A relatively small portion of a range selected because of its location, use or grazing value as a monitoring point for grazing. Key areas should be located within a single ecological site or plant community, be responsive to management actions and be indicative of the ecological site or plant community they are intended to represent. Key areas will normally be ¼ to 1 mile from water, located on productive soils with level to intermediate slopes, and be readily accessible for grazing. Size of key forage monitoring areas may be 20-500 acres. In some situations such as high mountain meadows with perennial streams, key areas may be closer than ¼-mile from water and less than 20 acres (Tonto Forest Plan, p. 42-1).

Light to Moderate Grazing Intensity: Based on review of numerous grazing intensity studies, Holechek (1999, 2004) identifies light to moderate grazing as 32-43% average use of primary forage species. These averages are based on pasture-wide utilization averaged over time. The Forest Service monitors utilization based on the use of key

forage species in key areas. Key areas are selected to be representative of management effectiveness over the entire pasture. For the purposes of monitoring, an annual use guideline of 30%-40% of key species in key areas would be used to monitor use in all pastures, which, combined with growing season rest or deferment, should insure pasture-wide average use of less than 40%. Grazing intensity can be measured before and during the growing season. Grazing intensity can be utilized to manage livestock so that expectations of end of growing season utilization measurements will not be exceeded.

Parker Three Step Method: A method for determining range condition used by Region 3 of the Forest Service. The method is outlined in R3 Forest Service Handbook 2209.21. The vegetative rating shown by this method is a commodity rating based on the value of the land for cattle grazing. The more plant species present that cattle prefer to graze, the higher the vegetation condition portion of the score. It is not a measure of ecological status or similarity with site potential.

Range Condition is a subjective expression of the status or health of the vegetation and soil relative to their combined potential to produce a sound and stable biotic community. Soundness and stability are evaluated relative to a standard that encompasses the composition, density, and vigor of the vegetation and physical characteristics of the soil. Condition classes may be classified as excellent, good, fair, poor, and very poor (p. 59 Tonto Forest Plan).

Satisfactory Range Condition can be evaluated using the Parker Three Step method. A Parker Three Step vegetation and soil stability rating that is fair or better with a stable or upward trend is also considered satisfactory range. Ratings less than fair with an upward trend are moving towards this objective (R3 Rangeland Analysis and Management Training Guide, 1997).

Satisfactory Watershed Condition can be evaluated using the Parker Three Step soil stability rating, which includes an erosion hazard component and a subjective evaluation of current erosion. A soil stability score that rates fair or better is considered satisfactory, or an upward trend towards a fair rating. Satisfactory watershed condition can be visualized as an area with minimal sheet erosion, good groundcover from live vegetation and litter, and bare spaces generally small and not coalescing, or without distinguishable runoff pattern (R3 Forest Service Handbook 2209.21, Ch. 40, 1988).

Soil condition is an evaluation of soil quality based on an interpretation of factors which affect vital soil functions. These functions are: the ability of the soil to hold and release water (hydrologic function), the ability of the soil to resist erosion and degradation (soil stability), and the ability of the soil to accept, hold and release nutrients (nutrient cycling). Categories of soil condition are satisfactory, impaired, and unsatisfactory.

Watershed Condition is a measure of the ability of a watershed to provide a sustained and orderly flow of water while maintaining soil productivity (p. 234 Tonto Forest Plan).

CHAPTER 3 – ENVIRONMENTAL CONSEQUENCES

This section summarizes the physical, biological, social and economic environments of the affected project area and the potential changes to those environments due to implementation of the alternatives. It also presents the scientific and analytical basis for comparison of alternatives presented in the chart above. The section is organized by resource. Within each section, the affected environment is briefly described, followed by the environmental consequences (effects) of implementing each alternative.

Wildlife

Affected Environment

In general, the quality of wildlife habitat is ultimately dependent on the quality of the soil resources, upland watersheds, vegetative conditions and riparian areas.

Threatened, Endangered and Proposed Species

Only species listed on USFWS threatened and endangered species lists for Gila County were considered for analysis. Potentially affected species were identified by evaluating the location and nature of the proposed action and review of existing information on occurrances of federally listed species including USFS records and the Arizona Game and Fish Department's (AGFD) State Heritage Program database for rare species. Designated critical habitat was also considered in the analysis.

At this time habitat and/or occurrence of 4 threatened, endangered, or proposed (TEP) species has been identified for this allotment. These include: bald eagle, Mexican spotted owl, southwestern willow flycatcher and Chiricahua leopard frog. It should be noted that the purpose of this section is to disclose existing conditions. It is not to make a determination of affect for any action; this is done in the BA&E. The project record has a total list of all TEP and Forest Service Sensitive species for the District and identifies those that will be addressed further during this analysis (PR V1 T20 and V2 T26).

Based on the following consultation with the U.S. Fish and Wildlife Service, some of the above listed wildlife species and/or their habitat was determined to be present within the project area. See Project Record for complete wildlife reports (PR V1 T20 and V2 T18, 26-27).

Alternative 2 proposes creating 1 new pasture from 3 smaller pastures; trap fencing on waters; up to 3,250 acres of juniper treatment on historic juniper savannahs and juniper woodlands; 5 new road stock tanks; the modified use of riparian habitat contained within the South Cherry pasture; and an option to create a riparian pasture within Ridge pasture if future monitoring indicates. In order to avoid adverse impacts to wildlife species, the management practices listed in Chapter 2, page 20 must be followed during implementation of range improvement projects.

Bald Eagle

Distribution

In Arizona, bald eagles occur as both residents and winter migrants. Nesting occurs in trees, snags, and rock features; nests are usually associated with riverine environments. Perches for shelter, roosting, foraging and guarding are important habitat components. Breeding birds tend to return to breeding areas around the first part of December and young are usually fledged by June. The eagle's diet is primarily comprised of fish, but they may also consume small mammals, carrion, birds and reptiles.

Habitat

On TNF, habitat along the Salt River, Verde River, and Tonto Creek has provided core nesting, foraging and wintering habitat for the species. One documented nest is known to occur in Dupont Canyon on the Buzzard Roost Allotment, approximately 8 miles west of the Cherry – Frio allotments. According to AGFD and Salt River Project (SRP) data there are two ponderosa pine snag nests. The northern most nest appears to have been occupied in 1997-1998 and again in 2003. In the last six years, this nest has fledged one documented eaglet.

In addition to the above documented nests, wintering migrant bald eagles that are not part of the Arizona nesting population are thought to be present in the analysis area; however, documentation does not exist identifying specific areas that wintering bald eagles use. There are occasionally observed roosting in large conifers or cottonwoods adjacent to perennial waterways.

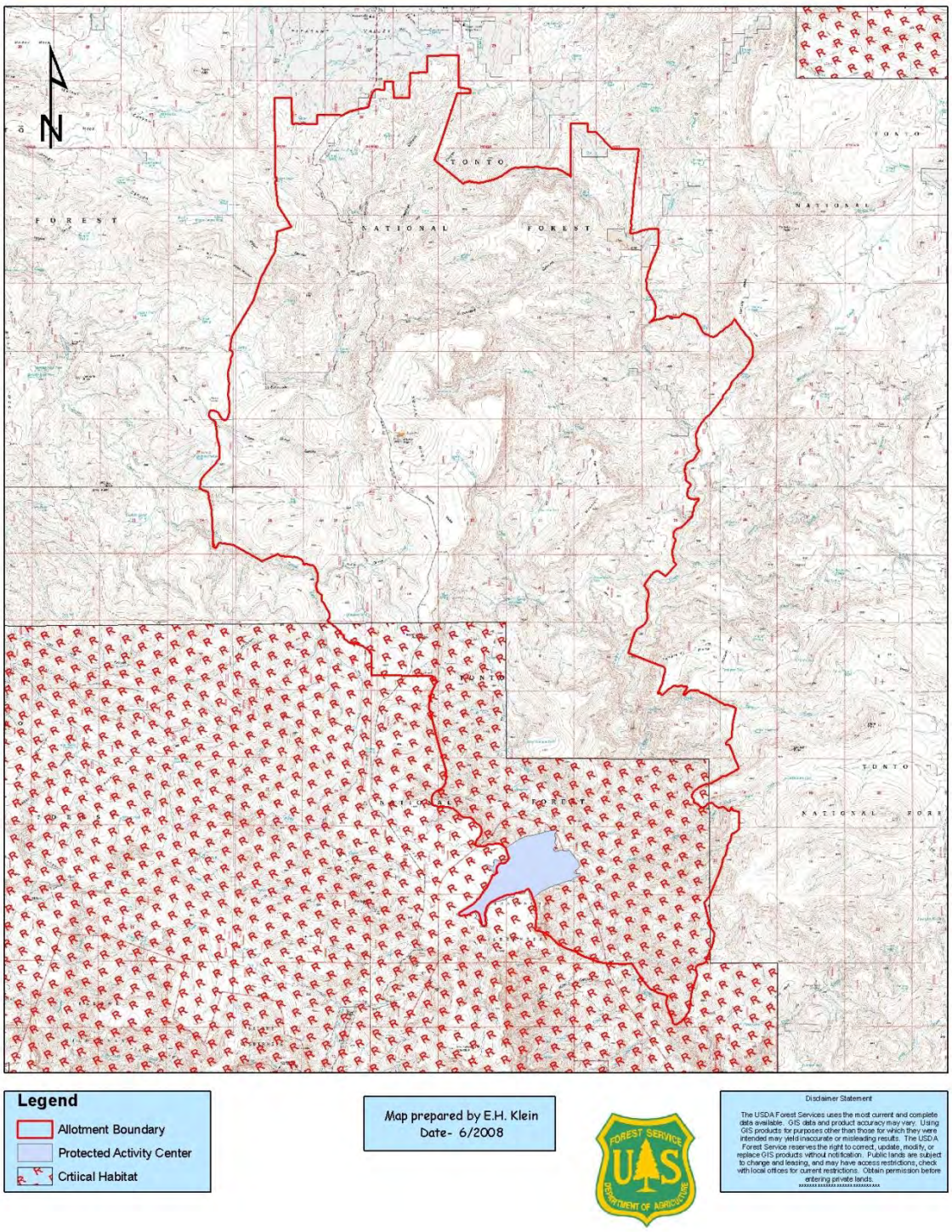
Mexican Spotted Owl

Distribution

Mexican spotted owls (MSO) are known to occur in Arizona, New Mexico, southern Utah, portions of Colorado, and in Mexico (Ganey *et al*. 1988). Results from these surveys led to the establishment of management territories that were later modified into Protected Activity Centers (PACs) in compliance with the MSO Recovery Plan (USDI 1995). Surveys for Mexican spotted owls have been conducted between 1993 and 1999 over parts of the analysis area, and more recently in 2004. These surveys have been associated with other projects including prescribed burns and the Buzzard Roost timber sale.

The range of the Mexican spotted owl in the United States has been divided into six recovery units (RUs) as identified in the Recovery Plan (USDI 1995 pages 36-49). The Tonto contains portions of two recovery units, the Upper Gila Mountain Recovery Unit (UGM) and the Basin and Range East (BRE). The southwestern portion of the allotment occurs within the BRE Recovery Unit and the eastern portion is within the UGM Recovery Unit (Figure MSO-1).

Figure MSO-1: Critical Habitat and Protected Activity Center For Mexican Spotted Owl.



Habitat

Critical habitat is designated and consists of 3,983,042 acres in Arizona. The southern portion of the Cherry Creek/Frio Canyon Allotment occurs within the polygon for Critical Habitat Unit BR-W-5 (Figure MSO-1). We do not have good vegetation data for the allotment, but what we have indicates that only 187 acres would be considered critical habitat within the allotment.

One Protected Activity Centers (PACs) occurs on the allotment in the South Cherry pasture.

Monitoring of spotted owl PACs on the Forest has occurred sporadically over the years utilizing several methods including both formal and informal monitoring protocols developed by the region as well as radio-telemetry studies conducted by non-governmental groups. PAC 120526 within the allotment has not been monitored since 1999. Part of the explanation for this is due to the problem of illegal activity that has been occurring within this general area for the past several years, preventing FS personnel from conducting work in the vicinity.

Southwestern willow flycatcher

Distribution

The flycatcher is a riparian obligate, nesting along rivers, streams, and other wetlands where dense growths of willow (*Salix* spp.), baccharis (*Baccharis* spp.), buttonbush (*Cephalanthus occidentalis*), boxelder (*Acer negundo*), saltcedar (*Tamarix* spp.) or other plants are present, often with a scattered overstory of cottonwood (*Populus* spp.) and/or willow. Historic nest locations of the flycatcher throughout its range are not well known. It is not known whether the habitats where they are located today are representative of all the different habitat types they could use for nesting.

The flycatcher occurs in Arizona on the Apache-Sitgreaves and TNFs, and on private land near the Prescott and Coconino NFs. Designated critical habitat for the species occurs on Tonto Creek from the high water level of the lake upstream to the confluence with Rye Creek and on the Salt River from the diversion dam upstream to the confluence with Cherry Creek.

Habitat

Migrant birds have been detected in riparian habitat that is both suitable and unsuitable for nesting and it may also occur in non-riparian areas. The migratory route flycatchers travel to known breeding populations from their wintering areas is unknown; however, flycatchers are known to use major drainages. It is conceivable that some may fly overland utilizing smaller drainages as they are encountered making all riparian areas important.

The allotment is located some 15 miles upstream from critical habitat for this species (Salt River), and it is unknown if Cherry Creek would be considered as an area that could develop into suitable breeding habitat or not, but it could provide a migratory corridor. There are no records that would indicate that there is occupied habitat on the allotment, nor that migratory birds use the allotment.

Chiricahua leopard frog

Distribution

Discontinuously distributed in Arizona, New Mexico, Sonora and Chihuahua, populations occur in the montane areas of the Mogollon Rim and along the eastern base of the Sierra Madre Occidental at elevations from 3,300-8,900 ft. Now absent from many historical localities and numerous mountain ranges, valleys, and drainages within its former range, it currently occupies an estimated 61 confirmed sites in Arizona, down from an estimated 212 historical occurrences (USFWS 2002). Most occupied sites in Arizona occur on the Coronado National Forest. On the Tonto, Chiricahua leopard frog distribution overlaps with lowland leopard frog habitat at lower elevations. The Chiricahua leopard frog was listed as threatened in June 2002 without critical habitat or a recovery plan (USFWS 2002).

Habitat

This highly aquatic amphibian occurs chiefly in the oak and mixed oak and pine woodlands. All leopard frogs are highly aquatic and almost always associated with permanent water, preferably with emergent and submergent aquatic vegetation (Sredl and Howland, 1992; Stebbins, 1985). This frog prefers rocky streams with deep rock bound pools (Arizona Game and Fish Department, 1994). Although this species inhabits montane springs, streams, and tanks, it was historically found in numerous valley wetlands and cienegas (USFWS 2002). Fifty percent of the populations documented by Sredl et al. (1997) in Arizona were associated with natural lotic systems. The others were associated with stock tanks (39%) and natural or artificial lakes (11%). Leopard frogs as a group are habitat generalists that can adapt to a variety of wetland situations. Therefore, suitable habitat for Chirachua leopard frogs would be any perennial or semi-perennial aquatic system that is found above 3,800 feet in elevation.

The Recovery plan (USFWS 2007) has defined likely to be occupied habitat as: 1) currently suitable habitat where the frog has been documented within the last 10 years, but is apparently now absent or 2) suitable habitat that is (a) within 1 mile overland of occupied habitat, (b) within 3 miles along an ephemeral or intermittent drainage from occupied habitat, or (c) within 5 miles along a perennial stream from occupied habitat. As was mentioned, AGFD has surveyed several areas on the Forest for ranid frogs within the last 15 years. Both the Regional BA&E for Wildland Urban Interface (WUI) prescribed fire projects and the Regional Grazing Criteria indicate that if in doubt (i.e., no surveys), assume presence of likely to be occupied habitat (Figure CLF-1).

The US Fish and Wildlife Service has identified potential habitat for this species as those aquatic systems (within the historic range of the frog) that are damaged or degraded from natural perturbations or chronic stressors (such as improper livestock grazing) but have the appropriate hydrological and ecological components, which are capable of being restored to suitable habitat. Aquatic habitats may become unsuitable for Chiricahua leopard frogs due to increased amounts of sediments, longer or more frequent periods of intermittency reduce flows, dewatering of ponds or bank chiseling.

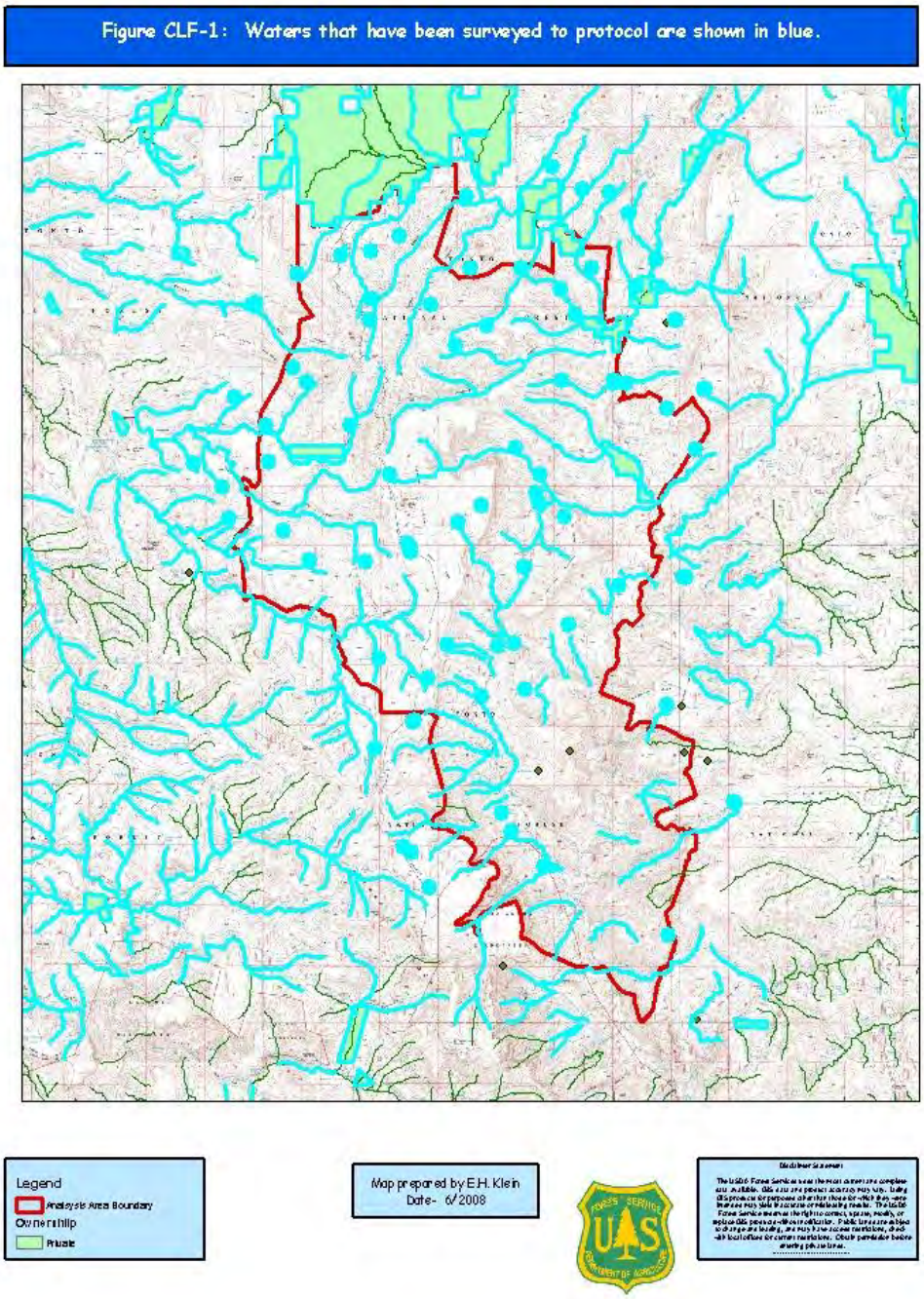


Figure CLF-1 depicts the current state of our knowledge regarding possible habitat within the allotment. Surveys have been conducted to determine presence for many of the waters on the allotment, however these surveys were not intended to determine adequacy of the habitat. As is apparent from CLF-1, the southern portion of the allotment lacks survey information.

