

**United States Department of the Interior
U.S. Fish and Wildlife Service
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AESO/SE

July 8, 2003

02-21-03-F-0298 - Voigt Allotment
02-21-03-F-0299 - Greer Allotment
02-21-02-F-0501 - Sheep Springs Allotment

Ms. Elaine J. Zieroth
Forest Supervisor
Apache-Sitgreaves National Forests
P.O. Box 640
Springerville, Arizona 85938-6357

Dear Ms. Zieroth:

Thank you for your request for reinitiation of formal consultation pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). We have reviewed your June 10, 2003, biological assessment for Forest Service management of grazing after the introduction of Apache trout (*Oncorhynchus apache*) into numerous streams on the Apache-Sitgreaves National Forests (A-S), in Apache County, Arizona. We received your request for formal section 7 consultation under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) on June 13, 2003. Due to the Forest Service and Arizona Game and Fish Department's (AGFD) plan to renovate and stock Apache trout in eleven streams on the Forest this summer (work began on renovation in 2002) the Forest has requested an expedited consultation.

This biological opinion is based on information provided in the Forest's Biological Assessments, Environmental Assessments, addendums to the Biological Assessments, maps, and other

documents associated with the above allotments; telephone conversations and/or electronic mail transmissions with Deb Bumpus of the Forest; and other sources of information. A complete administrative record of this consultation is on file at this office. Table 1 provides a detailed list of primary documentation used in this biological opinion.

TABLE 1: PRIMARY DOCUMENTATION USED IN BIOLOGICAL OPINION

ALLOTMENT	PRIMARY DOCUMENTATION USED IN BIOLOGICAL OPINION
Greer Allotment (2-21-03-F-0299)	• 2003 Addendum to the Biological Assessment and Evaluation for Greer Allotment
	• 1998 Environmental Assessment, Greer Allotment, Allotment Management Plan
	• July 10, 1998 Biological Assessment of the effects to Endangered, Threatened, and Proposed Species for the Greer Allotment Management Plan Revision
Sheep Springs (2-21-02-F-0501)	• 2003 Addendum to the Biological Assessment and Evaluation for Sheep Springs Allotment
	• 2002 Environmental Assessment, Beehive and Sheep Springs Allotments
	• 2002 Biological Assessment of the effects to Endangered, Threatened & Proposed Species for the Beehive / Sheep Springs Allotment Management Plan Revision
Voigt Allotment (2-21-03-F-0298)	• 2003 Addendum to the Biological Assessment and Evaluation for Voigt Allotment
	• 1998 Environmental Assessment, Rudd Creek Summer and Voigt Allotments
	• 1998 Biological Assessment of the effects to Endangered, Threatened & Proposed Species for the Rudd Creek Summer and Voigt Allotment Management Plan Revision
Burro, Hayground, and Reservation Allotments (2-21-90-F-120R)	• 2003 Addendums to the Biological Assessment and Evaluation for Burro, Hayground, and Reservation Allotments

	<ul style="list-style-type: none"> • July 20, 1993 Biological Opinion on the Burro Creek, Hayground, and Reservation Allotment Management Plan Revisions (AMPR) and the Coldwater Fisheries Enhancement Project (CFEP) on the West Fork of the Black River (2-21-90-F-120 an 2-21-92-I-666)
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Consultation History

Details of the consultation history are summarized in Table 2.

TABLE 2: SUMMARY OF CONSULTATION HISTORY

<i>Date</i>	<i>Event</i>
September 2000	The Forest and the Fish and Wildlife Service began informal consultations regarding the Apache trout reintroduction project.
February 19, 2002	We entered into formal consultation with the Forest on the reintroduction of Apache trout into streams on the A-S.
April 19, 2002	<ul style="list-style-type: none"> • We issued a biological opinion (02-21-01-F-101) to the Forest Service regarding the effects of the Apache Trout Enhancement Project on Apache trout (<i>Oncorhynchus apache</i>), Little Colorado spinedace (<i>Lepidomeda vittata</i>), loach minnow (<i>Tiaroga cobitis</i>) and its critical habitat, bald eagle (<i>Haliaeetus leucocephalus</i>), and Mexican spotted owl (<i>Strix occidentalis lucida</i>).
June 10, 2003	<ul style="list-style-type: none"> • We received a telephone request from the Forest Service for our concurrence that six grazing allotments would not likely adversely affect Apache trout in streams scheduled to be renovated and populated with Apache trout. • The Forest Service faxed Addendums to the original Biological Assessments and Evaluations for the six allotments (see Table 1).
June 11, 2003	<ul style="list-style-type: none"> • We notified the Forest Service that three of the allotments (Burro, Hayground and Reservation) had an existing biological opinion for the effects of Allotment Management Plans on Apache trout (U.S. Fish and Wildlife Service 1993) (02-21-95-F-120). We notified the Forest that we believed that the July 20, 1993 biological opinion for the Burro, Hayground, and Reservation allotments is in effect and that no additional consultation is needed for these allotments at this time. • We also informed the Forest that we were unable to concur with a “May Affect, Not Likely to Adversely Effect” determination for the remaining three allotments.

June 13, 2003	The Forest Service and Fish and Wildlife Service agreed to conduct formal consultation on the effects to Apache trout from on-going grazing.
June 26, 2003	A draft biological opinion was sent to the Forest for review and coordinated with the Arizona Game and Fish Department.
June 30, 2003	We received an email from Deb Bumpus with comments on the draft document and a request to finalize the biological opinion.

BIOLOGICAL OPINION

Description of Proposed Action

The action under consultation is continued grazing on three allotments that contain or drain into streams that will be stocked with Apache trout. The three allotments (Greer, Sheep Springs, and Voigt allotments) described in this biological opinion are located primarily in the Little Colorado River watershed. Appendix A, Maps 3 and 4 show the location and relationship of the allotments on the Apache-Sitgreaves National Forest.

The action area for this project is defined as all areas affected directly or indirectly by the Federal action. Thus, the action area is larger than the boundaries of the allotments because impacts may be carried downstream with flows and may also affect upstream areas. Watersheds and subwatersheds are comprised of numerous interconnected upland and riparian areas that function together as an ecological unit. For the proposed project, the action area includes all covered allotment areas and the Forest Service and private land areas of the watershed contained therein. The Forest uses a 25-mile guideline in grazing consultation forms when examining downstream effects of an action. Therefore, the East Fork Little Colorado River (EFLCR), West Fork Little Colorado River (WFLCR), South Fork Little Colorado River (SFLCR), and Lee Valley Creek within and 25 miles downstream (which would include portions of the Little Colorado River mainstem) are affected by the proposed action and thus considered to be within the action area. Apache trout introductions are planned for the EFLCR, SFLCR, WFLCR, and Lee Valley Creek within the action area.

Specifics of the proposed action for each allotment as provided by the Forest Service are discussed below.

Greer Allotment

See the Environmental Assessment for a complete description of the Allotment Management Plan (USFS 1998). This allotment comprises 11,666 acres (minus all the pastures added to Voigt and Sheep Springs allotments and withdrawn from grazing) and has a 10-year term grazing permit with an expiration date of December 31, 2011. The allotment features a rotational deferred grazing system. The season of use is from June 15 to October 31 which is considered a summer-fall grazing strategy. The permitted number of livestock is 200 cows and calves in a single herd. The opportunity to rest a pasture is an option that is evaluated annually. A determination to rest a pasture is based on the existing resource needs at the time. Allowable forage use levels ranged from 25% to 40% based on range conditions.

The allotment is divided into low- and high-elevation pastures. The low-elevation pastures are those in and around the Greer basin including the South Fork and Upper Skullduggery pastures. Two low-elevation pastures, Lower Skullduggery, and Bigelow, are not grazed until after August 1 due to Southwestern willow flycatcher (*Empidonax trailli extimus*) management objectives.

High-elevation pastures are those pastures to the southeast and above the Greer basin. The allotment receives cool season (May 15 - July 1) deferment every year with the exception of the first pasture entered for the period June 16 - July 1. The first pasture entered would be rotated within the grazing schedule every year. Each pasture receives warm season (July 1 - August 30) deferment on a rotating basis, for pastures entered after September 1.

Livestock do not graze the Baldy Pasture within the Mount Baldy Wilderness Area due to Arizona willow (*Salix arizonica*) management objectives. The area immediately around the town of Greer is formally closed to livestock grazing to prevent conflicts with the local residences, summer homes, and businesses. Due to the fencing, livestock are not able to access the EFLCR or the WFLCR upstream of the town of Greer. The Lake, West Fish Creek and Hoyer pastures were also withdrawn from livestock grazing to due conflict with local residences and recreation.

Sheep Springs Allotment

The allotment comprises a total of 18,635 acres. The ten-year Term Grazing Permit for the Beehive and Sheep Springs allotments implements a fourteen pasture deferred rotational grazing system utilizing the combined pastures of the Beehive and Sheep Springs allotments and the Hall, Bull, and Benny Creek pastures from the former Greer Allotment.

The 10-year grazing permit authorizes:

1. The grazing of 2000 sheep, 1 horse, and 7 burros (Band #1) with a season of use from June 1 to August 18.
2. 2000 sheep, 1 horse, and 7 burros (Band #2) from June 2 to August 19.
3. 400 sheep (truck herd) from 06/01 - 09/25; and 333 cow calves (c/c) from July 1 to October 31.
4. The grazing of a total of 100 Animal Units on the Hall, Bull, and Benny Creek pastures of the former Greer Allotment. Season of use on these pastures would be from July 1 to October 31 for cattle and June 1 to August 19 for sheep. (Numbers and class of livestock may vary but will be in accordance with the specified season of use and will not exceed 100 Animal Units).