The nearest known occupied habitat to the allotment is roughly 3 miles overland, to the north and west. None of these populations currently are within the dispersal distances identified that would indicate that "likely to be occupied" habitat is currently present on the allotment.

Northern Goshawk

Distribution

The Northern Goshawk (goshawk) (*Accipiter gentilis*) is primarily a resident of coniferous forests (especially ponderosa pine and mixed-conifer forests) across North America and Eurasia, although it also has been documented nesting in cottonwoods and aspen (NatureServe 2001, DeGraaf *et al*. 1991). The species is often associated with nesting in more mature or larger trees, although only a small patch of this type of habitat may be needed for successful reproduction in forests where a mosaic of age and size classes are present (USFWS 1998).
Active surveys for the species on the Tonto National Forest (TNF) began in the early 1990s. These inventories resulted in identifying 3 breeding areas for this species on the Pleasant Valley Ranger District. Surveys have not been conducted for this species on the allotment; however, a breeding pair was discovered in 2007 adjacent to the allotment.

Habitat

Quality habitat for the goshawk is considered to be ponderosa pine. For the most part, the TNF consists of transitional ponderosa pine communities (i.e. ponderosa pine mixed with live oak, manzanita, and juniper) and would probably not be considered ideal habitat for this species. Never-the-less, this species is known to occur, and there is approximately 5,260 acres of ponderosa pine habitat type within the allotment. Breeding areas to the east and northwest of the allotment have been discovered in the last two years.

Black hawk

Distribution

The common black-hawk is a neo-tropical raptor. It is a permanent resident in the tropics from southern Mexico to northern South America. A migratory population breeds as far north as southern Utah, Arizona, southwest New Mexico, and western Texas in the U.S., and Sonora and Chihuahua in Mexico. The common black-hawk in the southwestern U.S. is dependent upon riparian communities for nest trees and prey. The trophic position of the common black-hawk and its habitat affiliation within riparian communities suggest it may serve as an indicator of healthy mature riparian systems (Boal and Mannan 1996).

In the analysis area, according to AGFD Heritage Database Management System (HDMS), there are at least two known locations for the black hawk. Both occur within Cherry Creek. These observations were from the 1980's and specific surveys to locate active common black-hawk nests have not been conducted since then.

Habitat

On the Tonto National Forest, the common black-hawk is an "obligate riparian nester." It is generally dependent on mature broadleaf trees along perennial streams for nest sites (Porter and White 1977, Schnell *et al*. 1988), although a few nests are situated along intermittent watercourses where small impoundments may persist through the breeding season. Riparian communities (Brown *et al*. 1980) in which the species is found include the cottonwood-willow series (1224.53) of the Sonoran Riparian Deciduous Forest (<1,200 m elev.), the cottonwood-willow series (1223.21) and mixed broadleaf series (1223.22) of the Interior Southwestern Riparian Deciduous Forest (1,100-1,800 m elev.), and the cottonwood-willow series (1222.31) and mixed broadleaf series (1222.32) of the Rocky Mountain Riparian Deciduous Forest (1,700-2,300 m elev.) (Boal and Mannan 1996).

Most of Cherry Creek within the allotment would be considered habitat for this species. Based on the vegetation map, there also appears to be an area within Dinner Canyon that may also provide habitat for this species. Again, the vegetation map would indicate that 492 acres of habitat for this species occurs within the allotment, but we have no information as to the quality of habitat.

Fish

Cherry Creek and its tributaries harbor both native and nonnative fishes. There are five native species, four of which are listed as Forest Service Sensitive (longfin dace, desert sucker, Sonoran sucker, roundtail chub) and one which is common (speckled dace). Five nonnative fishes are also found in the drainage (flathead catfish, yellow bullhead, green sunfish, red shiner, and brown trout). Table 6 shows sensitive species of fish on the allotments. See Project Record for complete fish reports (PR V2 T6 and V3 T4).

Table 6. Fish species and determination of effects.

Species	Status	No Grazing	Proposed Action
Sonora Sucker	Sensitive	Allow for fastest recovery of species	May impact individuals but not likely to cause a trend to federal listing or a loss of viability.
Longfin Dace	Sensitive	May reduce populations over time due to reduced erosion.	Has/May have a beneficial impact on the species.
Desert Sucker	Sensitive	Allow for fastest recovery of species	May impact individuals but not likely to cause a trend to federal listing or a loss of viability.
Roundtail Chub	Sensitive	Allow for fastest recovery of species	May impact individuals but not likely to cause a trend to federal listing or a loss of viability.

Management Indicator Species

Management indicator species were selected as part of the development of the Tonto's Forest Plan. They were selected to adequately monitor the effects of implementation of the Plan's

proposed action on wildlife habitat and species diversity. The Tonto National Forest completed a status report for all management indicator species assigned in the Forest Plan. That document is incorporated into this document by reference. Because Alternative 2 proposes some minor treatment of juniper woodlands, this report will include this to the MIS analysis. See Project Record for complete wildlife reports (PR V1 T20, V2 T6 and T26, and V3 T4).

Appendix G of the Tonto National Forest Plan (page 249-250) describes the MIS species selected for each forest cover type and specifically what attribute of this cover type they represent. At the time this list was developed the emphasis was on indicators of overstory manipulation of vegetation.

Ten of 30 MIS species for the Tonto NF were omitted from analysis due to habitat (mostly elevational) not being present in the project area. Another ten species will be omitted from further analysis due to lack of effects to the community types they are indicators for, such as snag component, forest conditions or vertical diversity in mixed conifer or ponderosa pine. Only species that represent the herbaceous conditions, riparian conditions or density of juniper will be analyzed further, and are shown Table 7.

Table 7. Habitat Trend According to Alternative

Vegetation Type/Species	Indicator of Key Habitat Condition	Indicator or KHC Trend (Alt 1/Alt 2 acres)			**Total Acres**
		Upward	**Downward**	**Stable**	
Piñon-Juniper Woodland					
Ash-throated flycatcher	Ground cover in PJ	**17,957/3250**	**3,250/0**	**1,349/0**	**22, 556**
Gray vireo	Tree density	**0/0**	**0/3,250**	**22,556/19306**	**22,556**
Townsend's solitaire	Juniper berry production	**0/0**	**0/3,250**	**22,556/19306**	**22,556**
Juniper titmouse	P-J woodlands, general conditions	**0/0/**	**0/3,250**	**22,556/19306**	**22,556**
Spotted towhee	Shrub density in chaparral, successional stages of P/J	**0/0**	**0/3,250**	**34,880/31,630**	**34,880**
Black-chinned sparrow	Shrub diversity in chaparral	**0/0**	**0/0**	**12,324/12,324**	**12,324**
Black Hawk	Riparian streamside	**492/0**	**0/395**	**0/97**	**492**
Western Wood Peewee	Mid story level riparian	**492/0**	**0/395**	**0/97**	**492**
Gray Squirrel	General riparian- may indicate an alder component	**492/0**	**0/395**	**0/97**	**492**
Macroin-vertebrates	Water quality + fisheries habitat	**0/0**	**0/3,250**	**34,880/31,630**	**40,212/40,212**

The Tonto forest wide MIS analysis (Richards 2005) contains the population trends for the above species. The predicted change in habitat for either alternative is not significant enough to cause a change in population status for any of these species.

Further information on these species is available in the forest wide MIS analysis for the Tonto National Forest (Klein *et. al*. 2002).

Migratory Birds

On January 10, 2001, President Clinton signed Executive Order 13186 placing emphasis on conservation of migratory birds.

To date there has been no Regional or Forest policy developed to provide guidance on how to incorporate migratory birds into NEPA analysis. Advice from the Regional Office is to analyze effects in the following manner: (1) effects to Species of Concern listed by Partners in Flight; (2) effects to Important Bird Areas (IBAs); (3) effects to important over-wintering areas. At the time this direction was received Arizona had not completed its comprehensive wildlife conservation strategy (AGFD 2006). Table 8 incorporates those "species of greatest concern" that are also listed as protected migratory birds and their associated habitat types. The following is an attempt to disclose the impacts, if any of this project.

Cherry Creek and its tributaries serve as corridors for migration of birds within and through the TNF. Although relatively small watersheds, migratory birds use the riparian areas for habitat needs while migrating to different latitudes depending on the time of year. Upland riparian vegetation associated with water along these drainages provides a diversity of habitats that support shorebirds, waterfowl and neo-tropical birds. The importance of riparian habitats to wildlife was discussed previously.

Habitat types identified by the Arizona Partners in Flight Plan (Latta *et al.* 1999) suggest that six main vegetation types are represented on the allotment (Table 8). Not all species are expected to occur in the analysis area, but elements of their habitat may.

Table 8. Habitat Types within the Analysis Area

Habitat Type	Species	Habitat/Disturbance Effects
Pine habitat	Northern goshawk, Cordilleran flycatcher, Purple Martin, Mexican spotted owl	Utilization levels should minimize deleterious impacts to herbaceous vegetation. Cattle use expected to be low on steep slopes.
Pinyon Juniper	Gray flycatcher, Pinyon jay, gray vireo, black throated gray warbler, Juniper titmouse	Utilization levels should minimize deleterious impacts to herbaceous vegetation. Juniper removal will occur on 1.2% habitat type in allotment.
Chaparral	Black chinned sparrow,	Little herbaceous component in many areas due to fire suppression. Utilization levels should minimize adverse impacts.
High elevation	Common black-hawk, Elegant	Overgrazing and drought h as

riparian	trogon, Southwestern willow flycatcher, MacGillivrays warbler, Red-faced warbler	contributed to declines in diversity and composition. Continued grazing, especially in S. Cherry pasture, will continue decline. Rotational grazing and riparian protection measures will lessen impacts.
Mixed conifer	Mexican spotted owl, Northern goshawk, Cordilleran flycatcher,	Utilization levels should minimize deleterious impacts to herbaceous vegetation. Cattle use expected to be low on steep slopes.
Grasslands (high elevation)	Western Grasshopper Sparrow, Ferruginous Hawk	Some grasslands have been impacted (i.e. species shifts) from overgrazing in the past, compounded with drought. Efforts to balance cattle stocking rates with capacity may improve habitat coupled with long-term cumulative benefits of prescribed burning.

Important Bird Areas.

There are no designated IBAs within or affected by the project. The nearest IBA is the Salt-Verde Ecosystem (Saguaro Lake north through the Mazatzal Wilderness), located more than 25 miles to the east of the project area. There is no association or important link between the bird communities on the Cherry- Frio allotment and the Salt-Verde Ecosystem IBA. Therefore, no IBAs are affected by the project.

Over-wintering Areas

The project area may provide wintering habitat for a variety of raptors and upland song birds, however, this area is not recognized as an important over wintering area because significant concentrations of birds do not occur, nor is there a unique assemblage or a high diversity of birds that winter here.

Environmental Consequences

Please refer to Table 9 for a comparison of both alternatives by habitat type.

With the wide variety of wildlife species present in these allotments which cover six major vegetative habitat types, it is not practical to provide a summary of each possible wildlife species and the probable effect of each alternative. However, one common factor that seems to affect wildlife is available forage. Forage utilization as specified in the proposed action does not differentiate between the use by cattle and that used by other ungulates.

Alternative 1 would have the least impact; however it is unpredictable how much forage use by other ungulates would occur.

Alternative 2 would utilize 30% - 40% of the available forage in key areas (less in others) on the Cherry – Frio allotments. It is expected that herbaceous forage will have an upward trend to the benefit of forage dependent wildlife.

Table 9. Effects to Wildlife Habitat for the Cherry – Frio Allotment.

Habitat Type	Alternative 1 (No Grazing)	Alternative 2 (Proposed Action)
Ponderosa Pine	Conditions for this habitat type would mostly remain static. In areas of future improved herbaceous cover, small mammal densities may increase. Soil conditions may improve faster under this alternative.	Wildlife habitat changes from implementin Alternative 2 are generally low. Livestock herbivory on overstory is negligible. Some disturbance of nesting/roosting birds could result if roundup times occur in those areas
P/J, Madrean Pine-Oak & Chaparral	Pinyon and juniper components would remain comparable to other Alternatives. Inter-specific competition from cattle would be eliminated and browse composition could become more abundant. Soil conditions on flatter terrain would likely improve faster under this alternative.	Wildlife habitat would likely remain similar to existing conditions. The stocking rates and animal months would have minor effect on these habitat types. Impaired soil may improve over time. Rest-rotation grazing should minimize effects to habitat and wildlife species distribution.
P/J, Chaparral	Overall primary diversity and productivity would increase. Habitat selection by native wildlife would improve with normal precipitation patterns. Fawning, hiding, and thermal cover would improve with improved survival rates for big game, upland game, MIS and TES species. Soil conditions would likely improve faster under this alternative.	Under this Alternative, with proper monitoring, site herbaceous productivity and soil conditions may improve. If primary productivity improves, those wildlife species associated with this habitat guild may respond positively, although not as much as Alternative 1.
High & Low Riparian	TNF Standards and Guidelines may be achieved/maintained the quickest. Degraded riparian areas with water may improve more quickly. Some will recover slowly or remain impaired. This Alternative would most likely support improved wildlife species diversity over time. General wildlife habitat, edge effect, and corridor maintenance would be improved. Aquatic parameters may benefit more quickly and improve habitat conditions for many aquatic species.	TNF Standards and Guidelines will likely be achieved/maintained through use of Adaptive Management. Recruitment and establishment of riparian dependent trees and shrubs should improve more slowly than Alternative 1. Improvement of floodplains may indirectly improve wildlife habitat parameters. Aquatic parameters will likely remain similar to current conditions.

Effects of juniper treatment types on wildlife: The proposed action includes treatment of 3,250 acres of juniper woodlands. Several methods of juniper removal treatments are proposed in Alternative 2, including chainsaws, pushing with a dozer, fuelwood sales, hydraulic tree shear, and/or prescribed fire. Removal that involves heavy equipment (pushing with a dozer and using a hydraulic tree shear) could result in greater soil disturbance than the other methods. Increased soil disturbance in these areas could result in a short-term decrease (1 - 3 years) of hiding cover and/or forage for ground nesting and foraging birds and small mammals and a related short-term decrease in prey species for raptors and mammalian carnivores. This does not include any TES species since none are known to occur in juniper woodlands. A short-term reduction in forage and browse for deer and elk could also occur. Similar short-term effects are expected with the use of prescribed fire to remove junipers. These effects are expected to be short-term as the decrease in juniper density will result in an increase in herbaceous cover and diversity and forage production. All treatment types will result in an increase in noise effects (those related to use of equipment and human presence) during implementation of the project. These effects would be limited to the time that it takes for the different treatment types to occur (several days to several weeks)."

Soils

Affected Environment

Soil condition was evaluated by using a combination of field inspections, information from the on-going Terrestrial Ecosystem Survey (TES) survey, Digital Elevation Models (DEM's), aerial photo interpretation, and topographic maps (see Table 2). The soil condition represents an approximation. It was not possible to visit all areas. Interpretations were based on historical livestock use patterns and slope characteristics. Flatter and more open areas tended to have greater impacts than steeper slopes or areas with dense vegetation. Areas with less than satisfactory soil condition are a result of past and current management practices.

The satisfactory soil condition class covers 32,157 acres (79%). Generally, these soils have not been heavily impacted and have high effective vegetative ground cover. Plant species' density and diversity are high.

Fifteen percent of the soils (6,136 acres) have impaired soil condition**.** Most of these soils occur on open mesas or juniper woodlands on slopes ranging from 0 to 15%. Specifically, these have slight to moderate soil compaction and have lost part of the original "A" horizon through moderate sheet and rill erosion. These soils have not been compacted as much as the heavily used soils in unsatisfactory condition. Nutrient cycling is limited as well with a poor distribution of litter in the interspaces. Vegetation diversity and species composition is relatively low.

The unsatisfactory soil condition class makes up 2,476 acres (6%) in the allotment. Most of the unsatisfactory soils occur in the flat open grasslands. These soils have high amounts of surface

compaction and poor soil porosity and root distribution resulting in moderate to high amounts of sheet, rill, and gully erosion, very poor diversity, density, and composition of perennial grasses with little litter cover. Soil piping (subsurface erosion channels) occurs on some of the heavy clay mesa soils that were rated as unsatisfactory.

Environmental Consequences

On the Cherry Creek - Frio Canyon Allotments the soils in less than satisfactory condition are generally on gentler slopes. Even with good management, flatter areas will still have a tendency to receive heavy use since these areas are favored by livestock. Key areas, established to monitor cattle use, are normally on flatter, more open areas. If monitoring of grazing intensity of these areas shows acceptable use, other parts of a pasture can be expected to have acceptable levels of impacts.

The success of meeting the short and long-term desired conditions will depend on timely monitoring and cattle management. About forty-five percent of the allotment occurs on slopes greater than 30 percent; slopes that tend to get little use. About twenty percent of the allotment contains soils that are in less than satisfactory condition. Nearly all of these occur on slopes of less than 30 percent and most of these occur in juniper grasslands/savannas or juniper woodlands. Forage production on these areas is normally low. There will be a tendency for flatter areas (including areas in unsatisfactory condition) to be overused. These areas need to be closely monitored so that the use of adaptive management techniques will, over time, allow these areas to recover. Creating 5 new stock tanks will directly affect soils in the area occupied by the tanks but the indirect effect should be positive by improving cattle distribution. Building new fences will have very minor direct affect on soils but the indirect effect should be positive by improving distribution.

The environmental effects of juniper treatments will depend on the type of treatment and the condition of the areas treated. Possible treatments include: chainsaws, pushing with dozer, fuelwood sales, hydraulic tree shear, and/or prescribed fire.

a) Pushing with dozer (including chaining): These treatments will initially reduce juniper densities but will normally require periodic maintenance to control seedlings and resprouting of junipers (mostly alligator junipers). Follow-up treatment every 5-10 years will likely be needed. Chaining projects have often led to a large increase in juniper densities overtime. In the McInturf area of the Pleasant Valley District, juniper densities increased from about 60 trees per acre in 1946 to about 315 trees per acres in 1996 in an area chained in the 1950s (Ambos, 2005).
b) Results from prescribed fire can be positive or negative and will vary depending on starting conditions and type of burn. Broadcast prescribed fires on large scale can produce results similar to that of wildfires. “It may be stated that for fire to work as a management tool for juniper reduction, a reasonable potential must exist for perennial grasses to recover and establish following treatment.” (Ansley 2005) In some cases burning leads to an increase in unpalatable, noxious, or ephemeral plants (Overby, 2000) Maintenance burns of 5-10 year old treatments will be effective providing there is enough herbaceous cover. Overby states: “When the understory community is sparse with little perennial grass cover, slash should remain on site following fuelwood cutting until establishment of herbaceous understory.” (Overby, 2000)

c) Fuelwood sales and chainsaw treatments can have similar effects to each other. Green fuelwood sales with lop and scatter can improve cover, prevent erosion, and allow herbaceous growth. (Soeth and Gottfried, 1999) Chainsaw treatments can be effective if material is lopped and scattered. The areas treated may need maintenance treatments such as burning. If burning is required to reduce sprouting of junipers, the burns should normally take place only after herbaceous vegetation has become established.
d) Hydraulic tree shears can be effective in increasing ground cover but not as effective as green fuelwood sales. Soil disturbance in normally minor if equipment is used when soils are dry.

While most juniper treatments produce generally positive results the overall effects of juniper control treatments can be either positive or negative depending on the type of treatment and initial conditions. Generally, following treatment, the least amount of runoff and sediment occurs after slash has been scattered. Removing slash produces more runoff/sediment while burning slash least to the most (Thurow, 1997).

Overall, if areas are effectively monitored and appropriate changes in management made, soil and watershed conditions are expected to benefit.

Vegetation and Watershed

Affected Environment

The vegetative types listed in Table 10 were developed from the modified TES survey, aerial photo interpretation, and on-the-ground observations. They are aggregated from the vegetation types listed in the tentative TES legend. A few delineations were modified slightly to depict a more accurate representation of existing condition. Not all types and delineations were field validated.

In some cases, the vegetation was mapped as an association of two vegetation types. Where two vegetation types occur together in one map unit, the drier vegetation component normally occurs on southern aspects while the wetter component occurs on northern aspects. The following vegetation types are derived from TES information, on-site observations, and aerial-photo interpretation.

Table 10. Summary of Vegetation Types

Vegetation Groups	Vegetation	Acres
Semi-Arid Grasslands	Blue Grama/Alligator Juniper Savanna (LSM, 4, +1)	1,697
	Curly Mesquite/Alligator Juniper Savanna (LSM, 4, +1)	75
	Catclaw Mimosa/Alligator Juniper Savanna (LSM, 4, +1)	431
	Curly Mesquite/Utah Juniper Savanna (LSM, 4, 0)	820
Sub Total		3,023
Semi-Arid Grasslands/Woodlands	Alligator Juniper/Sideoats Grama Woodland (LSM, 4, +1)	2,302
	Alligator Juniper/Blue Grama Woodland (LSM, 4, +1)	4,532
Sub Total		*7,834*
Pinyon/Juniper Woodlands	Arizona Pinyon/Alligator Juniper/Arizona White Oak/Turbinella Oak/Manzanita (LSM, 4, +1)	728

	Arizona Pinyon/Alligator Juniper/Arizona White Oak/Blue Grama (LSM, 4, +1)	11,996
	Arizona Pinyon/Utah Juniper/Turbinella Oak/Curlymesquite (LSM, 4, 0)	482
Sub Total		*13,206*
Chaparral Woodlands	Colorado Pinyon/Alligator Juniper/Turbinella Oak/Mountain Mahogany Chaparral Woodland (LSM, 4, +1)	784
Sub Total		*784*
Chaparral	Arizona White Oak/Mountain Mahogany Chaparral (LSM, 4, +1)	7,458
	Turbinella Oak/Mountain Mahogany Chaparral (LSM, 4, +1)	1,540
	Turbinella Oak/Manzanita Chaparral (LSM, 4, +1)	1,994
Sub Total		*10,992*
Ponderosa Pine Forests		
	Ponderosa Pine/Pinyon/Alligator Juniper/Blue Grama (LSM, 5, -1)	525
	Ponderosa Pine/Pinyon/Alligator Juniper/Arizona White Oak (LSM, 5)	292
	Ponderosa Pine/Alligator Juniper/Arizona White Oak (LSM, 5, 0)	4,489
Sub Total		*5,306*
Mixed Conifer Forests	Douglas Fir/Ponderosa Pine/Gamble Oak (LSC, 6)	184
Sub Total		*184*
Streamside Vegetation	Streamside Vegetation	492
Sub Total		*492*
Total Cherry/Frio		40,821

Existing Condition of Vegetation and Watershed

Baseline conditions for vegetation and watershed were assessed using the Parker Three Step Method for assessment of range condition (Table 11) found in R3 Range Analysis and Management Handbook, FSH 2209.21. Vegetation condition is assigned a score that is comprised of a composition component (54% of score), forage frequency/cover component (36%), and a vigor component (10%). Plant species are classified as either decreasers, increasers, or invaders based on the plants response to grazing pressure from wild and domestic ungulates. Decreasers are plant species that ungulates tend to prefer, but the plant may be poorly adapted to repeated defoliation, so they tend to decrease in response to poorly managed cattle grazing. Increasers are plant species adapted to some grazing, so they tend to persist and flourish with properly managed grazing. Invaders are those species that will increase in abundance under heavy disturbance, such as poorly managed grazing. Vegetation condition rated as "fair" by this method is characterized by a satisfactory mix of desirable species, with adequate cover and vigor to provide quality grassland habitat.

Table 11. Summary of Parker Three Step Range Condition

Cherry Creek/Frio Canyon Allotments				
Pasture	**Key Area**	**Vegetation Condition**	**Soil/Watershed Condition**	**Effective Groundcover**
House	C-1, NE pasture	21, Poor↓	38, Poor↓	41%
House	C-3, SW pasture	29, Poor→	53, Fair→	42%
Cherry Holding	C-2, Racetrack Ridge	35, Poor↓	49, Fair→	44%
Edna Holding	C-4	24, Poor→	41, Fair→	56%

(Olligar)				
Olligar	C-5, Cow Flat Mtn	44, Fair→	51, Fair→	52%
Olligar	C-6, NW Horse Mtn	25, Poor→	44, Fair→	43%
South Cherry	C-7, SW pasture	39, Poor-Fair→	62, Fair→	27%
Dinner	C-8, S pasture, pine type	35, Poor↓	51, Fair→	63%
Dinner	C-9, juniper woodland	45, Fair→	70, Good→	48%
Deadman	C-1, Racetrack Ridge	37, Poor→	32, Poor→	20%
Dump	C-3, SW sect 36	37, Poor↓	36, Poor↓	34%

Watershed characteristics are also rated by the Parker Three Step method. The rating is comprised of two components, erosion hazard index and current erosion. The erosion hazard index is a numerical value that is based on the percentage of bare ground measured along transects. The current erosion value is assigned based on qualitative observations related to the amount of active sheet erosion observed, and the visual evidence of chronic erosion as shown by pedestalled plants or active rills and gullies.

Effective groundcover (EGC) is a measure of the percentage of ground area covered by live basal vegetation or persistent litter. These serve to protect the soil surface from accelerated erosion. It is a Tonto Forest Plan guideline to "maintain a minimum of 30% effective groundcover for watershed protection and forage production". It is also a Plan guideline to "manage vegetation to achieve satisfactory or better watershed condition." Effective groundcover is in excess of 30% at 9 out of 11 key monitoring areas. Only the sites in Deadman and South Cherry pasture did not met this management guideline.

Management Actions. Adaptive management uses monitoring data to provide feedback as to whether conditions are moving towards or away from stated desired conditions. Downward trends in vegetation and soil/watershed condition that are observed in any given year will result in management actions being taken. Positive trends would be manifested as the absence or opposite of these occurrences.

Indicators of downward trend for vegetation include:

- Desirable and intermediate species decreasing in vigor
- Lack of young plants from desirable and intermediate species
- Invasion by undesirable species
- Hedged and highlined shrubs. Dead branches generally indicating that shrubs are dying back.

Indicators of downward trend in soil stability include:

- Rill marks, which are small but conspicuous water channels around vegetation
- Active gullies are raw, actively downcutting, and may have headcuts. This type of gully may vary from a few inches to several feet in depth.
- Alluvial deposits; soil material transported and laid down as small fans in headwater drainages.
- Soil remnants; original topsoil held in place by vegetation or roots
- Active terraces; usually caused by hooves of animals; stairstep in appearance on side-slopes
- Exposed plant crown or roots (pedestalled plants).
- Wind-scoured depressions between plants
- Wind deposits
- Soil buildup behind plants, logs, and trees on upslope side.

Management actions that may occur in response to monitoring results include:

- Improve livestock distribution using salting, herding, fences, or increased water availability
- Adjust pasture season of use
- Adjust livestock numbers up or down in response to forage production
- Shorten/lengthen use period of pasture
- Provide more rest and recovery for pasture
- Defer use until forage plants are dormant or seed is set
- Implement thinning projects to increase litter cover and/or encourage herbaceous plant establishment

Environmental Consequences

The desired conditions and management objectives expressed for upland vegetation and watershed values are expected to be achieved under the adaptive management alternative for grazing, given that the proposal and other associated projects are fully implemented. Range research supports the concept that forage plant health and productivity, and overall ecological condition of rangelands can be improved or maintained through properly managed livestock grazing (Holecheck, et al. 1999). A study by Navarro, et al (2002) of Chihuahuan desert rangelands in New Mexico showed that from 1952 through 1999, the amount of rangeland classified in late seral stage or climax ecological condition increased from 25% to 38% while grazed conservatively (34% average). Ecological condition fluctuated most during periodic drought events in this study. Loeser, et al. (2007) compared the effects to vegetation composition and cover of three grazing practices on a semiarid grassland site near Flagstaff, AZ. The study was conducted during a period of recurrent drought from 1997 to 2004. They found that high-impact grazing brought about a decrease in plant cover over time, but cattle removal treatment plots demonstrated no consistent differences in cover from the moderate grazing treatment plots. During the severe drought year in 2002 when northern Arizona received only 19% of the 20-year precipitation average, they found that total plant canopy cover declined by 10% for no grazing and moderate grazing treatments, while declining in excess of 30% in the

high-impact treatment. This underscores the importance of yearly monitoring to assess potential drought effects and make adjustments as needed.

The proposed action includes juniper thinning projects on 3,250 acres. The areas targeted for treatment are mainly those that have received some form of thinning treatment in the past. These are located on productive soils in relatively flat terrain. The treatment areas will range from 20-500 acres in size, each. The method of thinning may include mechanical treatment (chainsaws, pushing with dozer, commercial fuelwood sale, hydraulic tree shear) and/or prescribed fire. The treatment methods should allow for slash to be placed on the soil surface to provide immediate effective groundcover, while providing a favorable microclimate for herbaceous plant establishment. The treatments will also allow for the maintenance of existing or newly created openings to retain optimum forage production.

Following the Tonto Forest Plan, the commercial treatment areas should have the silvicultural prescription be an even-aged management under the shelterwood cut method with pinyon uncut and 40 large juniper trees left per 40 acre cut block (p. 167). The following cover standard and guidelines will apply in areas where threatened, endangered, and sensitive species habitat requirements do not conflict:

- Provide a ratio of 60:40 percent forage to cover in pinyon-juniper.
- Permanent openings, fresh cut areas, and immature stands qualify as forage producing areas.
- Design the fuelwood harvest blocks in the woodland type in irregular shapes less than 40 acres and less than 600 feet across.
- Achieve a savannah condition in the pinyon-juniper type by leaving a minimum of 40 mature trees per 40 acre cut block.

A study conducted on the Pleasant Valley Ranger District from 1987 to 1994 to compare forage production and groundcover changes between thinned juniper woodlands and uncut control areas showed that untreated areas had an average production of 138-252 lbs/acre while areas thinned with slash placed on soil surface showed production values from 809-1,366 lbs/acre. Effective groundcover ranged between 42-52% in cut areas, and between 19-30% in uncut areas (Soeth and Gottfried 1999). Similar improvement is likely on these treatment areas.

Table 12 summarizes the effects of the no-grazing alternative in pasture key areas and Table 13 summarizes the effects of the Adaptive Management alternative in pasture key areas.

Table 12. Alternative 1, No Grazing Alternative – Key Woodland/Grassland Range Condition

Cherry - Frio Allotment			
Pastures and Key Areas	**Vegetation Condition**	**Watershed Condition/Groundcover**	**Standards Being Met?**
House C-3, Edna Holding,	Deadman likely to improve to fair	Racetrack Mesa in Deadman pasture	Yes, but may take longer than 20 years

Cherry - Frio Allotment			
Pastures and Key Areas	**Vegetation Condition**	**Watershed Condition/Groundcover**	**Standards Being Met?**
Deadman	condition within 20 yr. planning timeframe; other sites may take longer due to lack of species diversity; juniper density not an issue	improves to fair watershed condition, others remain stable at Fair or better/30% EGC met or exceeded	for key areas dominated by Hilaria belangeri (Hibe) specifically in House and Edna Holding pastures
Cherry/Frio: House C-1, Olligar C-5 C-6, South Cherry, Dinner, Dump	Improves towards fair condition initially; as juniper density increases, herbaceous plant cover declines without vegetative treatments	Sites that currently exhibit fair condition (Cherry Holding, Olligar, Dinner) may remain stable at fair condition over 5-10 year period, then may decline as herbaceous plant cover decreases/30% EGC met initially, then may decrease	No, may show some improvement short-term, but does not meet standards as juniper density increases

Table 13. Alternative 2, Adaptive Management Implemented - Key Woodland/Grassland Range Condition

Cherry - Frio Allotment			
Pastures and Key Areas	**Vegetation Condition**	**Watershed Condition/Groundcover**	**Standards Being Met?**
House C-3, Edna Holding, Deadman	Likely to improve towards fair condition within 20 yr. planning timeframe with improved grazing management; juniper density not an issue.	Racetrack Mesa in Deadman pasture improves to fair watershed condition with improved management, others remain stable at Fair or better/30% EGC met or exceeded.	Yes, but areas dominated by Hibe may take longer than 20 years to improve to fair condition.
Cherry/Frio: House C-1, Olligar C-5 C-6, South Cherry,	Improved herbaceous plant density 3-5 years after juniper-thinning treatments; House and Olligar key areas are	Remains or improves to fair watershed condition with improved grazing management; remains stable at fair condition	Yes; juniper thinning projects that are proposed will lead to improved watershed and forage

Cherry - Frio Allotment			
Pastures and Key Areas	**Vegetation Condition**	**Watershed Condition/Groundcover**	**Standards Being Met?**
Dinner, Dump	dominated by Hibe and may take longer to improve in species diversity.	with occurrence of juniper-thinning activities/30% EGC met 3-5 years after juniper-thinning and improved management.	conditions; may take longer than 20 years to improve veg. condition in Hibe areas.

Riparian Areas/Water Quality

Affected Environment

Most of the allotment is within the Cherry Creek 5th code watershed. Cherry Creek originates below the Mogollon Rim and flows south approximately 52 miles to its confluence with the Salt River. Twelve miles of Cherry Creek, mostly perennial, flow through five pastures. Major tributaries to Cherry Creek within the allotment are Turkey, Ash, PB, China Spring, Horse Tank, and Horse Camp Creeks, and Graveyard, Deadman and Fourmile Canyons.

A small portion of the allotment lies within the Spring Creek 5th code watershed. Key tributaries to Spring Creek within the allotment include the headwaters of Dinner Creek, Peters Corral, Sevenmile, and Bryant Canyons. Spring Creek, which lies outside the allotment, originates at the confluence of Dinner Creek and Sevenmile Canyon and flows northwest approximately 13 miles to its confluence with Tonto Creek.

Historic and on-going livestock grazing, roads, mining, fire suppression, city and housing development, and sand and gravel operations have impacted the watershed that includes the Cherry Creek/Frio Allotment. Many of the uplands surrounding Young are dissected by deep gullies, attesting to poor watershed condition.

Poor watershed conditions indirectly affect stream channels by producing higher flood flows and lower base flows. The impacts listed above have also directly affected stream channels. These direct and indirect impacts have resulted in loss of floodplains, eroding streambanks, wide and shallow channels with accumulation of fine materials, sparse vegetation, and little regeneration. As a result, most of the streams on the allotment are in impaired or unstable condition.

Riparian areas within the project area have all been directly and/or indirectly impacted by historic and recent livestock grazing, increasing use of riparian areas by wildlife, roads, sand and gravel operations upstream, wildfire, recreational activities and drought. The existing condition of the major stream channels and riparian areas within the allotment, as well as sources of data, are discussed fully in the Specialist Report (PR V1 T18, V2 T24, and V3 T9).

Some stream reaches were rated using a condition assessment developed on the Tonto National Forest (Mason and Johnson 1999). Condition assessment is based on stream channel stability. Channel stability is defined as the ability of a stream to carry the water and sediment of its watershed while maintaining its dimension, pattern, and profile, without aggrading or degrading, over time and in the present climate (Rosgen 1996). The three condition rating classes are stable, impaired, or unstable. Parameters used to assess stability include depositional pattern, stream bank vegetative cover (Thompson et al. 1998), stream channel width/depth ratio, channel stability rating (Pfankuch 1975), and bank erosion hazard index (Rosgen 1996).

Key Reaches

The discussion of existing and desired conditions is limited to stream channels and riparian areas that have the potential to improve within a relatively short time period (10 years). These areas are called key reaches. Similar to upland key areas (Interagency Technical Team 1996), key reaches are stream channels/ springs/ riparian areas that are representative, responsive to changes in management, accessible to livestock, and contain key species. Key reaches are synonymous with designated monitoring areas (DMA's) defined by Burton, Cowley and Smith (2007) as the location where implementation and effectiveness monitoring occurs.

Based on existing information, eight riparian areas in six pastures (Table 14) were selected as key reaches for the Cherry-Frio Canyon Allotment from the 34+ miles of stream channels. Key reaches are selected by the interdisciplinary team for the purpose of describing desired conditions and developing management objectives for riparian areas.

Existing Condition of Key Reaches

Existing and desired conditions of the eight key reaches are described in the following sections. The existing condition of other stream reaches on the Cherry Creek/Frio Canyon Allotment are described in Riparian Specialist report and PR V2 T24.