The permit also specifies that herding must be utilized to prohibit sheep from grazing or watering within riparian areas along perennial streams during the period June 1 to July 1. In addition, monitoring must occur.

A utilization level of 25% will be applied to herbaceous species in key riparian areas in unsatisfactory condition and 35% to key riparian areas in satisfactory condition during the grazing season.

The combined Allotments (Beehive and Sheep Springs) use a two herd, fourteen pasture deferred rotational grazing system. The main pastures on the Sheep Springs allotment and allowable use are: Geneva Pasture with an allowable use of 35% in key areas; Pole Knoll Pasture with an allowable use of 35% in key areas; Ski Hill Pasture with an allowable use of 30% in key areas; White Mountain Reservoir Pasture with an allowable use of 35% in key areas; Bull Pasture with an allowable use of 35% in key areas, Hall Pasture with an allowable use of 25% in key areas, and the Benny Creek Pasture with an allowable use of 25% in key areas. When the Sheep Springs Allotment is used as a single pasture the allowable use is 35% in key areas.

The Allotments will be managed as a combined unit with both two sheep bands and a cattle herd. The cattle herd and the sheep herds will each follow a separate grazing schedule. Most areas of the allotments will alternate cattle use or sheep use every other year. There are two pastures that will be exceptions to the alternating of sheep and cattle use on successive years, Pole Knoll and Sheep Corral pastures.

Voigt Allotment

This allotment comprises 9,438 acres, has a 10-year permit which expires in 2011, and features a rest-rotation grazing system. The season of use is from July 1 to October 20 which is considered a summer-fall grazing strategy. The permitted number of livestock is 200 cow/calf pairs and 6 horses.

Under the permit, livestock cannot graze the Phelps or Lee Valley Pastures on the Voigt allotment due to Arizona willow and Apache trout management objectives. The Phelps Research Natural Area and Phelps Botanical Area Exclosure are not grazed by domestic livestock per direction in the Forest Land Management Plan. Although the original proposal included fencing along the EFLCR, the proposed action has been modified to no longer require fencing.

The livestock operation consists of a single herd grazing the Voigt Allotment. The allotment is grazed with a rest-rotation grazing system.

Permittee-owned horses would be grazed between three small traps: Lee Valley, Cabin, and Little Horse on the Voigt Allotment.

Status of the Species

Apache trout is a medium-sized fish listed as endangered in 1967 under the Act, and reclassified to threatened in 1975 (U.S. Department of Interior 1975). Critical habitat has not been designated. Apache trout lives in small headwater streams using pools for resting and riffles for feeding. It spawns in spring and early summer over gravel substrates. Apache trout feeds mainly on aquatic insects.

Apache trout were formally described by R.R. Miller. Based on Miller's (1972) examination of museum specimens, it is believed the 19th century distribution of Apache trout included the White and Black river drainages, the headwaters of the Little Colorado drainage and the Blue River. These streams are all within close proximity in the White Mountains, Arizona. According to the Apache Trout Recovery Team (U.S. Fish and Wildlife Service 2001), the former widespread distribution of Apache trout in the Black, White, and Little Colorado river (LCR) drainages is confirmed by present hybrid populations and documented collections (Loundenslager et al 1986, Carmichael et al. 1993). Many early White Mountain area settlers reported the abundant presence of native trout, which they referred to as yellow-bellied, speckled trout (Miller 1972, U.S. Fish and Wildlife Service 1983). Survey records from the 1980's (Rinne and Minckley 1991, Loundenslager et al. 1986, Dowling and Childs 1992, Carmichael et al. 1993) indicated that populations of Apache trout still remained in several streams of the Fort Apache Indian Reservation and Apache-Sitgreaves National Forest.

Habitat loss and degradation from cattle grazing, logging, mining, agriculture, road construction, water diversions and reservoir construction, along with over-fishing, predation, hybridization and competition from non-indigenous trout, have greatly reduced Apache trout distribution and numbers. Many watersheds formerly inhabited by Apache trout have been routinely stocked with non-native rainbow trout (*Oncorhynchus mykiss*), cutthroat trout (*Oncorhynchus clarki*), brook trout (*Salvelinus fontinalis*), or brown trout (*Salmo trutta*) since the early 1900s (Silvey 1984). Non-indigenous salmonids exhibit tendencies to out compete Apache trout for resources such as food, cover, and other similar niche requirements, and to prey on them. Such competition from brown trout and brook trout has been identified as a cause of the decline of Apache trout (Rinne et al. 1981, Rinne and Minckley 1991, Carmichael et al. 1993). Cutthroat and rainbow trout were spread extensively by stocking over the entire range of Apache trout, although natural barriers prevented hybridization in some watersheds. Hatchery and management records from Williams Creek National Fish Hatchery, the FWS, and AGFD indicate that cutthroat trout were stocked from at least 1920 to 1942. Similar records indicate that rainbow trout were widely stocked between 1934 and 1954. Some non-indigenous trout stocking still occurs today. Lately, the list of known introduced fish species has grown to more than 80. Most of these species were purposeful introductions, placed in Arizona waters in an attempt to increase the diversity of sport fishing.

The only pure populations of Apache trout remaining by the 1950s were those that were isolated in headwater streams where non-native trout were not stocked, most of which were upstream of natural waterfalls. These created natural barriers to upstream movement of non-native trout. By the 1960s, pure Apache trout populations had been reduced from a range of about 600 mi of stream to a low of about 30 mi (Harper 1978). The White Mountain Apache Tribe undertook first attempts at conservation of Apache trout in the late 1940s and early 1950s when the only known populations existed on the Fort Apache Indian Reservation. In 1955, all Mt. Baldy streams on the reservation were closed to fishing. In 1963, the AGFD created hatchery brood fish populations at Sterling Springs State Fish Hatchery and stocking of Apache trout began throughout Arizona for both restoration and sport fishing from this initial hatchery program. In 1983, the FWS began rearing Apache trout at the Williams Creek National Fish Hatchery on the Fort Apache Indian Reservation and is now the principal rearing facility for Apache trout.

When the Endangered Species Act was enacted in 1973, Apache trout was brought under its protection (Public Law 93-205). In 1974, all Arizona waters were closed to the “taking” of Apache trout. The FWS directed a recovery team be formed and, in 1975, Apache trout was downlisted to threatened status. The threatened status allowed action agencies more flexibility to manage for Apache trout; this has included establishing sport fishing and hatcheries just for Apache trout. The recovery team produced the initial recovery plan in 1979, revised it in 1983, and another draft is currently in preparation.

Environmental Baseline

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State and private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat to provide a platform from which to assess the effects of the actions now under consultation.

Status of the Species Within the Action Area

Pure Apache trout are currently present within Hayground Creek, Stinky Creek, and Lee Valley Creek. Hybridized Apache trout populations occur within the West Fork Black River, Centerfire Creek, Fish Creek, and Snake Creek. Brown trout, brook trout, and rainbow trout also occur in these streams within both the hybridized and pure populations. Brown trout, brook trout, rainbow trout, and hybrids are scheduled for removal through renovation of these streams and subsequent stocking of pure Apache trout is scheduled.

Streams scheduled for stocking within the action area

EAST FORK LITTLE COLORADO RIVER (EFLCR)

The East Fork Little Colorado River is a northwest flowing tributary to the Little Colorado River in southern Apache County. It flows primarily through Apache-Sitgreaves National Forest administered lands, with its downstream most portion flowing through the Town of Greer. The EFLCR flows through the Greer and Voigt allotments. It is about 10.6 miles in length with a drainage area of about 12.3 mi². Flowing primarily through open grasslands and spruce-fir forests, it originates near the top of Mount Baldy, in the Mt. Baldy Wilderness, and terminates at the confluences of the West Fork Little Colorado River. The EFLCR is relatively small and shallow, with an average width of 10.1 feet, and an average depth of .5 feet (U.S. Forest Service 2002a).

In 1991, livestock grazing was discontinued along the upper 3 miles of stream in the Lee Valley and Phelps pastures of the Voigt Allotment. In the 1997 Allotment Management Plan revision for the Voigt Allotment, the Lee Valley and Phelps pastures were formally retired from livestock grazing.

AGFD fish survey records indicate that the EFLCR was surveyed in 1987, 1993, and 2001 utilizing GAWS survey methodologies. These surveys documented the overall suitability of the EFLCR to support a viable population of Apache trout but at the time included the presence of nonnative trout (Table 3).

Table 3: Number of fish sampled in the East Fork Little Colorado River.

Fish Species	Year					
	1973	1980	1987	1993	2000	2001
Rainbow trout (<i>Oncorhynchus mykiss</i>)	7	—	—	—	—	4
Brook trout (<i>Salvelinus fontinalis</i>)	1	66	465	238	61	323
Brown trout (<i>Salmo trutta</i>)	—	—	72	196	—	223
Fathead minnow (<i>Pimephales promelas</i>)	—	—	—	6	—	596
Bluehead sucker (<i>Catostomus discobolus</i>)	4	75	31	183	24	159
Speckled dace (<i>Rhinichthys osculus</i>)	—	2	12	1100	268	690

Currently the EFLCR does not support any Apache trout. However, there are plans to renovate the river in June 2003 and 2004 followed by stocking of pure Apache trout.