Table 14. List of key reaches by pasture within the Cherry - Frio Canyon Allotment.

Pasture	Key Reaches
Ridge	Cherry Creek
	Turkey Creek
Olligar	Ash Creek
South Cherry	Cherry Creek
Dinner	Dinner Creek
	Sevenmile Canyon
Cherry Holding	Cherry Creek
House	Cherry Creek

Cherry Creek

Ridge Pasture. About two miles of Cherry Creek flow through the Ridge Pasture on National Forest and private lands. About one-half mile of unfenced, private land is interspersed with

National Forest Lands in the center of the pasture. This half-mile reach is located on a wide valley bottom. The stream channel is intermittent, with extensive cobble bars and scattered riparian vegetation. Above and below the private land, Cherry Creek flows through canyons on National Forest lands. The channel is perennial and supports a broadleaf deciduous riparian forest. An old non-system road has been re-established from the private property north through the canyon. Sections of it lie within 10 feet of the channel and there are numerous channel crossings. Cherry Creek and its tributary, Turkey Creek (see Turkey Creek below), provide livestock water in this pasture.

Information for Cherry Creek in the Ridge Pasture is provided by utilization monitoring above and/or below the private land in 1998, 1999, 2002, 2007 and 2009. Photopoints also provide information for 1998 and 1999. This information is discussed below for Cherry Creek above and below the private land. The interdisciplinary team visited both upper and lower Cherry Creek in 2009. In the middle of the pasture, on Forest Service and private land, the stream channel is wide and braided where the valley bottom is wide and narrows to a single thread "F" type channel, or "C" type where the floodplain is wider, in the canyon sections. Typically, the terraces support large, mature and old trees dominated by sycamore with Fremont cottonwood, Arizona alder, velvet ash, red willow, boxelder and walnut. Sapling and pole – sized trees of these species dominate the greenline and floodplain. Seedlings are less common, and over the last decade, seasonal utilization has ranged from low to high. Elk browsing has also been noted. The herbaceous component has low species diversity and cover. The District staff observed loss of riparian vegetation following the highest recorded peak flows in 2008 (Table 15).

The upper reach of Cherry Creek above the private land below the canyon was monitored in 1999 and re-visited in 2009. The terraces are dominated by large sycamore. The greenline was dominated by alder with seedlings of ash, willow, cottonwood and boxelder in lower densities. American bulrush was the only herbaceous species noted. It had very low cover. This site was revisited in May 2009. The quarter mile of cobble-dominated channel and floodplains just above the private land is in transition from the wide, shallow, braided section in the broad valley to the narrower, single channel in the upstream canyon. This short reach is slightly downcut. At the upper end of this reach is a headcut. Above the headcut, the channel is vertically stable, but wide and shallow. All native tree species are present. Sycamore, alder and ash dominate the vegetation, especially in the canyon reach. Cottonwood and willow are more common in the wider valley bottom just above the private land. The understory shrub and herbaceous vegetation component generally has low species diversity and cover. Bermuda grass, an exotic, naturalized grass species, is the most common herbaceous species. There are large patches of Bermuda binding fine sediments at the greenline and streambanks. Native grasses and forbs are present but have very low cover.

In the lower reach of Cherry Creek below the private land, riparian vegetation utilization has been monitored south of the private land near the canyon reach where herbaceous vegetation is present in 1998, 1999, and 2002. Herbaceous species monitored in 1998 included deergrass, American bulrush and spikerush. In 1999, only bulrush and spike rush were monitored. Red willow was the most commonly browsed riparian tree seedling. Use was moderate to high in the first two years. Lower use in 2002 reflects decreased numbers due to drought. In 2007, use was monitored just above this reach closer to the Turkey Creek confluence. Low numbers, timing of

use and herd management, resulted in light use in 2007. Few seedlings were present. Sapling size alder and sycamore dominated the riparian tree component, with fewer cottonwood, ash, and willow. Most of the palatable seedlings were heavily hedged ash, apparently browsed by elk. Elk use had been noted in previous years. The understory at this reach monitored in 2007 had low herbaceous species diversity and cover. Herbaceous utilization was not monitored because of inadequate sample size. A cross section done in this reach indicates the channel is an "F" type (Rosgen 1996) in impaired condition due to a high width/depth ratio and low vegetative cover.

South Cherry Pasture. Cherry Creek flows seven miles north to south through a steep-walled canyon in the center of this pasture. Arizona alder, sycamore and velvet ash dominate the greenline. Fremont cottonwood and red willow occur less frequently. Field inspections, utilization monitoring reports and photopoints document low cover and diversity in the herbaceous component along Cherry Creek (see project record). Cherry Creek is accessible by vehicles only by Forest Road 2812 at the south end of the pasture near its confluence of China Spring Creek. This road also serves as one of the main access routes for livestock to Cherry Creek. Once in the riparian area it is relatively easy for livestock to travel up and downstream.

The interdisciplinary team visited the South Cherry Pasture in 2009 to evaluate recent cattle use and the stream channel and riparian vegetation following a large flood that occurred in January 2008 (see Table 15). Photographs (see PR V1 T18, V2 T24, and V3 T9) document some loss of vegetation, bank erosion, channel relocation, and large areas of unsorted sediment deposition. The reach below China Spring Creek is in a canyon and overlies bedrock. Downstream, the valley widens and the channel becomes wide and shallow, and occasionally braided. Sediments are unsorted and ranged in size from sands to large cobble size. There are small pockets of newly deposited silts, and remnants of silt dominated streambanks held by herbaceous, emergent species (bulrush, Bermuda grass, water bent grass, rushes). The extent of these areas seems greatly diminished from that visible in 1990's photographs prior to the flood events that occurred in the 2000's.

The interdisciplinary team field visit was also scheduled to observe the cattle use scheduled for the spring of 2009. Working with the District Range Conservationist, the ranch manager had reconstructed an old fence just north of Forest Road 2812 to restrict cattle access into Cherry Creek. Cattle were allowed to drift down Forest Road 203 from the Board Tree Saddle. Most of the cattle use was at the north end of the pasture. A few cattle were able to access Cherry Creek in the 2009 grazing season, however, overall use of riparian vegetation was very light.

Cherry Creek and springs located in tributaries to Cherry Creek located along Forest Road 203 are the primary sources of livestock water. Horse Mountain Tank is essentially the only accessible developed water source. Grazing impacts to riparian areas were monitored at the only site accessible to vehicles at the southern end of the pasture in 1998, 1999 and 2002. Cattle trails and manure were evident throughout the Cherry Creek riparian area, especially on the adjacent terraces. The pasture has been in non-use since 2002.

Cherry Holding Pasture. There is over a mile of Cherry Creek situated in this pasture. The valley bottom is very wide, with a narrow, perennial channel, greenline, wide cobble bars on

either side of the channel and overflow channels. Narrow-leaf and Fremont cottonwood, red willow, velvet ash, Arizona sycamore and alder are present. Seedlings are few and described in 1998 – 2002 monitoring reports as heavily used and hedged. Herbaceous species cover and diversity is low, but 2002 photos show a vegetated greenline with herbaceous species and riparian tree seedlings. Cherry Creek provides the main source of livestock water in this pasture except for Henry Tank a mile west of Cherry Creek. There is little recent data regarding livestock utilization, although monitoring in 2006 reports an upward trend following a three-year period of non-use. This site should be assessed to determine if adequate density of herbacecous plants and seedlings are present so that compliance with riparian utilization guidelines could serve as the basis for maintaining and/or improving riparian area vegetation.

House Pasture. About 1.5 miles of Cherry Creek flows through the House Pasture. About a half mile of this reach is on National Forest lands. There is one reliable stock tank in this pasture (Thiel 2007). There is no data for this pasture. This riparian area should be evaluated for riparian potential and use as a key reach. The other mile is on private land, and from aerial photos, appears to be intermittent. The lower half-mile of Crouch Creek above its confluence with Cherry Creek also lies on private land.

Turkey Creek

Ridge Pasture. Turkey Creek extends over three miles in the Ridge Pasture. Shown as perennial on the National Wetland Inventory (NWI) maps, it is more correctly described as interrupted perennial. Aerial photography shows a continuous band of riparian vegetation over its length, with varying densities of canopy cover. Similar to Cherry Creek, utilization monitoring in recent years has documented very high use of woody species and a lack of herbaceous species. Many of the seedlings and saplings were heavily hedged. A field inspection in 2007 recorded a dramatic response of velvet ash seedlings and the herbaceous understory to a three year non-use period. The channel is a "B" type in slightly impaired condition due to fine sediment filling the pools.

Ash Creek

Olligar Pasture. About four miles of Ash Creek flow through the Olligar Pasture. It is correctly delineated on the NWI maps as intermittent with riparian vegetation. The channel is mostly an unstable "F" type channel, dominated by large cobble, boulders and some bedrock. Dominant overstory species include Arizona sycamore and alder, and velvet ash. A few Fremont cottonwood and red willows are present, with an understory of scattered seep willow, false indigo and deergrass.

Monitoring information on livestock impacts is limited, available only for 1998 and 2000. Some areas of concentrated cattle use were documented, but this use may not be typical in the steeper canyon sections that occupy about half of Ash Creek's length. Density and cover of deergrass plants in monitored transects was very low. There are several functional tanks located in the uplands that provide livestock water in addition to Ash Creek.

Sevenmile Canyon

Dinner Pasture. A 1.5-mile reach of Sevenmile Canyon was surveyed below Sparky Spring in the Dinner Pasture. Sparky Spring is a perennial, developed spring that supports perennial flow in a portion of the stream. This perennial reach is a "B" type in slightly impaired condition. Cobbles and boulders stabilize the channel. There is a large amount of finer sediment being deposited in the channel and some bank erosion.

Downstream, the channel becomes intermittent. It is an "F" type in impaired condition, with more bank erosion and less vegetation than upstream. Below the private boundary fence, the channel has the same characteristics as this intermittent reach, with high deergrass canopy cover and a building floodplain.

Dinner Creek

Dinner Pasture. One reach of Dinner Creek was surveyed in 1999. It is an intermittent reach, with an "F" type channel. The overstory is a mixed stand of oak, pine and juniper, with some narrowleaf cottonwood and red willow. There were few seedlings of cottonwood or willow, but deergrass plants were common.

Stream Flow

The US Geological Survey has been monitoring a stream gage on Cherry Creek upstream of Devils Chasm on the Center Mountain Allotment since 1965. This gage, named Cherry Creek near Globe, AZ, is the nearest, functioning stream gage to the allotment. The drainage area above the gage is 200 square miles (USGS 2009). Peak stream flows for the last 10 water years are listed in Table 15 below (a water year begins October 1 and ends September 30). In the last ten years, Cherry Creek has seen the highest and lowest flows since the monitoring began. Flows throughout the 1980s and early 1990s were markedly higher until 1996 when the drought began and flows have remained low with only a couple exceptions (USGS 2009). The flow of 5400 in 2005 is equivalent to the five year recurrence interval (see table 15).

Water Quality

The Arizona Department of Environmental Quality (ADEQ) evaluates the water quality status of waters within the state in a Nonpoint Source Assessment Report (2008). Cherry Creek is the only drainage within the allotment that has been evaluated for the 2008 report. The evaluated reach extends from Fourmile Canyon to the Salt River. Water quality standards for Cherry Creek are intended to protect the designated uses of aquatic and wildlife-cold water fisheries (A&Wc), full body contact recreation (FBC), fish consumption (FC), agricultural irrigation (AgI), and agricultural livestock watering (AgL). Samples collected at two sites indicate Cherry Creek is "Attaining all uses".

Designated uses for non-ephemeral, unlisted tributaries above 5000 feet are aquatic and wildlife-cold water fisheries (A&Wc), fish consumption (FC), and full body contact recreation (FBC). Designated uses for non-ephemeral, unlisted tributaries below 5000 feet are aquatic and wildlife-warm water fisheries (A&Ww), fish consumption (FC), and full body contact recreation (FBC).

Designated uses for ephemeral, unlisted tributaries are aquatic and wildlife-ephemeral water fisheries (A&We) and partial body contact recreation (PBC).

Table 15. Ten years of peak flows at the Cherry Creek near Globe, AZ gage

Water Year	Date	Stream Flow (cfs)
1999	July 15, 1999	836
2000	August 9, 2000	323
2001	October 28, 2000	747
2002	July 18, 2002	24
2003	March 17, 2003	481
2004	July 16, 2004	629
2005	January 4, 2005	5400
2006	July 28, 2006	545
2007	August 4, 2007	1770
2008	January 28, 2008	10,300

Environmental Consequences

Criteria used to evaluate alternatives. The criteria used to evaluate alternatives will be based on the likelihood of meeting management objectives, standards/guidelines, and desired conditions described in the affected environment. The alternatives are contrasted based on the likelihood of the riparian vegetation and stream channels in the key reaches attaining the short and long-term desired conditions described in the Affected Environment. Short-term desired conditions limit the annual impacts of livestock grazing. Long-term desired conditions are measured through effectiveness monitoring within the key reaches. Although the attainment of Tonto Forest Plan desired conditions and proper functioning condition (Barrett et al, 1993) is the long-term goal for riparian areas, it is unlikely to occur within 10 years. It is reasonable to expect re-establishment and initial recovery of riparian vegetation within this period, especially where surface or sub-surface water is available and native plants occur.

Alternative 1 (No Grazing)

Direct Effects. Stream channel and riparian area recovery are considered optimal when the direct effects of livestock grazing are eliminated (Clary and Kruse 2003). As stated yin the cumulative effects, the potential for and rate of recovery are variable and difficult to predict. The most rapid recovery can be expected in small watersheds with perennial surface or subsurface flow, an existing source of native riparian herbaceous and woody vegetation, and availability of fine sediments. Recovery of larger watersheds and stream channels usually requires a much longer time frame.

Indirect Effects. Soils within the allotment are mostly in satisfactory condition. For those areas with soils in impaired and unsatisfactory condition, the No Grazing Alternative usually provides the most rapid increase of upland vegetative cover, shifts in species diversity, and improvement of soil condition.

Cumulative Effects. As stated in the direct effects, potential for recovery and rate of recovery will vary by key reach. With increasing watershed size, the cumulative effects of historic, recent and on-going management activities, along with altered disturbance regimes (fire and flood) make it difficult to predict whether eliminating the direct effects of cattle grazing will allow riparian vegetation recovery. Currently, there are no reaches along Cherry Creek in the canyon section where grazing has been eliminated for a long enough period of time to resolve this question. However, if there is potential for recovery of riparian vegetation, eliminating the direct and indirect effects of livestock grazing should allow the most rapid rates of recovery.

Consistency with the Riparian Area Management Direction. The No Grazing Alternative eliminates the direct and indirect effects of cattle grazing to recovering stream channels, riparian areas and watersheds within the Cherry-Frio Allotment. This alternative meets the intent of Forest Plan and Forest Service Handbook direction to protect, manage, and restore riparian areas.

Alternative 2 (Proposed Action)

Direct Effects. Riparian areas, with their high species diversity and structural complexity, provide critical terrestrial and aquatic habitat to wildlife species from adjacent upland and riparian area environments. Cattle tend to congregate in many riparian areas. They favor riparian forage and water availability, shade in warm months, and gentle topography. Excessive grazing, trampling, and trailing impacts can destabilize and break down stream banks, cause mechanical damage to shrubs and small trees, reduce or eliminate woody seedlings and saplings, expose soils, eliminate or shift native herbaceous species to weedy or exotic species with reduced root systems, and cause widening or incision of stream channels (Trimble and Mendel 1995, Clary and Kruse 2003). These changes may lead to loss of stream stability and function (Rosgen 1996). Livestock grazing practices can directly affect the following habitat features of aquatic species: stream channel profile, stream bank stability, streamside vegetation, channel bottom embeddedness, stream sediments and stream temperature. Maintaining native obligate riparian plants is extremely important to many streams because of their resistance to the erosive energy of flowing water (Clary and Kruse 2003, Corenblit, Steiger, Gurnell, and Naiman 2009). Herbaceous riparian vegetation in particular is important to stabilizing stream bank, point bar and floodplain deposits, critical to the channel restoration process (Clary and Kruse 2003). One of the most important factors influencing riparian conditions is utilization (Mosley et al 1999, Clary and Kruse 2003).

The proposed action recommends mitigating the direct effects of livestock grazing in key reaches by adhering to the riparian utilization guidelines. This mitigation measure should be effective for the following key reaches: Ash Creek, Dinner Creek, Sevenmile Canyon, Turkey Creek, and Cherry Creek in the Cherry Holding and House Pastures. If riparian area utilization guidelines are followed and cattle are moved when use guidelines are met, riparian areas and stream channel condition should be maintained or continue to improve.

The riparian utilization guidelines (McBride and Grove 2002) were intended to maintain or improve the condition of riparian vegetation by conservative use of key riparian species and ages classes. It is inappropriate to base riparian area management on utilization of key species and age classes that are absent or rare. The riparian utilization protocol establishes criteria for the

required number of samples and density of sampled plants in a stream reach. If these criteria cannot be met, the riparian utilization guidelines are not an applicable tool for recovering riparian vegetation. Clary and Webster (1989) recommend that grazing riparian areas in early seral condition be deferred until riparian vegetation re-establishes and ecological status improves.

Riparian tree seedlings may be present in both the South Cherry and Ridge Pastures, but the riparian herbaceous component has very low cover and/or density. Riparian vegetation has not re-established in Cherry Creek as quickly as it has in Turkey Creek and other lower order (smaller) streams following the removal of livestock in 2002 from the Cherry Frio Allotment. However, Cherry Creek should have the potential to support riparian tree seedlings and an herbaceous understory, based on review of the existing monitoring data and permanent photo points from the Cherry-Frio and Center Mountain Allotments (see project record). Cherry Creek appears to have been affected by a record peak flow that occurred in January 2008.

The South Cherry Pasture occupies about one-fourth of the allotment's total acreage. It's a 10,000 acre pasture, with 35% of its acres (3,535 acres) on slopes over 60%. About 40% (4,012 acres) of the pasture is on 30-60% slopes. Only 2,522 acres are on 0 to 30% slopes. Horse Mountain Tank is the only relatively accessible developed source of water in the pasture. Most of the livestock water is provided by Cherry Creek and tributaries to Cherry Creek where Forest Road 203 crosses them. Historically, cattle have congregated along the road and on Cherry Creek. Use monitoring (1998-2001) on Cherry Creek shows high use on palatable species. During this time, the pasture was used between October 1 and May 31, similar to the current proposal.

The proposed action recommends maintaining a fence that is likely to prevent most access to Cherry Creek and actively herding livestock out of the area that defy natural boundaries for a minimum of three years. After this time, cattle may be allowed to access Cherry Creek during the period of time when riparian trees and shrubs have lost their leaves and are usually not browsed. This should eliminate the direct effects of livestock impacts on riparian tree seedlings, achieving desired conditions for woody riparian species.

This mitigation measure does not address use of herbaceous riparian plants. The recovery of herbaceous vegetation is more important than woody vegetation for stream channel recovery. Residual herbaceous vegetation plays a critical role in building and maintaining streambanks, especially during winter floods. Grazing herbaceous vegetation in the fall is more likely to have an adverse effect than grazing in the spring. In the spring, even if grazed, the emergents (rushes, bulrushes, and horsetails) are actively growing and the winter floods have generally already occurred. (However, these plants, very palatable to cattle, generally occur on fine sediments at the greenline or on streambanks. These features are highly susceptible to physical alteration.) If the herbaceous vegetation senesces (dies and lays down) at the same time woody species drop their leaves, the direct effects to herbaceous vegetation could be successfully mitigated, allowing recovery of herbaceous vegetation. If riparian herbaceous emergents are grazed during this period, especially in the fall, herbaceous plant recovery is not likely.

Cherry Creek has been, and remains, the primary source of water in the Ridge Pasture. Further complicating management of this pasture, is that at least a half mile of Cherry Creek in the middle of the pasture lies on private land. This reach of Cherry Creek lies in a wide valley and probably has the highest cattle use. Cherry Creek to the north and south of the private land lies in Forest Service owned canyons. Cattle are less likely to access Cherry Creek at either end of the pasture. A new user created road along the length of the northern canyon reach of Cherry Creek now connects the Ridge and Cherry Holding Pastures. This road provides a travel route and increases the accessibility livestock have to the riparian areas in the north part of the Ridge Pasture.

Currently, the riparian vegetation condition in the Ridge Pasture is similar to that in the South Cherry Pasture. There are few tree seedlings and little herbaceous vegetation. Even though the pasture has not been grazed in recent years, signs of recovery are limited. Cattle grazed the Ridge Pasture in 2007. No cattle use was observed at the south end of the pasture. However, high elk use was observed. Riparian tree seedlings were hedged and Bermuda banks were trampled. The record high flow of January 2008 also adversely affected the stream and riparian vegetation.

Monitoring of cattle impacts may prompt construction of a fence along the west side of Cherry Creek, splitting the Ridge Pasture. Cherry Creek will occur in the east pasture. The proposed action includes allowing livestock grazing in this pasture annually or in alternate years. The proposed action states that use would be limited by complying with the riparian utilization guidelines. However, the riparian utilization guidelines may not be an applicable management tool for recovering riparian vegetation for a number of years. Grazing before riparian plants re-establish may slow riparian area recovery.

Construction of the five road stock tanks will not directly affect riparian areas. These tanks will be constructed to collect water from roads.

Indirect Effects. The soils within the allotment are mostly in satisfactory condition. Grazing of uplands with impaired and unsatisfactory condition soils may slow the rates of upland recovery, indirectly slowing the rate of riparian area and stream channel recovery. If management prescriptions are followed and cattle are moved when use guidelines are met, the negative, indirect effects of grazing will be minimized.

The indirect effects of the five road stock tanks would be to draw the cattle away from riparian areas, thereby helping to speed recovery of riparian vegetation and channel features.

Cumulative Effects. For Cherry Creek in the South Cherry and Ridge Pastures, it is possible that the cumulative effects of watershed condition may preclude achievement of desired conditions even if livestock grazing is excluded from these pastures. However, it seems likely that there is potential for recovery of riparian vegetation.

Consistency with the Tonto National Forest Plan. This alternative will meet the intent of Forest Plan and Forest Service Handbook direction to protect, manage, and restore riparian areas if the described mitigation measures are successful. The mitigation measures have a high probability

of success for most of the key reaches in the Cherry-Frio Allotment. Recovery of riparian herbaceous species in the South Cherry Pasture is likely to be successful only if grazing occurs after key riparian herbaceous species have senesced. It is difficult to predict the rate of riparian herbaceous recovery given the size and existing condition of the Cherry Creek watershed.

Environmental effects of juniper treatments

The effect of fire and its role in riparian ecosystem dynamics is not well understood (Baker 1990). Prescribed fire is rarely used in the management of these systems. However some effects of prescribed fire can be derived from experience with wildfires in riparian systems (DeBano and Neary 1996).

Direct Effects. Direct effects consist mainly of damage to the vegetation (trees, shrubs, and grasses) and partial consumption of the underlying litter layer. The severity of damage depends largely on the intensity of the fire. Wildfires have killed mature cottonwood, sycamore, velvet ash and walnut (Bock and Bock 1990). Intense fires can cause severe damage to plant cover while low intensity cool-burning prescribed fires may have minimal effects.

Indirect Effects. Both wildfires and prescribed fires can have indirect effects on the riparian system by changing the fluvial processes on a watershed. Intense wildfires can have substantial impacts on storm flow, erosion, sedimentation, and water quality. Cool burning prescribed fires may have little impact on these factors. Increases in peak flows from degraded watershed conditions following a fire (particularly intense wildfires) can have profound influences on riparian biota by sediment deposition in the channel and floodplain, and alteration of channel geomorphic characteristics from scouring and sediment transport. Increases in annual flood peaks of greater than 20 percent can lead to channel instability and degradation, and aquatic and riparian habitat deterioration (DeBano and Neary 1996). Watersheds in the Cherry Creek-Frio Canyon Allotment analysis area are prone to large peak flow responses due to some steep topography and climate (monsoon weather conditions and a close source of moist tropical air).

The net effect of a prescribed burn on peak flows that could potentially affect riparian ecosystems is dependent on the type of fire, size of area burned within a watershed, climate, watershed and soil characteristics, and the severity of the fire (DeBano and Neary 1996). Potential impacts are also dependent on the stream type affected by the peak flows and the condition and health of the channel and riparian vegetation. Rosgen (1996) "F" type channels, such as reaches of Cherry Creek, have high bank erosion rates which can be accelerated by increases in peak flows. The more naturally stable "A" and "B" channel type reaches would be less likely to be impacted by increases in peak flows. Low intensity prescribed burns are likely to have little impact on peak flows and other water resource conditions particularly if Best Management Practices (BMPs) are implemented.

Other indirect effects of wildfire in riparian zones include increases in stream temperature from reduced shading, reduced dissolved oxygen concentration from increased stream temperature, alterations in the quantity and quality of organic matter inputs to streams, and aquatic macroinvertebrate population changes.

Riparian systems on the Tonto National Forest serve an important function as buffer strips which capture sediment and nutrients from adjacent uplands, thereby preventing them from entering streams. Low intensity fires that do not kill streamside riparian vegetation can be used throughout the riparian area without creating substantial damage (Neary et al 1996).

Indirect effects from other juniper treatments such as cutting with chainsaws, pushing with dozers, fuelwood sales, or hydraulic tree shears can vary (see Soils Environmental Consequences). These treatments can cause sedimentation to stream channels in the short term before vegetation has a chance to recover. Treatments that are successful in improving ground cover would benefit stream channels and riparian areas indirectly by slowing runoff which would reduce scouring peak flows and erosion. Treatments that remove slash or decrease ground cover in the long term could lead to an increase in peak flows that would scour stream channels and riparian areas.

Alternative 1 - No Action/No Grazing. No range improvements or burning are proposed.

Direct Effects. There would be no direct risk to riparian areas from prescribed burning or cutting, though due to a buildup of fuels, the potential for a wildfire to impact riparian areas would be increased under this alternative.

Indirect Effects. The risk of short term impacts to water quality from introduction of ash or removal of vegetative cover from prescribed burning or cutting would not exist under this alternative.

Potential for substantial watershed impacts, including severe flooding, that could potentially result from an increased likelihood of catastrophic wildfires by permitting fuels to build up would be greater than for the proposed action.

Alternative 2 –Proposed Action. Possible juniper treatments include: chainsaws, pushing with dozer, fuelwood sales, hydraulic tree shear, and/or prescribed fire.

Direct Effects. For prescribed fire, planned ignitions will not occur in riparian areas. If low intensity fire enters a riparian area, it should have little effect other than to thin grasses and seedlings. Successful implementation of prescribed burns should have little impact on water quality.

Cutting of juniper will not occur in riparian areas, therefore there will be no direct effects from these juniper treatments.

Indirect Effects. Impacts that could result from prescribed burns include increased erosion and sedimentation, and increased peak flows. Impacts should be short lived due to recruitment of herbaceous vegetation.

Cutting of juniper where slash is left on the ground and ground cover is improved would decrease erosion and sedimentation by causing a decrease in peak flows. If all ground

cover is removed, there would be an increase in erosion and sedimentation, and increased peak flows. Impacts should be short lived due to recruitment of herbaceous vegetation.

Cumulative Effects. If BMPs are successful, prescribed fire and juniper thinning should produce minimal negative cumulative effects and allow for an increase in herbaceous vegetation in the uplands, allowing riparian areas and stream channels to move toward meeting desired conditions at a faster rate than the No Action alternative.

Recreation, Lands, and Special Uses

Affected Environment

Recreation

The Cherry Creek-Frio Canyon Allotments have several dispersed recreation sites, but no developed campgrounds. The analysis area has no major recreation facilities in the area.

The implementation of the Travel Management Rule will likely sanction Off-Highway Vehicles (OHV) motorized trails within the allotment area. This will give rise to more recreational OHV use on those trails designated to be in the forest service trail system. The Travel Management Rule process is expected to produce a Motorized Use Map by 2009. Once the process is completed, staging areas and possibly campgrounds for OHV use may be constructed.

The Tonto National Forest Land and Resource Management Plan (LRMP), 1985, indicates three management prescriptions for the Cherry Creek-Frio Canyon Allotments. The LRMP describes the recreation opportunity spectrum classes (ROS) for each of the management prescription areas (Table 16).

The LRMP direction for this area is to manage for a variety of renewable resource outputs including recreational opportunities. The LRMP describes the predominant recreation opportunity spectrum (ROS) classes for this area to be semi-primitive motorized, and roaded natural with a small percentage rural, mainly around developed recreation sites.

Special Uses/Lands

Lands
Cherry Creek allotment – There are six contiguous parcels of private in holdings. Frio Canyon allotment – There are no private in holdings within this allotment. The northern boundary of this allotment abuts the private lands in the town of Young.

The Desert to Tall Pine Scenic Byway (HWY 288) does go through the center of the allotment. Mitigation measures for 3,250 acres of juniper treatment should include buffer strips along the road to reduce impacts to visual quality objectives (VQO).

Table 16. Recreation based upon Management Areas and ROS Class

Management Areas	Management Emphasis	Recreational Opportunity Class	% of Management Area	Visual Quality Objective	% of Management Area
5A	Wilderness Non-Motorized	Wilderness Opportunity Spectrum	100	Preservation	100
5D	Recreation Opportunity	Semi-Primitive	23	Retention	4
		Semi-Primitive Motorized	40	Partial Retention	47
		Roaded Natural	36	Modification	40
		Urban	1	Maximum Modification	9
5G	Dispersed Recreation	Semi-Primitive	41	Retention	5
		Semi-Primitive Motorized	46	Partial Retention	20
		Roaded Natural	12	Modification	30
		Urban	1	Maximum Modification	45

Mining

Mining is governed by the Mining Law of 1872, which would permit exploration and development, but only after validation of the mineral claim, environmental analysis, and approval of operating plans.

Cherry Creek allotment - There are seven abandoned mines in the allotment area (AML 1997). Some of these workings may have been for uranium and others for asbestos. The presence of the mines and the surge in uranium prices have sparked renewed interest in filing claims in other parts of the Pleasant Valley Ranger District.

Frio Canyon allotment – There is no recorded mining activity within this allotment.

Special Management Areas

Special management areas represent congressionally designated areas, areas subject to court ordered management protection, and areas governed by agency rules published in the federal register (Figure 3).

Wilderness. The analysis area contains a portion of the Sierra Ancha Wilderness (designated by the Wilderness Act of 1964). The Sierra Ancha Wilderness receives moderate visitation to its western side, i.e. Workman Creek area, mostly during the summer and fall. The eastern side of the Sierra Ancha Wilderness receives considerable visitation to the ruins along the FR 203 from October to May.

Approximately 1,247 acres of the Cherry Creek allotment lies within the northeast portion of the Sierra Ancha Wilderness. The Wilderness Act of 1964, stated in Section 4(d)(4)(2) "…the

grazing of livestock , where established prior to September 3, 1964 shall be permitted to continue subject to such reasonable regulations as are deemed necessary by the Secretary of Agriculture." Grazing was addressed in the 1980 Colorado Wilderness Act, P.L. 96-560, as House Report 96-617, which was reissued in House Report 96-1126.

In 1990, the House reissued the grazing guidelines as House Report 101-405, Appendix A that accompanied the Arizona Desert Wilderness Act of 1990 (P.L. 101-628). These guidelines reaffirm the issuance of permits and the maintenance of facilities. Adjustments in livestock numbers should be made as a result of revisions in the normal grazing and land management planning and policy setting process. Occasional use of motorized equipment is authorized when no practical alternative exists. "The use of motorized equipment should be based on a rule of practical necessity and reasonableness."

Inventoried Roadless Areas. The purpose of the Roadless Rule was to establish prohibitions on road construction, road reconstruction, and timber harvesting in inventoried roadless areas on national forest system lands. The intent of this rule is to provide lasting protection for inventoried roadless areas within the National Forest System in the context of multiple-use management. The Roadless Conservation Rule was adopted by the US Forest Service on January 2, 2001.

Two roadless areas occur within the Cherry Creek allotment at the north end of the Sierra Ancha Wilderness. There are 7,484 acres of the Cherry Creek Roadless area and 1,077 acres of the Sierra Ancha Wilderness Contiguous area. A few pre-existing roads/trails occur in the inventoried roadless area, and are occasionally used by the permittee for allotment management activities. No new roads or trails are proposed.

Wild and Scenic Rivers (WSR). The analysis area contains two segments of the Cherry Creek that are considered potential for wild and scenic rivers in the *Preliminary Analysis of Eligibility and Classification for Wild/Scenic/Recreational River Designation (USDA, 1993).* At the request of the Arizona congressional delegation, the Forest Service conducted three studies of Arizona's free-flowing rivers, identifying those streams and river segments that satisfied the statutory requirements for inclusion in the Wild and Scenic Rivers System that they be free-flowing and that they possess at least one outstandingly remarkable value (ORV). ORVs can be scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. The Wild and Scenic Rivers Act (WSRA) required the Secretaries of Agriculture and Interior to conduct "specific studies and investigations" to discover rivers eligible for inclusion in the national wild and scenic river system (WSRS). A river is eligible for protection under the WSRA if it is free-flowing and possesses at least one of the outstandingly remarkable values set forth in the WSRA.

Cherry Creek - The segment 1-a, begins at the intersection of FR 329 and Cherry Creek to the intersection with Billy Lawrence Creek and Cherry Creek. This segment is 14.3 miles long. The classification it is being considered eligible for is wild (Figure 4).

Segment 1-b flows from the intersection with Billy Lawrence Creek to the northern boundary of the Ellison Ranch. This segment is 6.4 miles long. The classification it is being considered

Figure 3. Map of Special Management Areas

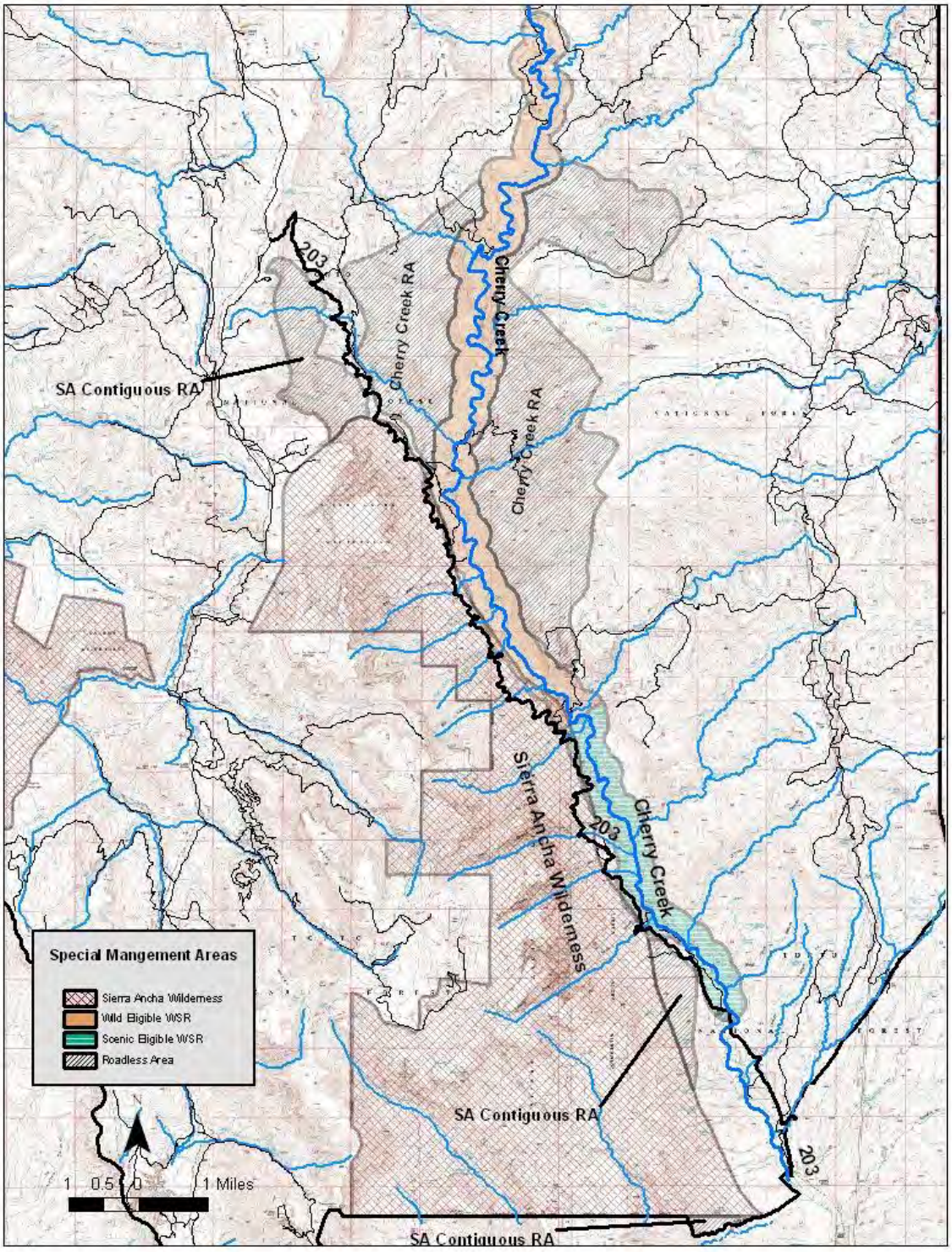
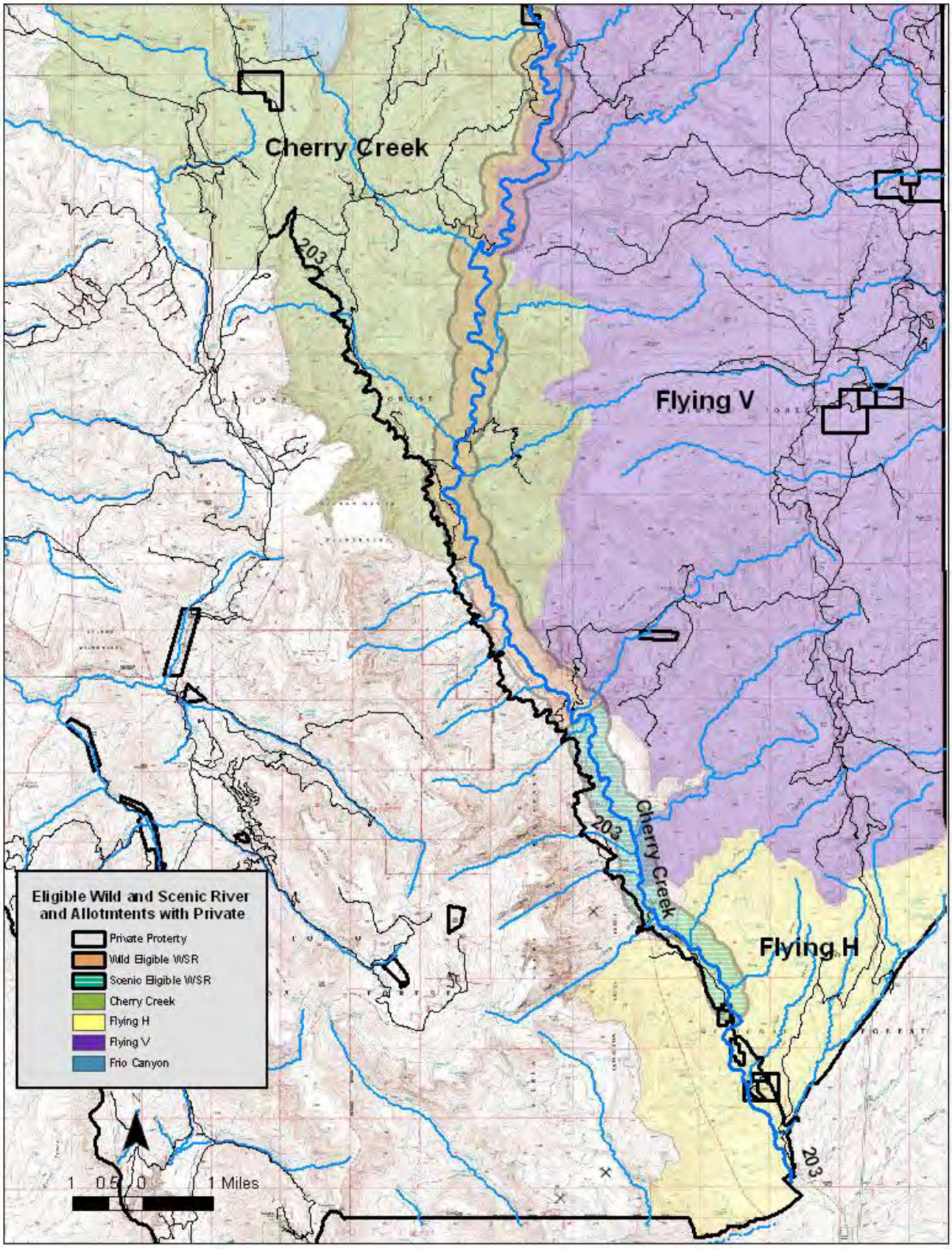