LEE VALLEY CREEK

Flowing primarily through high mountain meadows and spruce-fir forests, Lee Valley Creek originates near the top of Mount Baldy, in Mt Baldy Wilderness, and terminates at Lee Valley Reservoir. Lee Valley Creek is a northeasterly flowing tributary to the EFLCR on the Apache-Sitgreaves National Forest in southern Apache County. Lee Valley Creek flows through the Voigt Allotment. From its headwaters to Lee Valley Reservoir is about 1.6 miles in length with a drainage area of 1.1 mi². From Lee Valley Reservoir, the creek continues to flow another 1.2 miles to its confluence with the East Fork Little Colorado River.

Lee Valley Reservoir is a 35 surface acre impoundment. It is currently managed as a Featured Species sport fishery, featuring Arctic grayling (*Thymallus arcticus*) and Apache trout. Although the reservoir seeps into Lee Valley Creek, which is a tributary to the EFLCR, spillover from the reservoir also flows into a channel leading into the West Fork Little Colorado River.

In 1979 the Forest Service constructed a concrete block fish barrier approximately 410 feet above Lee Valley Reservoir at an elevation of 9,430 feet. The stream was successfully renovated in 1982, with an application of Antimycin-A. In 1982 and 1983, Apache trout of

Soldier Creek origin were stocked into Lee Valley Creek. The barrier during the flood of 1983 and was subsequently rebuilt. In 1987, the stream was once again renovated successfully. East Fork White River stock Apache trout were stocked into the creek in 1988. In 1989, beaver activity compromised the barrier allowing brook trout to move upstream from out of Lee Valley Reservoir. No permitted livestock grazing has occurred on any part of the stream since 1991. The 1997 AMP revision formally excluded livestock from Lee Valley and Phelps pastures of the Voigt Allotment.

Arizona Game and Fish Department fish survey records indicate that Lee Valley Creek was surveyed in 1977, 1990, 1995, and 2001 (Table 4). The 1990 (only habitat data was collected), 1995, and 2001 surveys utilized GAWS survey methodologies, and documented the overall suitability of Lee Valley Creek to support a viable population of Apache trout.

Table 4: Numbers of fish sampled in Lee Valley Creek.

Fish Species	Year		
	1977	1995*	2001*
Apache trout	—	2	4
Brook trout	48	11	44

* Collected above fish barrier.

There are plans to renovate Lee Valley Creek in June 2003 followed by stocking of pure Apache trout.

SOUTH FORK LITTLE COLORADO RIVER (SFLCR)

The South Fork Little Colorado River is a north flowing tributary to the Little Colorado River in southern Apache County. It flows primarily through Apache-Sitgreaves National Forest administered lands, with its downstream most portion flowing through private land. The SFLCR flows through the Greer Allotment. It is about 9.6 miles in length, with a drainage area of about 25.1 mi². Flowing primarily through open grasslands and spruce-fir forests, it originates near the head of South Fork Spring and terminates at the confluence of the Little Colorado River. Elevations range from 7,380 to 9,100 feet. The SFLCR is small and shallow, with an average width of 0.9 feet and average depth of 0.46 ft (U.S. Forest Service 2002a).

Arizona Game and Fish Department fish survey records indicate that the SFLCR was surveyed in 1991 utilizing GAWS survey methodologies (Table 5). The survey documented the overall suitability of the SFLCR to support a viable population of Apache trout and the presence of nonnative trout.

Table 5: Numbers of fish collected from the South Fork Little Colorado River

Fish Species	Year
	1991
Rainbow trout	95
Brown trout	290
Little Colorado sucker	1
Speckled dace	7

Currently the SFLCR does not support any Apache trout. However, there are plans to renovate the river in 2004 followed by stocking of pure Apache trout.

WEST FORK LITTLE COLORADO RIVER (WFLCR)

The West Fork Little Colorado River is a northeasterly flowing tributary to the Little Colorado River in southern Apache County. It flows primarily through Apache-Sitgreaves National Forest administered lands, with its downstream most portion flowing through the Town of Greer. The WFLCR flows through the Greer, Sheep Springs, and Voigt Allotment. It is about 7.6 miles in length with a drainage area of about 12.8 mi². Flowing primarily through open grasslands and spruce-fir forests, it originates near the top of Mount Baldy, in Mt Baldy Wilderness, and terminates at the confluences of the EFLCR and the Little Colorado River. Elevations range from 8,340 to 9,960 feet. The WFLCR is of moderate size with an average width of 13.1 feet and average depth of 0.7 feet (U.S. Forest Service 2002a).

The WFLCR is currently managed by the AGFD as an Intensive Use sport fishery. Stocking of approximately 11,000 catchable Apache trout at Sheeps Crossing occurs from April through September of each year.

Arizona Game and Fish Department fish survey records indicate that the WFLCR was surveyed in 1993 utilizing GAWS survey methodologies (Table 6). The survey documented the overall suitability of the WFLCR to support a viable population of Apache trout and the presence of nonnative trout.

Table 6: Numbers of fish sampled in the West Fork Little Colorado River.

Fish Species	Year
	1993
Rainbow trout	15
Brown trout	202
Brook trout	111

Currently the WFLCR does not support any Apache trout. However, there are plans to renovate the river in 2004 followed by stocking of pure Apache trout.

Allotment by Allotment Baseline Conditions

Greer Allotment

Dominant vegetation types on the Greer allotment include montane grasslands, wet meadows, stream associated riparian, spruce-fir, mixed conifer, and ponderosa pine (U.S. Forest Service 1998a and 1998c).

A 1997 range reconnaissance and assessment of the Greer allotment shows that overall, roughly half the herbaceous vegetation on full capacity acres is in poor condition (52%). The range conditions are variable across the landscape however, with some fair condition acres (8.7%) and a moderate amount of good condition acres (39.3%). The Greer allotment was assessed by range capacity and categorized into three classes based on capability to support sustainable livestock grazing. Full capacity (FC) acres are stable and can support livestock production. Potential capacity (PC) acres generally have the potential to support herbaceous production for livestock but currently require access, water development or other improvements to bring them to full capacity. No capacity (NC) range is not considered when determining stocking rates for domestic livestock due to naturally high erosion rates, steep slopes or a lack of herbaceous. Table 7 outlines the range condition and capability classification for the Greer Allotment.

Table 7: Greer Allotment range condition.

Range Condition Class	Full Capacity Range	Potential Capacity Range	No Capacity Range	Unavailable Range (Private Land)
			830	1,725
Very Poor		11,569		
Poor	6,917	875		
Fair	1,160	43		
Good	5,244	181		
Total	13,321	12,668	830	1,725

On full capacity acres, the range condition generally correlates with the range site landscape position. Poor range conditions are found in ungulate congregation areas such as swales, draws, and areas in close proximity to forage, water, and cover. Ungulates naturally congregate in these areas and they receive disproportionate use. Fair to good conditions are found in the uplands

and areas that receive lighter grazing pressure. On the potential capacity range, very poor (91.3%) and poor (6.9%) conditions were most common. This is due to limited herbaceous species composition. It is estimated that cool season species comprise about 30 percent of the herbaceous vegetation. The cool season component is mostly in fair condition outside of the concentration areas described above. Condition and trend studies conducted at five selected permanent locations in 1996 show an equal number of poor and fair condition sites. Vegetative trend was estimated as either static or downward. Two permanent range study exclosures had transects rated in good condition (U.S. Forest Service 1998a and 1998c).

The Greer allotment contains most of the headwaters of the Little Colorado River and there are approximately 71 miles of perennial stream within the allotment boundary. The WFLCR, EFLCR, and SFLCR constitute the primary riverine riparian areas on the Greer Allotment (U.S. Forest Service 1998a and 1998c).

In the higher elevations of the Greer allotment, the Baldy Pasture, within the wilderness, has had no planned livestock grazing since 1992. Here the WFLCR is characterized by either lower gradient wet meadow stretches or a live stream with intermittent patches of willows. Monitoring has shown that willows receive moderate to heavy grazing by elk, primarily in the spring. Banks are generally well vegetated with sedges that receive moderate use and they provide residual material for bank protection. Benches above the stream banks are vegetated by Kentucky bluegrass (*Poa pratensis*) and these are moderately to heavily grazed by elk (U.S. Forest Service 1998a and 1998c).

The remaining portion of the WFLCR on the allotment below the wilderness boundary is grazed by livestock, until it enters the steep sided canyon, below the popular Sheep Crossing day use area. This portion of the upper WFLCR has a riparian willow community (U.S. Forest Service 1998a and 1998c).

With the exception of the SFLCR, the streams on this allotment have stream reaches and areas in unsatisfactory riparian condition. Habitat parameters primarily responsible for the unsatisfactory habitat conditions include pool measure, pool structure, bank soil stability, and bank vegetation stability. The problem areas are generally in the low gradient reaches which corresponds with meadows that are attractive to grazing animals (U.S. Forest Service 1998a and 1998c).

The majority of the allotment (99.8 percent) falls within the 5th code watershed (15020001098) Little Colorado River which was rated in satisfactory condition. Specifically, within the larger 5th code Little Colorado watershed, 83 percent of the watershed within the Greer allotment was rated in satisfactory condition. The remaining 17 percent of the watershed within the Greer allotment was rated in unsatisfactory condition. The unsatisfactory condition areas are generally associated with areas near the canyon edges of the SFLCR and LCR below Greer that have inherently low levels of ground cover and therefore natural erosion rates are high in the steep rugged terrain. There are also localized areas of unsatisfactory watershed condition related to developed roads, where cattle and elk congregate in meadows, ephemeral drainages, and streambanks (U.S. Forest Service 1998a and 1998c).