Figure 4. Eligible Wild and Scenic Rivers



eligible for is scenic. A buffer zone of ¼ mile from the bank is the normally prescribed corridor to be protected.

Cherry Creek is mostly perennial flow in this segment. Both segments are considered free-flowing and their outstandingly remarkable values (ORV) are scenic, fish, and wildlife.

Forest Service policy at FSH 1909.12, Chapter 8.12 states that management prescriptions for eligible rivers should provide the following protection:

1. "…free flowing characteristics cannot be modified."
2. "Outstandingly remarkable values (ORVs) must be protected, and to the extent practicable, enhanced."
3. "Management and development of the river and its corridor cannot be modified to the degree that eligibility or classification would be affected."

The proposed action will not affect Wild and Scenic eligibility.

Environmental Consequences

Recreation

All of the allotments are used by four wheel drive vehicles and off highway vehicles for recreation, touring, and hunting. Interaction with livestock is a probability, but is not necessarily a negative impact on the motorized public. There is a possibility of motorized recreationists harassing livestock.

Alternative 1 (No Action) would reduce the need to maintain the roads for transportation of cattle, and eliminate the presence of allotment managers in the field that often alert the Forest Service of erosion control and road maintenance.

Alternative 2 (Proposed Action) would maintain the status quo and ensure that effective reporting and advocacy for these remote roads continues.

Juniper Treatments*:* Juniper treatments would have a short term impact on the visual quality of the recreational experience in some instances; however the various juniper treatments would provide readily available fire wood to campers and the general public. The long term effects would be beneficial as the landscape would return to a more natural state; flats would open and increase the opportunity for the public to enjoy the experience of seeing wildlife and increased camping opportunities.

Special Management Areas

Wilderness: Cherry Creek allotment encompasses part of the Sierra Ancha Wilderness.

Alternative 1 (No Action) would allow the wilderness to seek a natural order. Tanks and fence lines would deteriorate and be removed through natural erosion and volunteer work forces using minimum requirements and primitive tools to accomplish restoration of the impacted resources.

Alternative 2 (Proposed Action) would have minimal effect on the Sierra Ancha Wilderness due to the allotment's small amount of acreage within the wilderness boundary. No tanks exist within the wilderness which precludes the need to use motorized or mechanized equipment in the wilderness.

Inventoried Roadless Areas:

Alternative 1 (No Action) There would be less need to access or maintain tanks or roads to tanks. This would require stabilization and reclamation efforts.

Alternative 2 (Proposed Action). Cherry Creek Allotment and the Flying H allotments contain Inventoried Roadless Areas. The Cherry Creek allotment contains a number of stock watering tanks that may require maintenance periodically. The infrequent maintenance of these tanks is allowed as a permitted action or with written authorization.

Wild and Scenic Rivers

Cherry Creek which flows through the Cherry Creek Allotment is an eligible Wild and Scenic River. The reaches begin at the FR 329 intersection with Cherry Creek and ends at the Ellison Ranch.

Alternative 1 (No Action) Roads accessing Cherry Creek would be eliminated or reduced as there would not be a need for them. This would likely reduce sediment and access to the creek for campers and others. Fisherpersons would still be able to access by hiking to the creek from the roadways.

Alternative 2 (Proposed Action). Monitoring of grazing impacts on riparian and other vegetation within the ¼ mile protected boundary may create the need for actions to protect the corridor from degradation. Mitigation measures incorporated into the design of the proposed action should also help ensure that Wild and Scenic eligibility will be maintained.

Mining

Both of the allotments have the potential to see mining exploration and possible development. Cherry Creek allotment has had extensive mining in the past 50 years with uranium and asbestos as the primary minerals sought.

Alternative 1 (No Action) will not likely have any effect on mining activity since mining is market driven and is only affected by the availability of minerals.

Alternative 2 The presence of livestock would be affected by a mine and hauling routes using large trucks. These would be dealt with through the yearly grazing annual operating instructions (AOI) and mitigated by the operations plan issued to the mining operation.

Lands

There are no proposed exchanges or major changes to ownership that would affect the private lands. Neither alternative will impact the private lands with the possible exception that alternative one would affect the ranches with the loss of grazing and associated loss of value. This could possibly cause a change of ownership and a change of use of the private lands. The effect could be either positive or negative depending on the future development of the lands.

The continued use for agriculture based economy may create a sustainable and predictable future for the lands contained within these allotments.

Alternative 1 (No Action) This alternative would impact the value of ranch lands and their tax base. This could lead to an exchange of landownership and possible development for dude ranches, hunting lodges, or community developments. Ranch lands that become vacant sometimes are purchased as part of land exchanges driven by congressional legislation for Forest Service lands wanted for mining expansion or community development. Ranch land often comes with water rights and water conveyances that would be detrimentally impacted if not maintained. At the same time, the presence of water would substantially increase the value of any land.

Alternative 2 Active ranching operations would continue to contribute to the Gila County tax base.

Heritage Resources

Affected Environment

The Cherry Creek/Frio Canyon Allotments contain more than several hundred known and hundreds, if not thousands of undocumented archaeological sites. These sites represent the occupation and agricultural modification and use of this area by people related to the Hohokam, Salado, and Anchan archaeological traditions over a period of 8,000 to 10,000 years. The allotments contain several known historic Apache sites. They also contain several historic sites reflecting use and occupation by Anglo and Hispanic ranchers, stockmen, miners and prospectors, the Civilian Conservation Corps, and the U.S. Forest Service.
Surveyed coverage within the allotments vary, but have involved fuelwood sales, grassland maintenance thinning (agra-axe) projects, fuels management primarily in the form of prescribed burns, range improvements, mineral exploration, recreation, maintenance of utility lines with associated vegetation removal, and engineering projects relating to emergency road repairs. These formal studies also include a Heritage Overview of the Piedmont of the sierra Ancha and the Cherry Creek Geographic area which encompasses a large portion of the lower part of the analysis area. The density of prehistoric sites within the surveyed areas has been variable, but has been very high in some areas. However, much of the analysis area remains unsurveyed. Known heritage properties include a variety of features, ranging from historic cabin sites to simple artifact scatters to large prehistoric habitation sites. The great majority of these features, however, are prehistoric consisting of collapsed stone masonry structures representing both permanent habitation as well as seasonal use, agricultural features such as checkdams and roasting pits for the processing of agave. There are also a large number of features associated

with a long history of cattle ranching, including a few historic homestead sites, and a few reflecting sporadic attempts at small-scale mining and ore processing. Many other prehistoric and historic archaeological sites are represented by nothing more than a scatter of artifacts on the ground surface.

No traditional cultural properties, native plant gathering areas or tribal sacred sites are currently known to be located within the allotment; however, no specific efforts to identify and inventory such areas have been made.

From the 1870s to the early 1920s, grazing of what would become the Cherry Creek - Frio Allotments was heavy and unregulated. This resulted in an initial reduction of vegetative cover, which may have affected heritage resources by soil loss, erosion, and trampling. Since the establishment of the allotment and implementation of grazing management, the known heritage resources inventoried within have stabilized and in many cases improved in condition as vegetative cover have returned.

Environmental Consequences

Impacts to heritage resources, especially archaeological sites, can be generally defined as anything that results in the removal of, displacement of, or damage to artifacts, features, and/or stratigraphic deposits of cultural material. In the case of heritage resources that are considered eligible for inclusion in the National Register of Historic Places, this can also include alterations of a property's setting or context. In the case of traditional cultural properties and sacred places, additional considerations may include alterations in the presence or availability of particular plant species. Heritage resources, depending on their nature and composition, are subject to several different types of impact from activities associated with grazing. Direct impacts from grazing are generally considered to be those resulting from concentrated livestock trampling or construction. Indirect impacts can include erosion and changes in vegetative composition and density that alter the setting and geographic context of sites.

Since site condition assessments for heritage resources are not available for any time prior to the introduction of European livestock species to the Southwest, some level of effect is assumed to have contributed to the current condition of all sites on the allotment. Given the non-renewable nature of heritage resources – particularly archaeological and historic sites – any portion of them that has been damaged or removed diminishes their cultural and scientific value permanently. The missing parts cannot be replaced and they cannot be bred in captivity and released into the wild to create more sites at locations of our convenience. Therefore, all effects to heritage resources are considered cumulative.

Effects Common To All Alternatives

Based on a history of observation and consultation with the State Historic Preservation Officer (SHPO), managed grazing is not considered in and of itself to constitute an effect on heritage resources when the grazing strategy is designed to match herd size with capacity and distribute livestock as evenly as possible across the allotment in order to avoid localized concentrations of animals and the resultant impacts to soils and vegetation associated with intense trampling.

Changes in grazing strategy are likewise not considered to have an effect provided that whatever new strategy is implemented does not alter these conditions. Adverse effects can be foreseen if a proposed grazing strategy were to introduce livestock into an area not known to have been grazed historically. They may also be expected when a grazing strategy proposes shifting to a more intensive system where higher permitted numbers or high intensity/short duration schedules would concentrate livestock into confined areas where either the absolute or relative stock density would cause a significant increase in surface disturbances due to trampling that would be above previous or existing levels. This could result in either direct or indirect adverse effects depending on the degree of trampling resulting from localized concentration and on the presence or absence of heritage resources in the concentration area, the nature of the resource and its resistance to such impacts, and the distance to other heritage sites. For the most part, these conditions tend to be associated with the construction of range improvements designed to provide water or to concentrate and hold stock for roundup or shipping. Thus, the greatest potential for direct adverse effects to heritage resources is associated with the construction of range improvements and the access roads needed to build and maintain them.

Mitigation

Mitigation of impacts to heritage resources for all alternatives is best accomplished by avoidance of these properties by the placement and construction of all range improvements. It can also be achieved by minimizing opportunities for the localized concentration of animals, improving distribution across the allotment and across each pasture, and by reducing the intensity of grazing for the allotment as a whole. In instances where a proposed improvement will involve any potential for ground disturbance, such as stock tanks and other water developments, a 100% archaeological survey will be conducted for areas which have no previous survey coverage, or have out-dated surveys which do not conform to current standards. Other, more specific mitigation requirements may be identified as each of these improvements is developed and a heritage inventory is made of their areas of potential effect. Such protective measures are developed in accordance with the goals of the project taking into account site vulnerability as well as the methods of project implementation. All inventoried heritage sites are treated as eligible for the National Register of Historic Places with the exception only of those that have been formally determined to be not eligible in consultation with SHPO. Archeological clearance must be approved with all necessary consultation with SHPO and the potentially interested Tribes prior to issuing any decision regarding the construction, modification, or removal of all improvements. This approach, based on long-term consultation with SHPO and on Region 3 policy as embodied in the *First Amended Programmatic Agreement Regarding Historic Property Protection and Responsibilities* between the USDA Forest Service Region 3, the State Historic Preservation Officers of Arizona, New Mexico, Texas, and Oklahoma, and the Advisory Council on Historic Preservation, signed 12/24/2003, and specifically, Appendix H, the *Standard Consultation Protocol for Rangeland Management* developed pursuant to Stipulation IV.A of the *Programmatic Agreement* is considered to be the "standard operating procedure" for treating potential grazing impacts to heritage resources on the Tonto National Forest.

Protection measures identified under the *Protocol* include:

1. Archaeological survey will be conducted for areas proposed for surface disturbance which have no previous survey coverage, or have out-dated surveys which do not conform to current standards.

2. Relocation or redesign of proposed range improvements and ground-disturbing management practices to avoid direct and indirect impacts to historic properties.
3. Relocation of existing range improvements and salting locations sufficient to ensure the protection of historic properties being impacted by concentrated grazing use.
4. Fencing or exclosure of livestock from individual sensitive historic properties or areas containing multiple sensitive historic properties being impacted by grazing.
5. periodic monitoring to assess site condition and to ensure that protection measures are effective
6. Other mitigation measures involving data recovery, for example, may be developed and implemented in consultation with the SHPO as the need arises. The appropriate tribes will be consulted if the mitigation is invasive or if it affects a Traditional Cultural Places (TCP) or other property of concern for them.

These protection measures apply equally to all alternatives but a No Action/No Grazing Alternative, to which only the first two measures apply.

Monitoring

In accordance with Appendix H, the *Standard Consultation Protocol for Rangeland Management of* the *First Amended Programmatic Agreement Regarding Historic Property Protection and Responsibilities* between the USDA Forest Service Region 3, the State Historic Preservation Officers of Arizona, New Mexico, Texas, and Oklahoma, and the Advisory Council on Historic Preservation, signed 12/24/2003, monitoring will be conducted as part of the day-to-day activities of the professional cultural resource specialists and certified para-archaeologists working in the area. Grazing allotments cover most of any given forest, and when archaeologists are in the field conducting surveys they are most likely surveying within a grazing allotment. The archaeologists will use these opportunities to observe and report on grazing activities, the effectiveness of the grazing strategy, and potential impacts to heritage resources. Any incidents of damage to historic properties from grazing will be reported, and the archaeologists will draw upon the protection measured outlined in the *Protocol* to ensure that the effects are avoided or minimized.

Fire and Fuels _____

Affected Environment

Analysis of the area is on a landscape scale. Reconnaissance of the analysis area was done using aerial photos, district maps, project files, interviews and through some site visitation.

Elevations run from approximately 4,000 feet to 6,600 feet and vegetation adheres to typical elevation regimes; ponderosa pine is present at the highest elevations, pinyon/juniper woodlands at the mid-elevations, and chaparral is the dominant vegetation type at the lower elevations.

Fuel across the project area is predominantly grass, brush, and pinyon/juniper with some timber needle litter within the project area. Fuel models in the project area that are conducive to fire behavior are best described as grass, a fuel model GR4, “Moderate Load, Dry Climate Grass,”

where the fuel bed depth is less than 2 feet, and brush, fuel model SH5 "High Load, Dry Climate Shrub," where the shrub loading depth is 4-6 feet (USDA 2005).

The Pleasant Valley district has a fire occurrence rate (FOR) of 0.4 fires per every 1,000 acres. Using the FOR, the project area can be expected to have about 43.2 fires starts on an annual basis. 0.4 fires/ 1,000 acres x 108,118 acres = 43.2 fires expected to occur in the project area.

Condition Class

Within the affected range allotment, 0 acres can be characterized by condition Class 1 being "Within the natural (historical) range of variability of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances."

Within the affected range allotments, 29,387 acres can be characterizes as condition Class 2 having a "Moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances."

Within the affected range allotments, 11,436 acres can be characterized as Condition Class 3 having a "High departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances" (Figure 5).

Fire Behavior

The overall fire behavior in the project area can best be described as moderate to high. Fire intensities and rates of spread are usually moderate but can be high depending on the time of the season, fire indices and extreme weather.

During the monsoonal season, when weather conditions are cooler, many of the natural occurring fires may be single lightning-struck, burning trees that offer little to no threat.

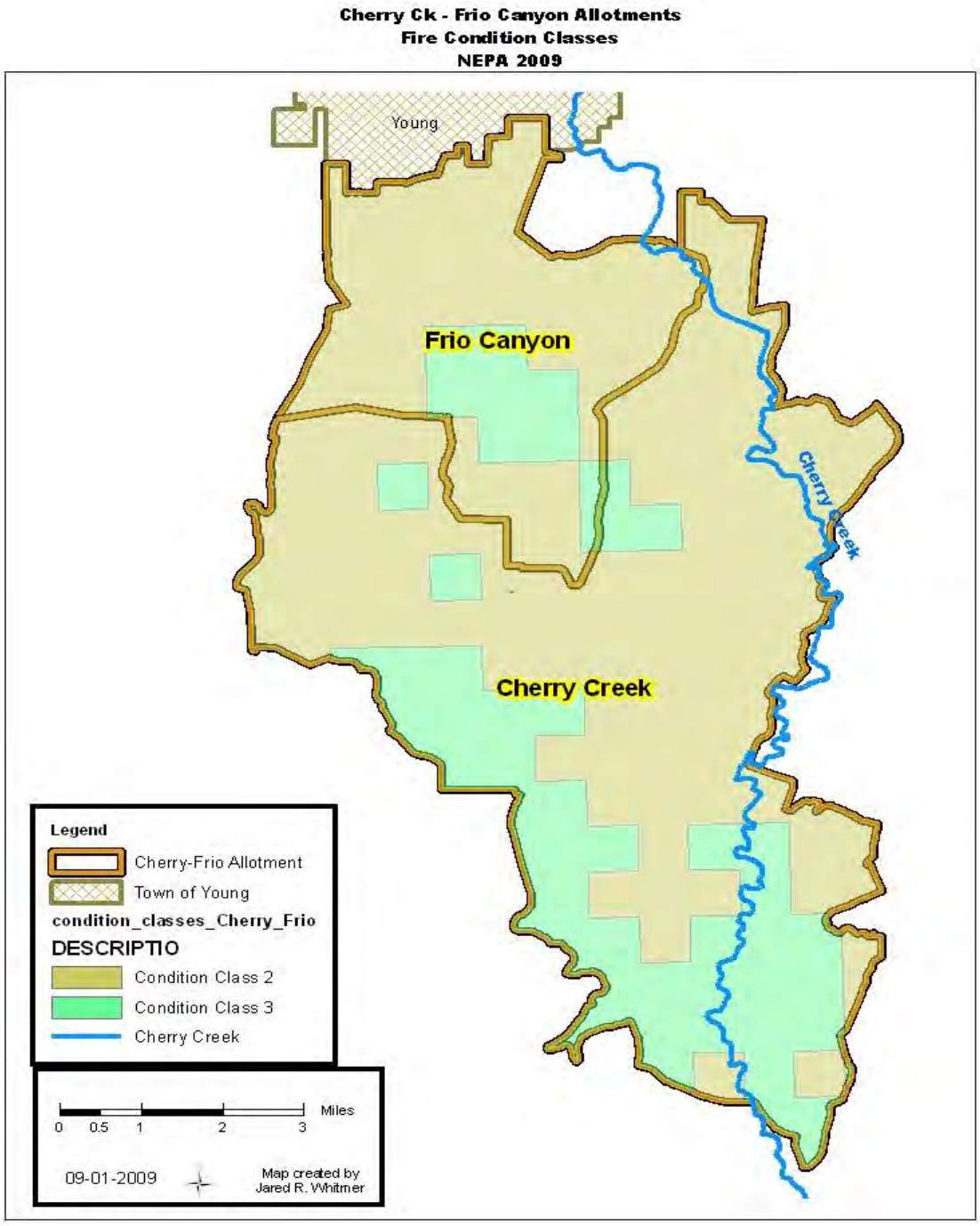
Fire Management

The Tonto National Forest - Fire Management Plan, outlines the direction and guidance that will be used to manage fuels and fires to mitigate the threats of high-intensity wildland fires. The plan also outlines how those operations will occur (USDA 1985).

The Tonto forest fire management plan is tied to the Tonto Forest Plan which states:

> "Wildfire will be managed consistent with resource objectives and will be suppressed in accordance with suppression guidelines. Suppression of fires, or portions of fires, will be accomplished where they adversely affect forest resources, endanger public safety, or have a potential to damage capital investments. This will be accomplished with a minimum of motorized equipment in wilderness and minimal ground disturbance where possible in any suppression activity" (USDA 2007).

Figure 5. Fire Condition Classes



Wildland Fires

The project area has experienced no large wildland fires in the last 5 years.

Prescribed Fire

There are two active or proposed prescribed fire projects located within the project area: the Lacy Burn (28,720 acres) and the Cherry Burn (42,000 acres).

Wildland Fire Use

In 2007, the Tonto National Forest amended the forest plan to allow for Wildland Fire Use (WFU). This amendment to the forest plan allows for natural occurring wildland fires to burn freely on the condition that these fires help meet natural resource objectives in fuels management and do not endanger firefighter safety or threaten the public or property. Although WFU allows fires to burn freely, the WFU plan also allows for fires to be partially or completely suppressed if its prescription is no longer within its parameters (USDI & USDA 2005).

Desired Condition

Fuels and Fire Behavior
For management areas 5A, 5D and 5G, the Tonto National Forest Land Management Plan as amended states, "Use prescribed fire to treat vegetation for water yield, forage, and wildlife habitat improvement" (USDA 1985). The use of burning should improve forest health, age class diversity, and should reduce fuel loadings to a more manageable level, thus allowing natural wildfire to play its role in the ecosystem. Wildlife habitat and overall rangeland conditions are also expected to improve. In order to accomplish these improvements, a low intensity prescribed fire will be established with maintenance burns to follow.

Environmental Consequences

Alternative 1 (No Action). The no grazing alternative will allow fine fuels to accumulate and allow fires to burn much more freely and readily if not suppressed. These fires would burn with a greater intensity, consuming brush and woody debris much more efficiently. These fires would also consume and remove other competing vegetation, like juniper, which are encroaching on meadows and open lands. In addition to removing competing vegetation, a greater portion of brush would be removed encouraging a greater stimulation of new and fresh forage on vegetation beneficial to wildlife habitat.

Alternative 2 (Proposed Action). Grazing (Alternative 2) on vegetated areas decreases the fine fuels which are needed for fire to burn continuously and with intensity. Grazing will most likely cause fires to burn with less intensity and efficiency. This decrease in fire behavior will also decrease the amount of fuel and woody debris that these project burns are designed to remove. Juniper would have a greater opportunity to survive and new and fresh forage would not be as plentiful. **Juniper removal treatments will increase the abundance of fine fuels available,**

allowing fires to burn continuously across the landscape. This will increase the efficiency of fuels treatments in the reduction of woody debris that these projects are designed to remove. The type of treatment utilized to reduce or remove juniper encroachment will not significantly impact future fuels treatments.

Timber

AFFECTED ENVIRONMENT

Existing Condition:

There are approximately 40,823acres within the Cherry-Frio analysis area with approximately 21,824 acres classified as juniper or pinyon-juniper woodland and approximately 5306 acres classed as Ponderosa pine type. Species composition and stand densities are quite variable and are influenced by aspect and soil types. There are two general categories that can be used. Juniper woodland generally consists of areas stocked predominantly with alligator juniper which has a grassy understory. These areas tend to occur on flatter topography. Many of these areas are juniper savannahs, some of which have experienced juniper invasion and other areas were chained in the 1950's and 60's and have regenerated to predominantly alligator juniper. The second category is pinyon-juniper, which is distinct from the juniper woodland in that it is stocked with a variety of species such as alligator juniper, pinyon pine, Arizona White oak, Emory oak, sparse Ponderosa pine, and tends to have a shrub component in the understory. Grass understory may exist in some sites of this type, depending upon soils, and on other sites the shrub component may dominate the understory. Steeper slopes in this type tend to have the dense shrub understory with little herbaceous cover.

Densities are quite variable across the juniper woodland and pinyon-juniper woodland types. Areas that are juniper woodland savannahs may only have 20-30 ft.^{2} of basal area/acre of large diameter trees (ie.20-30"+) and areas that were pushed or chained in the 1950-60's may have similar or higher basal areas, that consist of small diameter trees (ie≤ 10.0") that have come back from seed and sprouts. Areas of pinyon-juniper type may have basal areas of 70 to 100 ft.^{2}/acre comprised of a mix of alligator juniper, Arizona White oak, Emory oak, pinyon, and possibly some sparse Ponderosa pine. These stands tend to be multistoried and unevenaged, consisting of: (1) junipers ranging from 0.1" diameter up to trees 30 to 40"in diameter; (2) oaks that are 0.1" to 30+" diameter; (3) pinyon ranging from 0.1" up to 20" or more; and (4) the widely scattered Ponderosa pine that will generally be 12-20"+ in diameter. Stems/acre may number into the hundreds because of oak, juniper, and pinyon reproduction. Stand density correlates directly with herbaceous understory. The denser the stands, the less herbaceous cover exist. The more open the tree canopy is, the more herbaceous cover exists or the greater the potential is for herbaceous cover. The Ponderosa pine stands tend to occur on north aspects and as stringers along drainages where more moisture is available. These stands may be single storied or multistoried in structure and generally consist of trees ranging from 1" diameter up to trees 20-30"in diameter. The majority of trees are in the 15-30" diameter range and generally there is little or no Ponderosa pine regeneration occurring. The understory and midcanopy trees

are alligator juniper, Arizona White oak and Emory oak. Basal areas range from 60 to 150 ft.^{2} with stand averages generally around 80-120 ft.^{2}

No Action Alternative

This alternative provides no treatments of woody vegetation by mechanical means or by fire. The juniper woodland and the pinyon-juniper woodland areas will continue under their current conditions for a period of time. However, as time goes by stand conditions will change in each of these types due to tree growth and reproduction that will occur. Juniper woodland areas that are savannahs and currently producing fair to good forage will experience a reduction in forage production if no treatment or natural disturbances occur over the next 20 to 40 years. Forage production will be reduced due to increasing numbers of junipers from natural reproduction and from existing trees expanding in stem and crown diameters. Additional canopy cover will create more shade and adversely affect herbaceous cover. Savannah areas may experience reduced forage production of ±10% (estimate only) over a 40 year period. Areas where young junipers are currently dense (ie. areas chained 40-50 years ago) and forage is limited will experience significant increases in canopy density and forage reduction. Fire risk may reduce over this time period due to a reduction in fuels capable of carrying fire.

Pinyon-juniper stands with grassy understories will likewise experience an increase in the number of stems per acre due to natural regeneration of oak, juniper, and pinyon. Existing trees will increase considerably in stem and crown diameters over a 40 year period. Current oak, juniper and pinyon seedlings that are ± .5" diameter and 1-3 feet in height may well be ± 5.0"diameter and 15-20 ± feet in height. Existing overstory trees will also increase in diameter and crown width, all of which will adversely affect and reduce forage production. Some mature overstory trees will die over this time period. Fire risk in these sites may go down since fine fuels for carrying fire (ie. Grass) will be reduced. The denser stand conditions will create conditions more favorable for insect and pathogen problems in the tree species.

Pinyon-juniper sites that have a shrub understory will likewise increase in stand density from tree growth and reproduction over a 40 year period. Shrubs will tend to expand their area of occupancy and increase in density and height. This will significantly reduce any forage that currently exists on these sites. Dead wood in the shrub and trees layers will increase and create more potential for fire occurrence and fire risk. Potential for pathogen and insect problems will increase.

Ponderosa pine stands will continue to grow. Canopy closure will increase, tree diameters will increase 2-4 inches over a forty year period, thus increasing the stand basal area/acre. This increased growth and canopy closure will further reduce forage production and the potential for the Ponderosa pine to naturally regenerate. Forest floor fuel loadings will increase from the current level of about 10-20 tons/acre to potentially 30-40 tons/acre, which will increase the fire risk. Increase stand density will reduce tree vigor and health and create potential problems from pathogens and insects.

Continue grazing will have no effect on the timber resources in the analysis area.

Proposed Action

Proposed actions of juniper thinning and prescribed burning will provide a means to reduce vegetation density, alter structure and age class distribution, and reduce fuel continuity, all of which will tend to reduce fire risk, increase forage production potential, and improve wildlife forage and browse.

Areas of juniper woodland that are thinned may have stand density significantly reduced, especially in stands where alligator juniper is the primary or only species occupying the sites. Such sites that were chained in the 1950's or 60's are presently stocked with several hundred stems per acre, most of which are ≤ 8" diameter. Treatment will reduce stocking to a minimum of one tree/acre average with the largest trees being retained. Slash will be lopped and scattered, which will help reduce erosion and provide a microhabitat for existing grass to increase in health and vigor, produce seed and to increase area of occupancy. Sites that currently display fairly good grass cover and are not experiencing much erosion will respond the fastest. These sites may achieve sufficient grass cover to allow broadcast burning to occur within 4-5 years after thinning. Burning will help reduce juniper sprouts and maintain the open character achieved by thinning. Sites that are currently experiencing erosion and have rather poor grass cover may require ± 15 years to achieve sufficient grass cover to carry a broadcast burn. This time period will allow sprouts to grow tall enough to be out of lethal range of a light to moderate intensity grass fire. Therefore, an additional maintenance thinning of the sprouts may be necessary to allow maintenance of the thinning by means of prescribed fire. Repeated burning at 5-6 year intervals may then be effective in maintaining the open character created by the thinning.

Pinyon-juniper sites with a grass understory and light shrub component that are treated by thinning will see a reduction in tree canopy cover and increased forage production. Tree canopy cover may be reduced 40-80% from pretreatment levels. Thinning will create a distribution of trees ≥ 10 inches diameter as individuals or small clumps or groups (mix of oak, juniper, pinyon) where small areas of pinyon-juniper type may be included in proposed thinning sites that are predominantly old savannahs in the juniper type. Slash from the cut trees and shrubs will be lopped and scattered. Since a grassy understory exists, there is potential for forage production to improve sufficiently over a 4-5 year period to possibly carry a prescribed burn. Burning will help reduce sprouts that will occur. It is possible that sufficient forage will occur to allow repeated burning at 5-6 year intervals to help maintain the open character created by the thinning. These thinnings will improve forage production and allow use of fire as a periodic disturbance (reintroducing fire as a natural disturbance). Fire risk may actually increase somewhat due to increased forage available to carry fire. Stand density reduction will provide a positive effect in reducing conditions favorable to insects and pathogens that infect the tree species.

Pinyon-juniper woodland outside of the proposed thinning areas will be treated by prescribed fire. Areas with sufficient herbaceous cover to carry fire will experience mortality of the smaller trees and shrubs. Burning will probably not kill many of the large

trees unless fuel loading (ie. Limbs, dead wood, etc) is sufficient within their vicinity to produce enough heat and flame height to kill them. It is not anticipated that fire will reduce tree stocking significantly in such areas, but if forage is sufficient to carry fire, it is probably fairly open to begin with. In contrast, pinyon-juniper sites with shrub understory that have sufficient dead woody component to carry fire will burn at much higher intensities and will probably kill 60 to 100% of the trees within the path of the fire. The steeper the slopes the more mortality will occur. Prescribed burning will create a mosaic of burned and unburned areas across the landscape. The unburned areas will remain essentially the same as they are. Areas that are burned may not have many live trees remaining, but this will vary with burn intensity. These burned areas will have shrubs and juniper and oak sprouts appear within the first year of burning. These sprouts will create new stands of early successional stage trees and shrubs adjacent to unburned areas of older, later successional stage trees and shrubs. As burning progresses over the landscape during a 10-15 year period, it will create a diverse mosaic pattern of age and size classes across the landscape and help meet LMP desired conditions.

Cumulative Effects

No Action Alternative

Existing conditions of the woody vegetation is a result of the past hundred or more years of intense grazing and fire suppression activities. Reduced herbaceous cover created conditions favorable for juniper, oak, and pinyon regeneration to occur and shrub species to increase areas of occupancy. Fire suppression prevented fire from doing its natural role of reducing densities. This has lead to dense stands of woodland species across the landscape. This alternative carried into the future will create denser stand conditions, will increase fire risk, and increase risk of insect and disease related events that may cause extensive mortality. The desired conditions of improving forage production and ground cover in savannahs will not be met. Improving and maintaining age class distribution across the landscape will not be met and creating conditions conducive to using prescribed fire as a tool to allow fire to play its natural role in the ecosystem will not occur. Potential for large scale, high intensity wildfires will increase.

Proposed Action Alternative

The proposed action and its use of juniper thinning and prescribed fire will help meet the desired conditions discussed in Chapter 1. Conditions created by the proposed actions will be an improvement for the resources compared to the no action alternative, but will not move the landscape very far in the direction of historic conditions. Continued treatments over time and more intense treatments overtime will be needed to more approximate historical conditions. The proposed actions will provide distinct improvements in general health and vigor of woody species as well as forage and ground cover and wildlife habitat and improve the sustainability of these resources for use by future generations. Of the methods analyzed for juniper treatment, pushing with a dozer would be the most effective. Fuelwood sales and the tree shear would have to be followed up within 3-5 years to prevent or reduce the re-sprout of alligator junipers. Prescribed fire by itself would be the least effective method.

Socio-Economics

Affected Environment

Potentially affected parties include the one permittee, the community of Young, Arizona and Gila County, Arizona.

Young, Arizona is a small (population approximately 561, 2000 Census); remote community accessed by dirt and graveled roads 126 miles northeast of Phoenix. The town is completely surrounded by the Tonto National Forest. Originally established as a cattle ranching community in the 1880's, the town is primarily a retirement and second home community, with the median age of the population being 48.3 years. However, cattle ranching remains an important part of the local culture and economic base. Major employers in the community are the public school and the US Forest Service. Of the approximately 5000 acres of private land ownership in the valley, about half or 2500 acres have been subdivided into 2 to 5 acre plots, and the remaining 2500 acres remain as open space (Arizona Department of Commerce).

Gila County, with a population of approximately 51,335 (2000 Census), encompasses approximately 4,752 square miles. Within the county, ownership or administrative control occurs as follows: the US Forest Service -55.5 percent of the land, Apache Tribe -37 percent, individuals and corporations -3.7 percent, US Bureau of Land Management -1.9 percent and the state of Arizona –less than 1 percent (Arizona Department of Commerce 2008). With little private land to assess property taxes, the county is dependent upon the funding from the federal government. The US Government makes payments to Gila County under various programs, the two most important being:

1. Payments in Lieu of Taxes (PILT). These payments are made to the local governments based upon the acreage of federal land within the county, population, consumer price index and previous year payments. In 2001, Gila County was to receive approximately $1,498,572 from this program.

2. Secure Rural Schools and Community Self Determination Act of 2000 (PL 106-393). Traditionally, the federal government had returned 25% of the revenues collected on Forest Service lands from grazing permits and timber sales, to the counties on which these revenues were generated. With decreased timber sales and fees generated from grazing permits, the above Act was designed to "...restore stability and predictability to the annual payments made to States and counties containing National Forest System lands and public domain lands managed by the Bureau of Land Management for use by the counties for the benefit of public schools, roads and other purposes." Under the legislation, the County would receive a fixed income from the federal government, regardless of the income generated on the federally administered lands. The amount is to be based on the average of the highest three years within a ten-year period. Gila County has elected to be funded under the Act, rather than continue to receive 25% of the revenues generated from the Forest Service System lands.

Social Environment

The social environment is perhaps the most diverse and emotionally charged arena in ecosystem management. The social environment for this analysis comprises the people living in and adjacent to the Tonto National Forest. Forest resources play an important social role for the people of the Southwest. The goods, services, and uses available from the National Forests represent major components in the lives of many residents within the area of the Tonto National Forest, especially those in rural areas.