Sheep Springs Allotment

The allotment is characterized by mixed conifer and ponderosa pine interspersed with open montane grasslands dominated by Arizona fescue (*Festuca arizonica*) and mountain muhly (*Muhlenbergia montana*). Acres of vegetative cover type are summarized in Table 8. Stands of mixed conifer are located on the eastern side of the allotment along a steep escarpment and on the west side of the allotment near the White Mountain Apache Indian Reservation boundary. The majority of the allotment uplands are timbered and interspersed with open montane grassland. Riparian areas are restricted to Fish Creek, Carnero Creek, Norton and Sunnyside Reservoirs, small cienegas, isolated wet meadows, ephemeral streams, sinks, and springs. Both Fish Creek and Carnero Creek are diverted for irrigation water. The majority of the allotment in the grassland type is in good range condition. The majority of the allotment in the timber types are in very poor and poor range condition (U.S. Forest Service 2002b).

Table 8: Cover Type By Acres for Sheep Springs Allotment

Type	Acres
Grassland	3,790
Ponderosa Pine	4,649
Aspen	155
Mixed Conifer	2,593
Pinyon/Juniper	3
Wetland	12
Water	74
Spruce/Fir	272
Private Property	160

The Apache-Sitgreaves Terrestrial Ecosystem Survey has classified 10,947 acres (93.5%) as having full capacity range, 481 acres (4.1%) as potential capacity range and 129 acres (1.1%) as no capacity range. Watershed conditions are primarily satisfactory at the landscape level, with 10,244 acres in satisfactory watershed condition and 1,241 acres of unsatisfactory watershed condition. Acres of unsatisfactory watershed condition are associated with soil mapping units in Ponderosa pine/pinyon-juniper woodland transition areas, south facing slopes of cinder cones, and on open grasslands of lower elevations that do not have adequate ground cover (U.S. Forest Service 2002b).

The majority of the Sheep Springs Allotment is located in the Little Colorado River watershed. A small portion, located adjacent to the White Mountain Apache Reservation, is in the White River watershed. A 1992 riparian survey for the Beehive timber Sale conducted for the Fish

Creek watershed area and subsequent 1998 and 1999 Proper Functioning Condition (PFC) surveys conducted by Forest Service and AGFD personnel on riparian conditions, indicate that the majority of riparian areas are in proper functioning condition for Fish Creek. Of the 10 miles of Fish Creek found on the allotment, less than one mile is rated as functional at risk. The remaining perennial stream reaches on the allotment were also surveyed in 1997 utilizing PFC methodology. Riparian areas are proper functioning condition in the 4.5 miles of Hall Creek above Highway 273 and in the canyon reaches below White Mountain Reservoir. There are concerns on Hall Creek where it flows through Hall Creek Exclosure that is excluded from livestock. Approximately 1.0 mile of Benny Creek, on the allotment, is in proper functioning condition with a good herbaceous vegetative component. Approximate 2.5 miles of Rosey Creek, on the allotment, are rated as functional at risk. Based on PFC surveys in 1997-1999, areas of concern have been identified in certain localized perennial stream reaches rated as functional at risk due to ungulate distribution patterns and the existing road network and associate drainage designs. Ungulate concentration in some channel bottoms is causing localized areas of bank hoof shear, raw bank and head cutting typically associated with trailing. Road crossing are also responsible for creating minor head cuts, sediment, and/or altering steam flows (U.S. Forest Service 2002b).

Voigt Allotment

Dominant vegetation types include montane grasslands, wet meadows, stream associated riparian, spruce-fir, mixed conifer and ponderosa pine. On the Voigt allotment, condition and trend studies show that the herbaceous vegetation on full capacity acres is mostly in fair with some good condition and either a static or upward trend (U.S. Forest Service 1998b and 1998d).

The EFLCR is the primary riparian area on the Voigt Allotment. In upper Voigt (Phelps and Lee Valley pastures) and in Little Horse Pasture there has been no livestock grazing since 1991. Here the EFLCR is characterized by either wet meadow stretches or live streams with intermittent patches of willows. The willow component is primarily Geyer's willow (*Salix geyeriana*), Booth willow (*Salix boothii*), and in some areas Arizona willow (*Salix arizonica*). Monitoring has shown that willows receive moderate to heavy grazing by elk, primarily in the spring. Banks are well vegetated with sedges that receive little use and they provide extensive residual material for bank protection (U.S. Forest Service 1998b and 1998d).

The remaining portion of the EFLCR on the allotment (below Little Horse pasture) is currently grazed by livestock. Overall woody riparian vegetation is absent along much of this length of the EFLCR. Cutbanks are common and some downcutting has occurred primarily in Home pasture. Monitoring has shown bank trampling to be common. The livestock rate has been reduced by 45 percent since 1992 to correct these problems and the trends are upward (U.S. Forest Service 1998b and 1998d).

Both the EFLCR and Lee Valley Creek on the allotment are Apache trout recovery streams. The EFLCR had GAWS surveys completed in 1987 and 1993, with six reaches located on this allotment. In the most recent GAWS survey none of the reaches surveyed were above the 60

percent minimum habitat condition index set by the Forest. While overall habitat conditions have declined, both ungulate damage and embeddedness rating showed improvement in the most recent survey (U.S. Forest Service 1998b and 1998d). A number of spring sites comprise the remaining riparian areas on Voigt. Most are heavily impacted, showing soil compaction and, in some sites, loss of Bebb's willow (*Salix bebbiana*) (U.S. Forest Service 1998b and 1998d).

From the PFC assessment, Upper Lee Valley Creek from the fish barrier to the Wilderness area boundary is rated as in proper functioning condition. The segment from the fish barrier to Lee Valley Reservoir is rated as function at risk with a downward trend. This unsatisfactory rating is based on observations that sinuosity, width to depth ratio and gradient are not in balance with the landscape setting. The channel is incising and draining the meadow because (1) within the vegetative component, there is low diversity in species, and vegetation (Kentucky bluegrass) is not capable of protecting stream banks during high flow conditions, (2) floodplain and channel characteristics are inadequate to protect the stream bank from side and down cutting, and (3) woody debris is inadequate to dissipate energy during high flow events. The EFLCR downstream of Colter Creek dam is rated as in proper functioning condition although improvement in plant diversity and density is desired (U.S. Forest Service 1998b and 1998d).

While livestock grazing is one causative factor in the current riparian conditions, the principle effects to the riparian and hydrologic function of the EFLCR and Lee Valley Creek are associated with the dams and reservoirs contained within the Voigt allotment. Lee Valley Reservoir, Colter Reservoir (non-functioning) and an unnamed, breached reservoir on the upper EFLCR in the Mt. Baldy Wilderness Area have all served to highly modify the hydrograph and hydraulic function of the watershed. Water is no longer impounded at the Wilderness site and Colter Reservoir dam has an internal leak and only temporarily impounds water in a small area behind the dam. Lee Valley Reservoir is managed as a sport fishery by AGFD. Additionally, State Road 273 crosses Lee Valley Creek and the EFLCR, altering stream function (U.S. Forest Service 1998b and 1998d).

The majority of the allotment falls within 5th code watershed (15020001098) Little Colorado which is rated satisfactory. The remaining relatively minor portions of each allotment fall within 5th code watershed 150601011162 (Upper Black River) which is also rated satisfactory (U.S. Forest Service 1998b and 1998d).

Effects of the Action

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action, that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

Arizona Game and Fish Department is planning to stock Apache trout into streams in the Little Colorado River beginning in 2003 [for further information on this project, refer to the Apache Trout Reintroduction Environmental Assessment (U.S. Forest Service 2002d)]. The effects section is written with the knowledge that it is reasonable certain that pure Apache trout populations will be placed within the action area during the life of the project.

Direct and Indirect Effects of Grazing on Apache trout

Extrapolations of general hydrologic and biological principles and site-specific research data provide a large body of evidence linking degradation of watersheds, stream channels, aquatic and riparian communities, and fish habitat and populations in western North America to past grazing and some current grazing management (Leopold 1924, Leopold 1951, York and Dick-Peddie 1969, Hastings and Turner 1980, Dobyns 1981, Kauffman and Krueger 1984, Skovlin 1984, Kinch 1989, Chaney *et al.* 1990, Platts 1990, Armour *et al.* 1991, Bahre 1991, Meehan 1991, Fleischner 1994). We expect that the effects of the proposed livestock grazing to Lee Valley Creek, the East Fork Little Colorado River, the West Fork Little Colorado River, and the Little Colorado River, as well as to perennial and intermittent streams, tributaries to these streams, and upland portions of the three allotments will occur through four mechanisms: 1) watershed alteration; 2) alteration of the riparian vegetation community; 3) alteration of the faunal community; and 4) directs effects to Apache trout from livestock accessing occupied habitat. These mechanisms will have varying effects to Apache trout.

Watershed Alteration

Livestock grazing may cause long-term changes to the watershed and its functions. The extent of these changes to the watershed varies with watershed characteristics, grazing history, and cumulative effects from other human uses and natural watershed processes. Watershed changes due to grazing are more difficult to document than direct livestock impacts to the riparian and aquatic communities due to their long-term, incremental nature, the time lag and geographic distance between cause and effect, and numerous variables. Despite this, the relationship between livestock grazing in a watershed and effects to river systems is widely recognized and documented (Leopold 1946, Blackburn 1984, Skovlin 1984, Chaney *et al.* 1990, Platts 1990, Bahre 1991, Meehan 1991, Fleischner 1994, Myers and Swanson 1995). Sayre (2001) notes that the emphasis in livestock grazing should be on “managing for the whole,” and that “What gets eaten by livestock is a function of numerous processes involving water, soils, decomposers, other plants, and so on.” Similarly, Naiman (1992) also notes the connectivity of the watershed with riverine and riparian conditions, indicating that water flows down through the watershed, “...integrating influences of natural and human disturbances within the catchment.” Although watershed effects vary depending upon the number and type of livestock, the length and season of use, and the type of grazing management, the mechanisms remain the same and the effects vary only in extent of area and severity (Blackburn 1984, Johnson 1992).

A combination of grazing capacity, utilization, condition, and trend data are needed for sound range management decisions, noting that grazing capacity is dynamic and can show great fluctuations with climatic trend. While all of the allotments are grazed under a deferred rotation

system, we have concluded that rest alone, as provided by the proposed action, will be insufficient to mitigate the effects of past and potential current overuse, as supported by various authors (Holechek *et al.* 1998, Mueggler 1975, Platts, 1990, Trlica *et al.* 1977). Various other measures such as reduced forage use, reduced livestock numbers, better distribution of cattle, more fencing, and awareness of sensitive areas may be necessary to mitigate the effects of past overuse.

It should be noted that overutilization is not uncommon, even in areas with established utilization criteria. Galt *et al.* (2000) note that “Consistently, actual measured use has been 10 - 15 percent higher than the intended use. We attribute this to livestock trampling, wildlife consumption, and weathering.” In desert rangelands, researchers recommend that range be stocked for around 30 - 35 percent use of average forage production, with some destocking in drought years (Holechek *et al.* 1999). While this number was developed for desert ranges, it is consistent with the findings of other researchers who indicate that a harvest coefficient of 35 percent is suitable for arid and semi-arid areas (Galt *et al.* 2000).

Information provided for the Sheep Springs allotment noted that there is a concern that watershed conditions on the upper WFLCR, EFLCR, and upper LCR are contributing sediment and impacting downstream fisheries in the Little Colorado River (U.S. Forest Service 2002c). While the Sheep Springs/Beehive Allotment only represents a portion of the upper LCR watershed, there is a concern in the entire LCR watershed regarding watershed conditions. Specifically, the overall LCR watershed concerns center on: turbidity, poor stream bank stability, and unsatisfactory riparian and fishery habitat conditions that can be attributed to impoundments, recreation, forestry practices (including forest roads), ungulate grazing, agriculture, and natural conditions in the watershed (U.S. Forest Service 2002c). However, the Addendum to the Biological Assessment and Evaluation for the Sheep Springs Allotment note that current range, watershed, and riparian conditions on the allotment are satisfactory overall. Watershed conditions within the allotment are noted as 91 percent satisfactory with the remaining unsatisfactory acres associated with south facing slopes on cinder cones (U.S. Forest Service 2003b).

On the Voigt Allotment, the 1998 environmental assessment notes that there is concern that permitted livestock use exceeds proper utilization of the forage. In addition, there is concern that riparian areas are not in satisfactory condition. Since that time changes have been made to the grazing management to try to improve some of these conditions (U.S. Forest Service 1998b). Conversely, the 2003 Addendum to the Biological Assessment and Evaluation for the Voigt Allotment note that in 1997, overall watershed and riparian conditions on the allotment were satisfactory. Watershed conditions on the allotment were also noted as satisfactory (U.S. Forest Service 2003c).

These allotments, combined with other allotments being grazed within the watershed are contributing to the overall health of the watershed. The ecological condition of the entire watershed of a particular stream is important when trying to gauge the health of fish populations

and other aquatic species. The Little Colorado watershed appears to be in satisfactory condition on this allotment, with some areas of concentrated use that are of concern to the overall health of the system.

Aquatic and Riparian Habitats

The potential effects of grazing on streambanks include the shearing or sloughing of streambank soils by either hoof or head action; elimination of streambank vegetation; erosion of streambanks following exposure to water, ice, or wind due to loss of vegetative cover; and an increased streambank angle which increases water width and decreases stream depth. In some areas, damage begins to occur almost immediately upon entry of the cattle onto the streambanks and use of riparian zones may be highest immediately following entry of cattle into a pasture (Platts and Nelson 1985, Goodman *et al.* 1989). Vegetation and streambank recovery from long rest periods may be lost within a short period following grazing reentry (Duff 1979). Bank configuration, soil type, and soil moisture content influence the amount of damage with moist soil being more vulnerable to damage (Marlow and Pogacnik 1985, Platts 1990).

Livestock grazing has been almost entirely excluded from the East Fork Little Colorado River (due to the Mt. Baldy Wilderness exclosures on the Greer Allotment) except the approximately 6 miles below Little Horse Pasture on the Voigt Allotment, West Fork Little Colorado River (due to Mt. Baldy Wilderness exclosures) and Lee Valley Creek; however, livestock will likely continue to directly alter streamside vegetation by trampling, rubbing, and grazing on herbaceous plants and browsing on shrubs within portions of the South Fork Little Colorado River on the Greer Allotment and the East Fork Little Colorado River on the Voigt Allotment. Cattle presence on streambanks destabilizes them through chiseling, sloughing, compaction, and collapse, and results in wider and shallower stream channels (Platts and Nelson 1985, Platts 1990, Meehan 1991). This may change the way in which flood flows interact with the stream channel and may exacerbate flood damage to banks, channel bottoms, and riparian vegetation. These impacts occur at all levels of cattle presence, but increase as the number of livestock and the length of the grazing season increase (Marlow and Pogacnik 1985). The Environmental Assessments and Evaluations for the Greer, Voigt, and Sheep Springs allotments note that the latest permit reduced livestock numbers to try to reduce these impacts (U.S. Forest Service 2003a, 2003b, and 2003b).

Cattle grazing in and on riparian vegetation may cause changes in the structure, function, and composition of the riparian community (Szaro and Pase 1983, Warren and Anderson 1987, Platts 1990, Schulz and Leininger 1990, Schulz and Leininger 1991, Stromberg 1993). Plant species diversity and structural diversity may be substantially reduced and nonnative species may be introduced through spread in cattle feces. Reduction in riparian vegetation quantity and health and shifts from deep-rooted to shallow-rooted vegetation contribute to bank destabilization and collapse and production of fine sediment (Meehan 1991). Loss of riparian shade results in increased fluctuation in water temperatures with higher summer and lower winter temperatures (Karr and Schlosser 1977, Platts and Nelson 1985). Litter is reduced by trampling and churning

into the soil thus reducing cover for soil, plants, and wildlife (Schulz and Leininger 1990). The capacity of the riparian vegetation to filter sediment and pollutants to prevent their entry into the river and to build streambanks is reduced (Lowrance *et al.* 1984, Elmore 1992). Channel erosion in the form of downcutting or lateral expansion may result (Heede *et al.* 1990).

According to Wada (1991) the presence of instream cover and bankcuts are important variables in defining Apache trout habitat. In addition, undercut banks, solid debris piles, and logs in contact with the water are very important as cover for Apache trout. As described above, cattle will influence these variables by grazing within the stream corridor. Grazing within the SFLCR, WFLCR, and EFLCR on the Greer and Voigt allotments will effect sheltering and feeding of Apache trout.

However, the Forest Service has committed to managing cattle grazing in order to maintain or improve riparian conditions. This will be important in repairing stream conditions within the Apache National Forest for Apache trout. However, cattle grazing continues in other riparian areas within the proposed action area, and, in fact, may be concentrated there by existing conditions. Because the numerous perennial and intermittent drainages on these allotments are tributaries to the forks of the Little Colorado River (where Apache trout will be stocked) the condition of their streambanks and riparian vegetation contributes to the condition of these rivers, especially during high flow events. These effects are mostly seen as a part of the overall watershed effects.

Faunal Alteration

Livestock use of the riparian corridor causes change in species composition and community structure of the aquatic and riparian fauna, in addition to floral changes already addressed. The aquatic invertebrate community may be degraded because of altered stream channel characteristics, sediment deposition, or nutrient enrichment (Meehan 1991, Li *et al.* 1994). Since Apache trout feed on aquatic and terrestrial insects, any changes in composition could effect feeding requirements of Apache trout.

Direct/Indirect Effects from Livestock Access to Occupied Habitat

The effects of animals wading in stream courses are of particular concern on the Voigt and Greer allotments. Documentation of livestock directly impacting fish or fish eggs is mostly through personal observation, and not very well documented in the literature. However, there are a few citations available that have documented livestock and humans trampling fish and/or fish eggs. Minckley (1973) noted that Yaqui topminnow (*Poeciliopsis occidentalis sonoriensis*) were eliminated from Astin Spring by livestock trampling. A study that examined the effects of anglers on trout egg and fry survival found that wading anglers had detrimental effects on trout redds through trampling (Roberts and White 1992). The authors also speculated that livestock trampling may have similar adverse effects. In California, an entire population of Owens pupfish (*Cyprinodon radiosus*) (a few hundred individuals) were rescued from a drying site

where they were stranded in cattle hoofprints (Miller and Pister 1971). In addition, documentation from a Bonneville cutthroat trout (*Oncorhynchus clarki utah*) project on the Goshute Reservation (UT/NV west desert, south of Wendover, UT) stated that livestock destroyed an estimated 50% of the spawning redds within an enclosure due to trampling and mucking around in the streambed (J. Stefferud, pers. comm. 2003).