Geographically this region has two distinct types of population centers. There are several small rural communities scattered along and within the boundaries of the Forest. In addition, the Phoenix metropolitan area abuts the Forest along its southwestern boundary. The smaller communities tend to rely at least partially on Forest resources (mining, ranching and timber) for their economic development. This is evidenced by the Gila County Land Use and Resource Policy Plan for public lands, which states, "Federal and state agencies need to recognize and take into account the critical role that public lands in Gila County play in the overall functioning of the County, and in the County's economy and tax base" (Gila County, 1997). The Phoenix metropolitan area and the town of Payson have experienced great population growths in recent years. The influx of people has caused public opinion to change regarding what the appropriate uses of the public lands are. Those uses which have had historical importance to many rural areas in the past (timber, livestock grazing, and mining) are being looked upon as not appropriate, whereas the demand for recreational type activities on public lands is greatly increasing.

Few generalizations can be made about the communities across the Southwest. They are as diverse as the people who live there and due to the increasing desirability of the Southwest as a living location. The diversity is ever increasing. It should not be expected that all residents have the same or even similar points of view on various issues.

Lifestyles

Lifestyles include style and perceived "quality of life" for individuals or groups. This may include employment or work patterns, leisure and recreation behavior, how and where people practice their religion, and visitation patterns with friends and family.

In rural areas of the Southwest, where sparse populations dominate the landscape, a rural lifestyle exists. Most residents live close to where they work and have a direct or indirect tie to the natural resources for their livelihood. Most rural residents believe resource utilization would be less disruptive to their local communities than most other forms of economic development. Recreational activities generally include hunting, camping and fishing. Rural residents tend to be willing to live at a lower income if the only means of acquiring higher incomes is to live in a highly urbanized area. Community and family are essential to their quality of life.

Ranching and the grazing of domestic livestock have been a part of the Southwest culture for 400 years. Grazing sheep and cattle in the Southwest was introduced by the Spanish in the late 16th

century. The tradition of an open range endured for several hundred years before Anglo-Americans arrived in the Southwest, and when they came, the new arrivals expanded the traditional pastoral practices into modem range-cattle and sheep industries. In the Southwest, the National Forests were of equal or greater importance to the people for their range resources as they were significant for timber, watershed or mineral resources (Baker, 1988).

Environmental Consequences

Potential Economic Impacts to the Permittee

Other than reported actual livestock numbers (from Bills for Collections) that have been placed on the Cherry Creek – Frio Canyon allotments, further information has not been provided to the Forest Service in regards to the financial aspects of the operations (expenses, other sources of income). Therefore, a cost-benefit analysis will not be completed to try and evaluate the specific, potential effects to the permittee. Stocking rates have been quite variable throughout recent history on the allotment due to fluctuating resource conditions, recurrent drought, and economic considerations of permittee.

Research is available that discusses the influence stocking rates can have on economic returns. This information will be used to compare the alternatives regarding the potential economic impact to the permittee. Generally, heavier stocking rates result in the greatest gross economic returns, while moderate stocking rates maximize net economic returns (Holechek, 1998). Over time, heavy stocking tends to result in higher death loss; a greater need for supplemental feeding, especially in years of below average precipitation, and lower weaning weight percentages. Under heavy stocking rates, livestock tend to make high gains for a few years, especially when precipitation remains at average or above average levels. However, during drier periods, livestock productivity tends to reduce per animal unit and per unit area. The severity of reduction is related to the stocking density, i.e., heavier stocking rates result in more severe reductions in economic returns than moderate stocking rates, especially in drought years. Under the adaptive management proposal, desirable stocking rates would be moderate over the long-term to achieve desired resource conditions.

Economic returns for the permittee would be best under Alternative 2, although variable. The flexibility inherent in adaptive management would allow the permittee to increase herd size (to the upper limit proposed) when conditions warrant. There would be no economic returns to the permittee under Alternative 1, however, the permittee would not be required to maintain range improvements any longer. These range improvements would remain the property of the Forest Service, which would be required to provide continued maintenance or arrange for removal.

Economic Impacts to the Community of Young, Arizona and Gila County

Neither alternative will affect future payments received through PILT or PL 106-393. Young and Gila County could be affected by the alternatives due to the amount of money made by the permittee and how much is spent in the local economy. This is related to a multiplier effect, or that monies spent in a community are often re-spent. Multipliers in rural communities are generally lower than for large municipal areas as expenditures for large ticket items are usually

made outside the local area. Multipliers of 1.25 to 1.75 are common in rural areas associated with adjacent public lands (Loomis, 1993).

Because the effects are related to the dollars generated and spent by the operation, effects from each of the alternatives will be the same as the effects to the permittee. Economic returns would be greatest under Alternative 2, and there would be no economic returns to the permittee under Alternative 1.

Social Impacts

Effects to lifestyle, personal values and attitudes are hard to quantify and explain. Effects to individuals will vary greatly depending on each individual's personal operation and values. The effect of change on any individual permittee would vary depending on the size of loss or gain, the financial condition of the operation, the price of the product at market, operating costs, dependency on federal lands for their operation, diversity of their household income, and desire to remain in the ranching business. These factors are very individualistic and as such are hard to specifically quantify. Additionally, much of this information is of a personal nature and not readily shared with others in a public domain.

The effects to community will vary depending on the community's capacity to adapt to internal and external forces. Community capacity depends upon the community members' collective ability to pursue goals; the skills, experience and education levels of people in the community, and the diversity of local businesses. Generally, small isolated communities are more vulnerable as they contain less diverse economies, less capital, and have fewer people to initiate and implement change.

Alternative 1. Removal of the livestock would result in an initial reduction in gross economic returns to the permittee, unless the cattle could be placed on private land. The effect of this loss on the permittee and family will depend on the financial condition of the operation, the dependency of their operation on this particular allotment, and the dependency of the family income on the income derived from this permit. Lifestyle changes in response to loss of income could include decreasing family spending, possibly sending family members off the ranch to pursue alternate income opportunities, and diversifying operations to make them less dependent upon ranching.

If the implementation of the no grazing alternative resulted in the sale of base property, the local community may eventually lose some of the culture and lifestyle tied to ranching. Residents would also tend to attribute any sale of the permittee's operation to the reduction of livestock grazing on Forest Service lands. This would intensify feelings of mistrust and loss of personal control and further threaten lifestyles, resulting in negative attitudes towards the Forest Service, and other federal agencies in general.

Alternative 2. Personal characteristics such as self sufficiency, independence, hard work and other traits associated with the ranching lifestyle would most likely be protected under this alternative. Continuation of the ranching operation in a sustainable manner will provide the means for the permittee and family members to stay in the area, and they will continue to provide

the community with a known quality in which to draw upon for community functions. Business will likely be conducted in a similar manner.

Environmental Justice

Environmental justice (EJ) is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Toward attaining EJ for all communities and persons in the United States, Executive Order 12898 (February 11, 1994) directed all Federal agencies to evaluate their proposed actions to determine the potential for disproportionate adverse impacts to minority and low-income populations.

In the memorandum to heads of departments and agencies that accompanied Executive Order 12898, the President specifically recognized the importance of procedures under NEPA for identifying and addressing environmental justice concerns. The memorandum states that "each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by [NEPA]."

Implementation of either of the alternatives evaluated in this EA would not result in adverse impacts to environmental resources and socioeconomic conditions. Therefore, disproportionate direct, indirect or cumulative adverse impacts on low income or minority populations would not occur.

CHAPTER 4 CONSULTATION AND COORDINATION

The Forest Service consulted the following individuals, Federal, state and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

Consultation with Others

The Forest attempted to contact 84 separate individuals/parties believed to be interested or affected by the proposed action when it initiated scoping on the proposed action through a scoping letter sent on February 13, 2008. The scoping document was sent to the following: 28 individuals, 17 private organizations, 9 tribes, 1 university professor, 12 state/county/community officials, 3 federal agencies and 4 congressional delegates. From these scoping activities, 9 letters were received.

A second scoping document including the Chapter 1 and 2 of the EA was sent out to the public on June 9, 2008, along with a second notice published in the Payson Roundup on June 6, 2008. The purpose of the document was to further describe the proposed action along with a preliminary effects analysis to previously interested/affected parties. The scoping document was sent to the following: 12 individuals/private organizations, 9 tribes, and 5state/county/community officials. From these scoping activities, 5 letters and or emails were received.

From these scoping activities, 12 parties commented or otherwise expressed an interest in the proposal and will receive a copy of this environmental assessment. Complete mailing lists of individuals and groups consulted with are contained in the project record.

FEDERAL AGENCIES:
U.S Environmental Protection Agency
U.S. Fish and Wildlife Service

STATE/COUNTY/LOCAL GOVERNMENT:
Arizona Department of Water Quality
Arizona Department of Water Resources
Arizona Game and Fish Department
ASU, Center for Environmental Studies
Gila County Board of Supervisors
Gila County Extension Service

TRIBES:
Fort McDowell Yavapai Nation
Yavapai-Prescott Tribe
Yavapai-Apache Nation
Tonto Apache Tribe
San Carlos Apache Tribe
White Mountain Apache Tribe
Salt River Pima-Maricopa Indian Community
The Hopi Tribe
Zuni Pueblo

INDIVIDUALS/ORGANIZATIONS:

American Rivers
Center for Biological Diversity
Forest Guardians
Audubon Society
Maricopa Audubon Society
Nature Conservancy
Palo Verde Sierra Club
Sierra Club, Grand Canyon Chapter
Sonoran Bioregional Diversity Project
Southwest Center for Biological Diversity
Southwest Forest Alliance
The Wilderness Society
Tonto Rim Sports Club
Erik Ryberg, Western Watersheds Project
Wilderness Society

Bob Benne
Jeff Burgess
Woody Cline
Dave Cook, Gila County Cattle Growers
Nathan Ellison
Mike Hemovich
Michael Lechter

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Jill Oertley, Wildlife Biologist Mogollon R.D.; Earl Klein, Wildlife Biologist Pleasant Valley R. D.; Erica Lee, Wildlife Technician Pleasant Valley R.D.; Bob Callamusso, Fish Biologist Supervisor's Office	Wildlife Analysis
Dave Frew, Recreation, Lands, Minerals Staff, Pleasant Valley RD	Recreation/Lands/Special Uses Analyses
Janet Grove and Lynn Mason, Riparian Ecology and Hydrology, Supervisor's Office	Riparian Area/Water Quality Analyses
Norm Ambos, Soils and Watershed Staff, Supervisor's Office	Soils Analysis
Denise Ryan, Forest Archeologists	Heritage Analysis
John Thornburg	Fire and Fuels Analysis
Jim Mercer	Timber Analysis

LIST OF FIGURES

LIST OF TABLES

APPENDIX 1.

PROJECT RECORD INDEX Volume 1 Cherry Creek – Frio Canyon and Flying V & H Allotment Analysis				
Doc. No.	**Description**	**Author**	**Recipient**	**Date**
1	Tonto Forest Plan –CD and Tonto National Forest MIS status report and CD	Various		1985/ Revised 2005
2	Annual Operating Instructions and Monitoring Reports: 2000-2008 – Cherry Creek and Frio Canyon	Various	Files	various
3	Annual Operating Instructions and Monitoring Reports: 2000-2008 – Flying V & H	Various	Files	various
4	Paper: Principles of Obtaining and Interpreting Utilization Data on Southwestern Rangelands and Chapter 90 of FSH 2209.13	Various		October 2004/ September 2005
5	Meeting with Cherry-Frio permittee to discuss Allotment NEPA	Whitmer	Mastel	06/04/2007
6	Meeting with Flying V & H permittee to discuss allotment NEPA	Whitmer	Mastel	06/11/2007
7	Meeting to discuss Flying V & H permittee proposed improvements by pasture	Johnson	Whitmer	07/9/2007
8	Meeting to discuss Cherry-Frio permittee proposed improvements by pasture	Lechter	Whitmer	07/9/2007
9	ID Team Meeting for Cherry-Frio Canyon & Flying V & H Allotment EA	Various		10/05/2007
10	Desired Conditions for Uplands Vegetation and soils for Cherry-Frio and Flying V & H	Whitmer	Mastel	10/10/2007
11	Project initiation letter for Cherry-Frio and Flying V & H	Mastel	Whitmer	10/18/2007
12	Historical and Modern Disturbance Regimes of Pinon-Juniper Vegetation in the Western U.S.	Various		May 2007
13	ID Team meeting to review PIL and discuss specialist needs	Various		11/05/2007
14	Specialist Report: Draft Rangeland and Watershed	Thiel		January 2008
15	Specialist Report: Heritage Resources and Programmatic Agreement Region 3	Ryan; Various		January 2008; 2003
16	Specialist Report: Draft Soils and Vegetation for Flying V & H	Ambos		01/18/2008
17	Specialist Report: Draft Soils and Vegetation for Cherry -Frio	Ambos		01/18/2008
18	Specialist Report: Riparian and Stream Channel (Desired Conditions and Existing Conditions)	Grove & Mason		Various

PROJECT RECORD INDEX Volume 1 Cherry Creek – Frio Canyon and Flying V & H Allotment Analysis				
Doc. No.	**Description**	**Author**	**Recipient**	**Date**
19	Specialist Report: Draft Fire and Fuels	Thornburg		1-15-2008
20	Specialist Report: Wildlife Report – Desired Future Conditions	Klein		11/19/2007
21	Draft Environmental Assessment for public Review and Mailing List	Ranger	Various	02/13/2008
22	Legal Notice: Opportunity to Comment in Payson Roundup and affidavit of publication	Payson Roundup	Whitmer	02/15/2008
23	Comments on Proposed Action	Various	Various	Various
24	ID Team meeting to discuss comments from initial scoping	Various		02/27/2008
25	ID Team meeting to discuss extra comments from scoping	Various	Mastel	03/31/2008
26	Specialist Report: Rangeland Resources	Thiel (updated Whitmer)	Mastel	April 2008

PROJECT RECORD INDEX Volume 2 Cherry Creek – Frio Canyon and Flying V & H Allotment Analysis				
Doc. No.	**Description**	**Author**	**Recipient**	**Date**
1	Specialist Report: Wildlife Report – Affected Environment	Klein		April 2008
2	Letter to US Fish and Wildlife requesting concurrence on the species to be addressed in BA for Cherry-Frio AMP project	Mastel	Spangle	05/16/2008
3	Specialist Report : Fire for Cherry-Frio and Flying V & H	Thornburg	ID Team	05/24/ 2008
4	Specialist Report: Timber and past fuel wood sales	Mercer		May 2008
5	Cherry-Frio permittee proposed projects on map	Lechter		May 2008
6	Specialist Report: Fisheries for Cherry-Frio & Flying V & H	Calamuusso		May 2008
7	Comment Analysis on Proposed Action	Whitmer	ID Team	05/25/2008
8	Schedule of Proposed Actions (SOPA list)	Various		06/03/2008
9	Legal Notice: Opportunity to Comment in Payson Roundup and affidavit of publication	Payson Roundup	Whitmer	06/06/2008
10	Comments by specialists on Draft EA	Whitmer	Various	Various
11	Draft Environmental Assessment for public Review and Mailing List	Ranger	Various	06/09/2008
12	Comments on Draft EA: White Mountain Apache Heritage Program	M. Altaha	Mastel	06/19/2008
13	Comments on Draft EA	J. Burgess	Mastel	06/19/2008
14	Comments on Draft EA: Permittee	M. Lechter	Mastel	07/01/2008
15	Comments on Draft EA	E. Ryberg	Mastel	07/07/2008
16	Comments on Draft EA: Coop Extension	J. Sprinkle	Mastel	07/29/2008
17	Specialist Report: Recreation, Mining, Lands, and Special Uses	Whitmer	ID Team	06/10/2008
18	Concurrence on the species to be addressed in BA for Cherry-Frio AMP project from US Fish and Wildlife Service	D. Bills for S. Spangle	Mastel	06/23/2008
19	Note to project record – Cherry-Frio analysis to be split from Flying V & H	Whitmer	ID Team	June 2008
20	Economic Report and Community profile of Young, AZ	AZ Dept of Commerce		July 2008
21	Letter to US Fish and Wildlife requesting concurrence with BA, draft BA attached	Mastel	Spangle	08/12/2008

PROJECT RECORD INDEX Volume 2 Cherry Creek – Frio Canyon and Flying V & H Allotment Analysis				
Doc. No.	**Description**	**Author**	**Recipient**	**Date**
22	Correspondence with Specialist regarding Draft EA	Various	Whitmer	Various
23	ID Team meeting notes	Whitmer	Various	10/15/2008
24	Specialist Reports: Riparian existing condition and draft environmental consequences	Mason and Grove	Whitmer	November 2008
25	Specialist Report: Soils and vegetation environmental consequences	Ambos	Whitmer	11/10/2008
26	Specialist Report: Wildlife environmental consequences, Biological Assessment, MIS, Biological Evaluation, and Literature Cited CD.	E. Klein, J. Oertley, E. Lee	Whitmer	December 2008
27	Letter of concurrence from US Fish and Wildlife	M. Martinez for S.Spangle	Mastel	12/02/2008

PROJECT RECORD INDEX Volume 3 Cherry Creek – Frio Canyon Allotment Analysis				
Doc. No.	**Description**	**Author**	**Recipient**	**Date**
1	Annual Authorization Instruction meeting	Whitmer		01/25/2009
2	Note to file- concerns about Cherry Creek and new found drift fence	Whitmer		03/05/2009
3	ID Team meeting notes	Brown	Whitmer	04/30/2009
4	Specialist Report: Fisheries for Cherry Creek/Frio Canyon	Calamusso		May 2009
5	Content Analysis for Comments on EA and Identification of significant issues and Alternatives for Detailed Study	Whitmer	Mastel	06/12/2009
6	Specialist Report: Recreation, Wilderness, Inventoried Roadless, Land and Minerals Environmental Consequences	Frew	Whitmer	07/23/2009
7	Emails regarding refined proposed action- added additional protection measures	Grove	Whitmer	07/24/2009
8	Letter from Tilting H ranch requesting applicant status	Carroll	Mastel	08/12/2009
9	Updated specialist report: Stream Channels and Riparian Environmental Consequences	Grove & Mason	Whitmer	08/21/2009
10	Chiricahua Leopard Frog species profile **(online) http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=D02F** and Recovery Plan **http://ecos.fws.gov/docs/recovery_plans/2007/070604_v3.pdf**			08/26/2007 / April 2007
11	Letter to Permittee discussing applicant status	Mastel	Lechter	08/28/2009
12	Decision Notice and FONSI	Mastel	Permittee/ Public	09-10-2009
13	Final Environmental Assessment	Whitmer	Permittee/ Public	2009
14	Phone call to permittee regarding Final Environmental Assessment	Whitmer	Permittee	
15	Affidavit of Publication	Payson Roundup	Public	
16	Transmittal Letters for Decision Notice	Mastel	Permittee/ Public	
17				
18				
19				

APPENDIX 2. LITERATURE CITED

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