Apache trout are scheduled for reintroduction into the WFLCR in 2004, the EFLCR above Colter Reservoir in 2003 and below Colter Reservoir in 2004, and the SFLCR in 2003. These streams occur within the allotment boundaries.

Greer Allotment

As part of the improvements described in the Greer Allotment Plan Revisions of 1998, livestock grazing does not occur along the WFLCR or EFLCR on the allotment. East Fork Enclosure encompasses both drainages and excludes all livestock from within the enclosure. Based upon 1993 fisheries surveys, habitat conditions in the WFLCR and EFLCR were rated as fair. Livestock have access to the entire length of the SFLCR on the allotment, approximately 3 miles. Fisheries habitat surveys conducted on the SFLCR in 1991 note that the stream was in satisfactory condition and that ungulate damage was low with ratings of 2.5 percent.

The Addendum to the BAE notes that unsatisfactory riparian conditions occurred on Benny Creek, Rosey Creek, and the upper WFLCR and were associated with ungulate distribution patterns, water patterns, water impoundments and diversions, and the existing road network.

The proposed action on this allotment will continue grazing of cattle at a utilization rate of up to 40 percent on good condition ranges, 35 percent on fair condition range, and 25 percent on poor condition range. As proposed, the action would continue for seven years. We believe this action will maintain the riparian conditions within Hall and Benny Creek on the allotment, but will contribute to cumulative degradation of channel conditions in areas adjacent to and downstream of the allotment. Grazing on the Greer Allotment is likely to adversely affect Apache trout in the SFLCR due to unrestricted grazing access along the length of the river within the allotment boundaries. In addition, grazing on the allotment is likely to adversely affect Apache trout in the forks of the Little Colorado River within and downstream of the allotment boundaries due to the effects as described above.

Sheep Springs

Apache trout currently do not occur within any drainage on Sheep Springs Allotment. The species is scheduled for reintroduction into the WFLCR which is adjacent to the allotment.

Implementation of the proposed grazing strategy is thought to result in improvements to current riparian condition. Current watershed and riparian condition are mostly satisfactory, with exceptions occurring in the riparian corridor along Rosey Creek and along one mile of Fish

Creek. Currently, riparian ratings for these stream reaches are functional at risk with an upward trend. On the allotment, the remaining drainages surveyed rated as proper functioning condition. These include the remaining reaches of Fish Creek, and both Hall and Benny creeks. Reduction in livestock from previous permits, delayed season of use for cattle, herding of sheep out of riparian areas in June and the adherence to the lowered utilization levels should improve riparian conditions.

Our concerns with the proposed action on this allotment are limited to the downstream transport of sediment on the Little Colorado River generated by continued grazing at utilization levels of up to 35 percent in riparian and upland areas that are in poor condition. The Environmental Assessment notes that approximately 2.5 miles of Rosey Creek, one mile of Fish Creek is rated as functional at risk. Based on the proper functioning condition surveys, areas of concern were identified in certain localized perennial stream reaches rated as functional at risk due to ungulate distribution patterns and the existing road network and associated drainage designs. Ungulate concentration in some channel bottoms is causing localized areas of bank hoof shear, raw bank and head cutting typically associated with trailing. However, the addendum to the biological assessment notes that the reduction in permitted livestock from the previous permit, the season of use and the continued monitoring of forage utilization standards authorized should maintain or improve current fisheries, range, watershed, and riparian conditions on the allotment over the next ten years.

Voigt Allotment

Apache trout are scheduled for reintroductions into the WFLCR in 2004, the EFLCR above Colter Reservoir in 2003, and below Colter Reservoir in 2004.

The Notice of Decision to authorize livestock grazing on the Voigt Allotment states that “to fully implement this decision, new interior pasture fences will be constructed on the Voigt Allotment to create an open riparian corridor to exclude livestock from the length of the riparian area along the EFLCR” (U.S. Forest Service 1999). However, the addendum to the biological assessment and evaluation for the Voigt Allotment notes that downstream of Phelps Research Natural Area livestock have access to the EFLCR. Additional conversations with the Forest Service verified that the fences have not been constructed to date (Deb Bumpus, U.S. Forest Service, June 18, 2003) as planned with the 2001 Decision Notice. The Forest has requested to consult on the action as proposed with no fences to exclude cattle from the EFLCR. Cattle will have access to the EFLCR under the proposed grazing management.

The proposed action on this allotment will continue grazing of cattle at a utilization rate of up to 40 percent on upland conditions, and 25 percent in riparian areas. The EFLCR is the primary riparian area on the Voigt Allotment. In upper Voigt there has been no livestock grazing since 1991. These upper sections of the EFLCR where grazing does not occur is characterized by either wet meadow stretches or live streams with intermittent patches of willows. Monitoring

has shown that willows receive moderate to heavy grazing by elk, primarily in the spring. The banks are well vegetated with sedges. As a consequence, they are providing extensive residual material for bank protection. In contrast though, the remaining portion of the EFLCR is being grazed and will continue to be grazed. Overall, woody riparian vegetation is absent along much of this length of the EFLCR. Cutbanks are common and some downcutting has occurred, primarily in Home pasture. Monitoring has shown bank trampling to be common. These conditions are expected to continue to occur as long as cattle have unrestricted access to this portion of the river. The Forest indicates that they will look into solutions to keep cattle from congregating in hotspots to remedy some of these problems.

We believe that grazing on the Voigt Allotment is likely to adversely impact Apache trout in the EFLCR due to unrestricted access along the River below Little Horse within the lower portion of the allotment. The anticipated effects of this concentration are a reduction of vegetative cover and sediment filtering capabilities in Apache trout habitat.

Cumulative Effects

Cumulative effects include the effects of future State, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of ESA.

AGFD has obtained a scientific collecting permit 10(a)(1)(A) to transfer Apache trout from fish hatcheries directly into the EFLCR, the WFLCR, the SFLCR, and Lee Valley Creek. Since the project area occurs within the jurisdiction of the A-S, it is not likely that actions that might affect listed species within the project area would not be considered a Federal action. Ongoing monitoring of the fish community is expected to occur. Fishing by anglers for Apache trout within streams in the area may occur. Actions by individuals whose land is adjacent to the Forest or its tributaries may or may not be considered Federal actions. The FWS is not aware of any other proposed non-Federal action that may affect species considered in the action area of this consultation.

Conclusion

After reviewing the current status of Apache trout, the environmental baseline for the action area, the cumulative effects, and the anticipated effects of the proposed action, it is the FWS biological opinion that the proposed action is not likely to jeopardize the continued existence of Apache trout. No critical habitat has been designated for this species, therefore, none will be affected. We present this conclusion for the following reasons:

1. There have been recent efforts by the National Forest to ameliorate some of the erosion and sedimentation problems aggravated by ongoing livestock grazing activities on many of these allotments within the watershed.

2. In general, there is an upward trend in Apache trout numbers due to recovery efforts by the Forest, Arizona Game and Fish Department, and other cooperators.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is defined (50 CFR 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined (50 CFR 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Forest so that they become binding conditions of any grant or permit issued, as appropriate, for the exemption in section 7(o)(2) to apply. The Forest has a continuing duty to regulate the activity covered by this incidental take statement. If the Forest (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Forest must report the progress of the action and its impact on the species to us as specified in the incidental take statement [50 CFR §402.14(i)(3)].

Amount or Extent of Take Anticipated

We conclude that take will occur directly due to stream access within the Greer and Voigt allotments. This take will occur in the form of harm and harassment, through either injury or death to fish by cattle during stream crossings and grazing within and adjacent to the stream corridor. We further anticipate that take will occur due to the indirect effects of grazing and the subsequent adverse effects to the riverine habitat in which Apache trout live. This take will be in the form of harm, in that habitat will be modified or degraded in such a way as to result in death or injury by significantly impairing essential behavioral patterns such as breeding, feeding, and sheltering. We anticipate incidental take of Apache trout will be difficult to detect for the following reasons: (1) dead or impaired individuals are difficult to find due to their small size as juveniles and the potential for any carcasses to be carried downstream or to be scavenged; and

(2) stocking of Apache trout will be an ongoing activity in areas potentially affected by the proposed action which would mask any population decline resulting from the take. Therefore, we define incidental take in terms of habitat conditions, and use surrogate measures to identify when take has been exceeded. We anticipate that take will occur throughout those portions of the EFLCR, WFLCR, SFLCR, and Lee Valley Creek and their tributaries included within the proposed action area. The authorized level of incidental take of Apache trout from the proposed action will be exceeded if any of the following conditions occur:

1. Cattle access the EFLCR (Voigt and Greer allotment), WFLCR (Greer allotment), SFLCR (Greer Allotment), and Lee Valley Creek (Voigt Allotment) outside of the permitted grazing areas and are not immediately removed.
2. Forage utilization objectives are exceeded, AND there is a decrease in ground cover OR channel stability decreases and these decreases are related to cattle grazing.

Utilization rates are a good surrogate measure for determining incidental take because: 1) they are easily measured; 2) they are clearly defined in the proposed action for each allotment; and 3) they relate to habitat conditions, as described in the effects section.

Effect of the take

In the accompanying biological opinion, the FWS determined that this level of anticipated take is not likely to result in jeopardy to Apache trout.

REASONABLE AND PRUDENT MEASURES WITH TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, the Forest must comply with the following terms and conditions, which implement the associated reasonable and prudent measures and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

The following reasonable and prudent measures and terms and conditions are necessary and appropriate to minimize the effects of take of Apache trout.

1. Protect riverine and riparian habitat from significant grazing and trailing effects within the EFLCR, WFLCR, SFLCR, and Lee Valley Creek.
 - a. Appropriate management actions shall be taken to ensure that cattle are not congregating within stream corridors. Methods to be used can include, but are not limited to, temporary drift fences, gap fences, and herding.
 - b. Check fencing to ensure that trespass cattle are not using these areas. If the fences are found to have been damaged they shall be immediately repaired. If any livestock are found within occupied Apache trout habitat where they are not authorized to graze they will be immediately removed.

- c. The Forest Service shall closely monitor utilization and physical damage levels to banks and existing vegetation within EFLCR, WFLCR, and SFLCR during periods of cattle use.
2. Implement the proposed action in a manner that will result in stable or an upward trend for all pastures within the allotment. Verify the upward trend through monitoring.
 - a. Soil/watershed or ecological condition, at a minimum, shall be assessed by evaluating plant density, crown and litter cover, stubble height, and other soil stability characteristics. Monitoring to document changes in watershed and soil health shall be conducted in a manner consistent with a mutually developed (by the FWS and the Forest Service) monitoring plan.
 - b. The monitoring plan shall be developed by utilizing information collected by the Forest Service and Arizona Game and Fish Department. Additional sources of information can and should be used to assess ecosystem health of the allotments.
 3. The Forest Service shall conduct necessary monitoring of the incidental take associated with this proposed action.
 - a. Records of enclosure and gap fence monitoring and maintenance shall be maintained. A brief summary on enclosure maintenance, repair, livestock intrusion, and other relevant information will be furnished in the annual report.
 - b. In the annual report, briefly summarize for the previous calendar year, 1) implementation and effectiveness of the terms and conditions, 2) documentation of take, if any, and 3) actual livestock use (head, animal months, dates of pasture use, utilization measurements, etc.) with a description of any variations from the proposed action. If other monitoring or research is completed pertaining to Apache trout or conditions of rangeland, riparian areas, or soil, a copy of the relevant reports shall be included.

Disposition of Dead or Injured Listed Animals

Upon locating a dead, injured, or sick listed species initial notification must be made to our Law Enforcement Office, 2450 West Broadway Road #113, Mesa, Arizona (telephone: (480) 967-7900) within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve the biological material in the best possible state.

Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and

threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends the following:

1. Consider reducing livestock utilization levels within the allotments to more rapidly improve watershed conditions.
2. Consider revising Allotment Management Plans to eliminate planned livestock grazing in all riparian pastures with Apache trout habitat.
3. Identify, reconstruct, or close unneeded roads on the allotments to reduce this source of sediment inflow to the stream.

In order for us to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, we request notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the action outlined in the this biological opinion. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

The FWS appreciates your cooperation throughout this consultation process. For further information, please contact Jennifer Graves (x232) or Debra Bills (x239). Please refer to the following consultation numbers: (1) 02-21-03-F-0298 for Voigt Allotment, (2) 02-21-03-F-0299 for Greer Allotment, and (3) 02-21-02-F-0501 for Sheep Springs Allotment in future correspondence concerning these projects.

Sincerely,

/s/ Steven L. Spangle
Field Supervisor

Ms. Elaine J. Zieroth

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cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (ARD-ES)

Regional Supervisor, Arizona Game and Fish Department, Phoenix, AZ
Project Leader, Arizona Fishery Resources Office, Pinetop, AZ
District Ranger, Alpine Ranger District, Alpine, AZ

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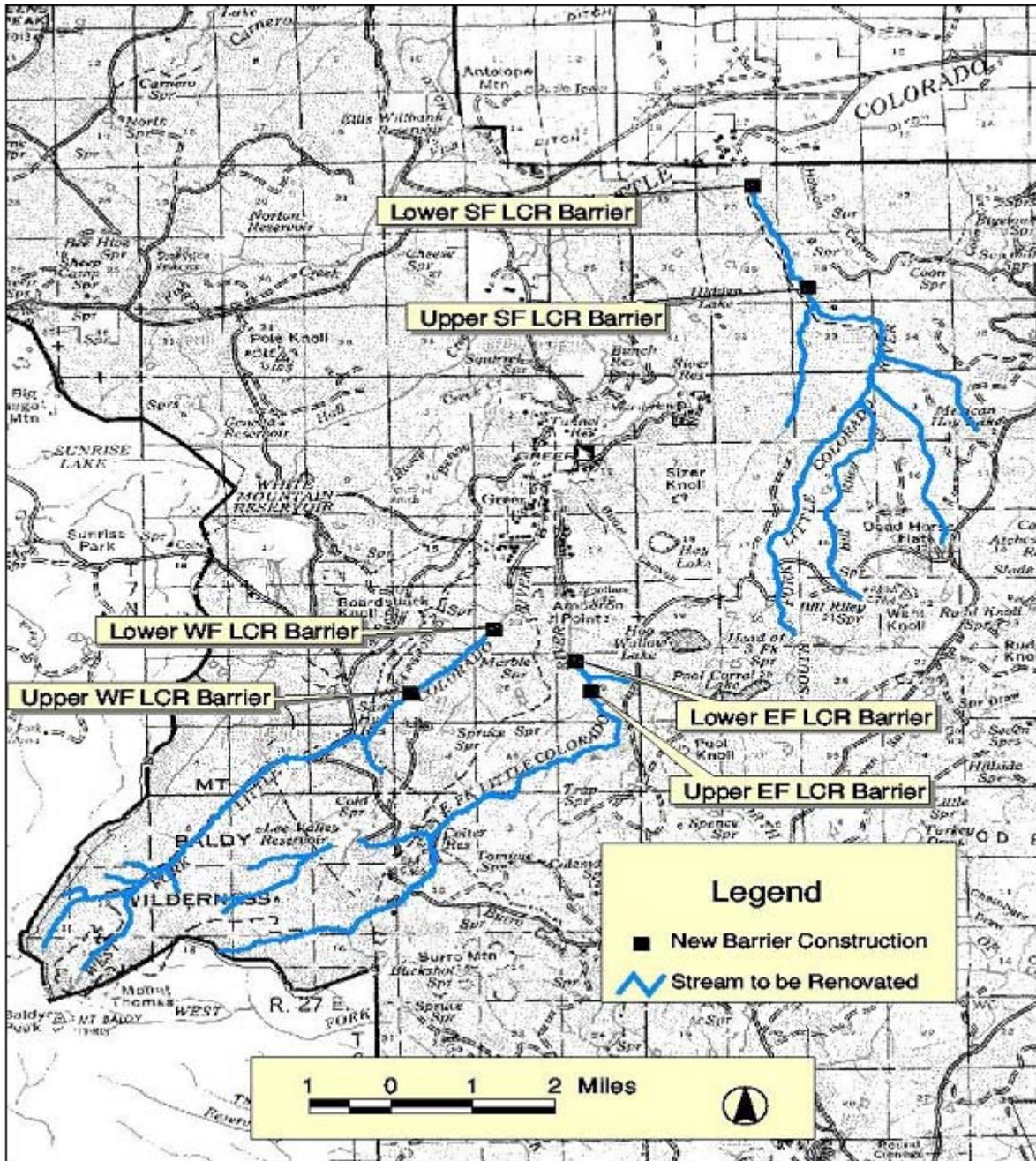
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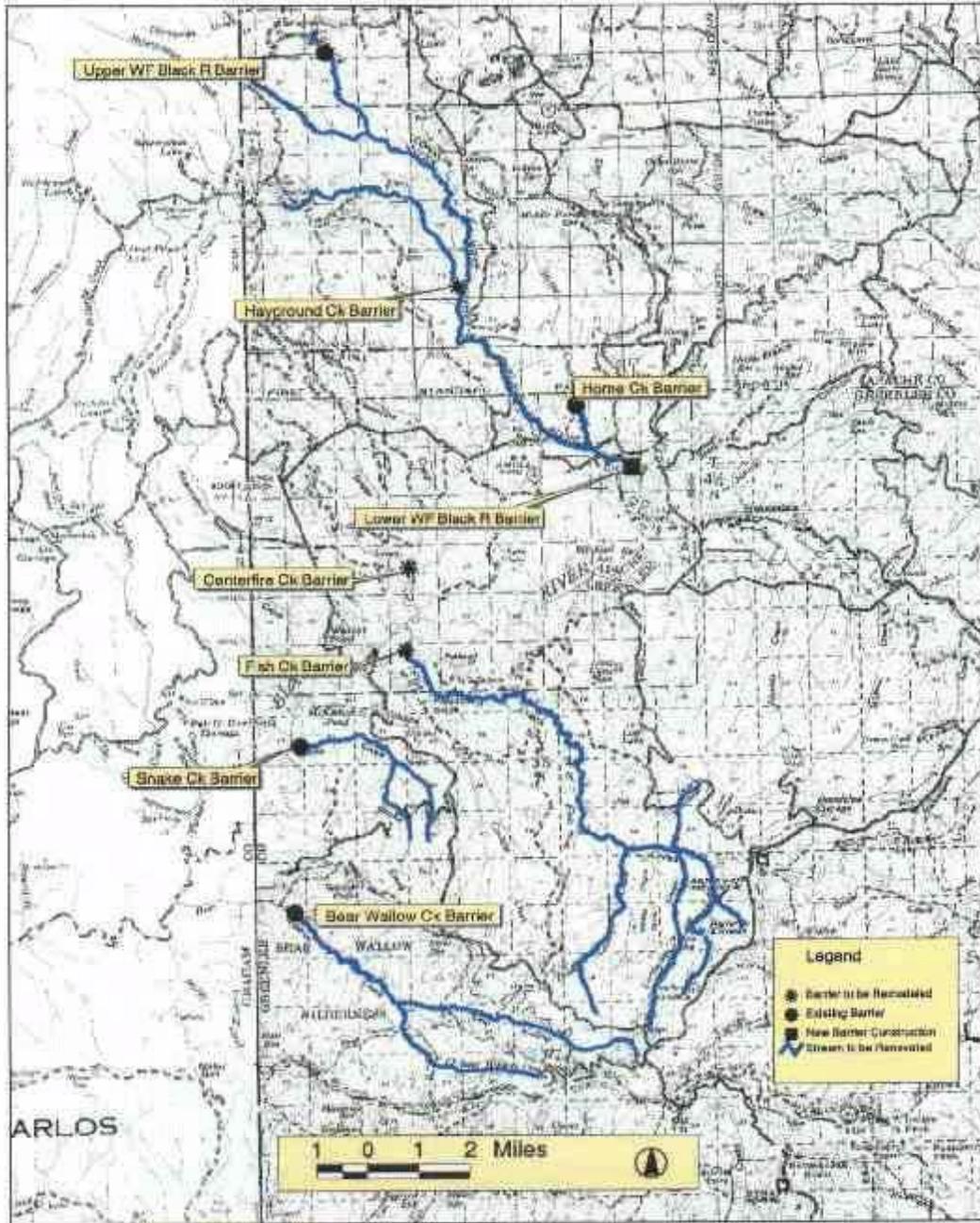
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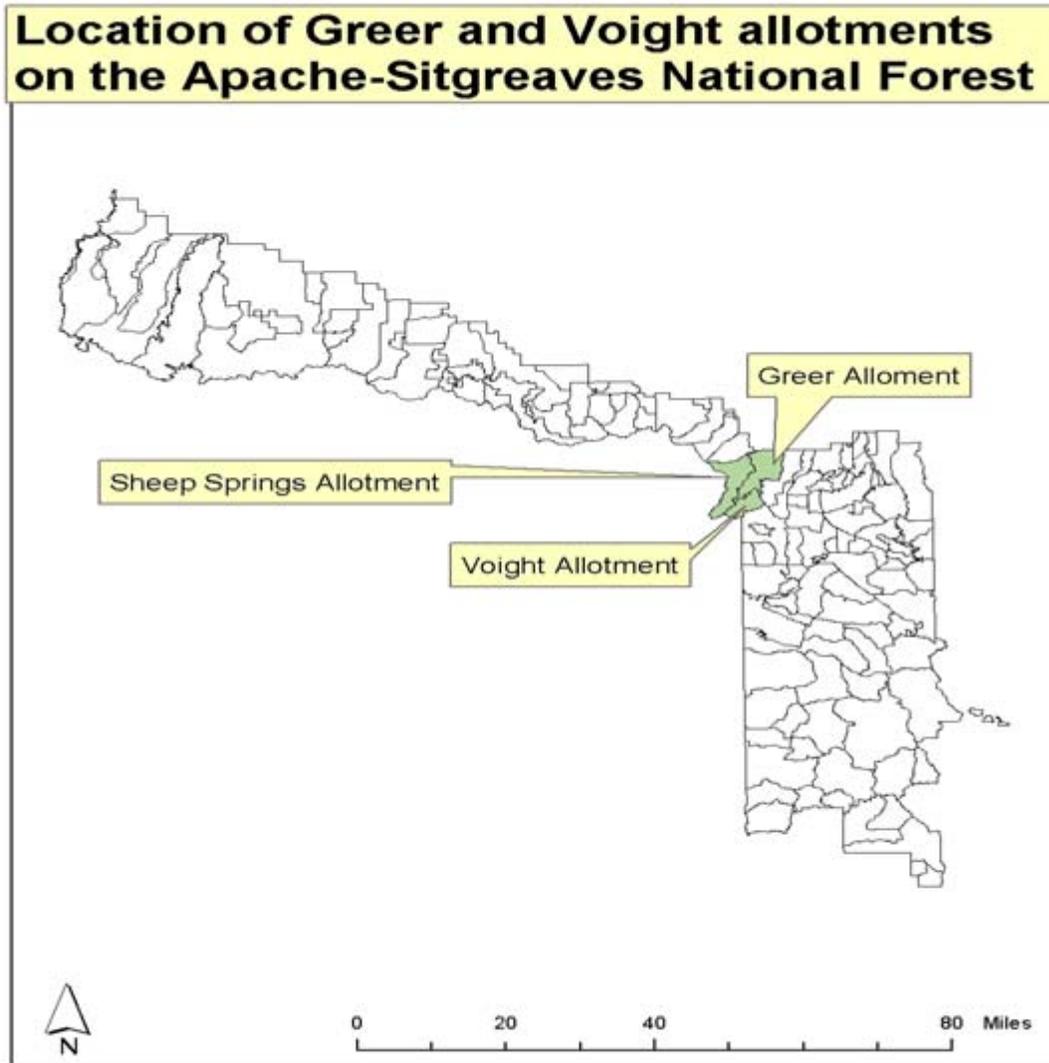
APPENDIX A – MAPS



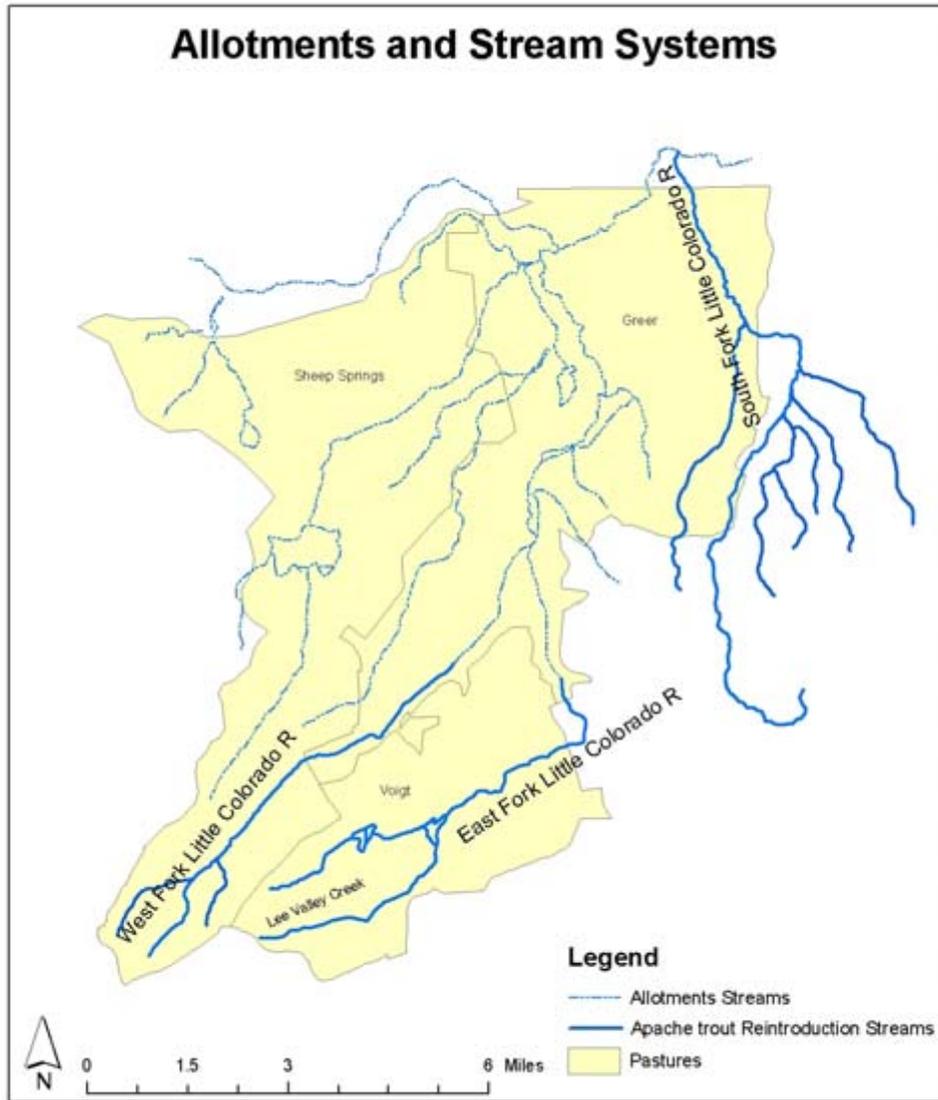
Map 1: Proposed Apache trout enhancement project locations within the LCR system on the A-SNFs. Stream renovation (removal of non-native salmonids species above barriers) would be accomplished by the use of Antimycin-A with neutralization by potassium permanganate ($KMnO_4$).



Map 2: Apache trout enhancement project locations within the Black River system on the A-SNFs. Stream renovation (removal of non-native salmonids species above barriers) under would be accomplished by the use of Antimycin-A with neutralization by potassium permanganate (KMnO₄).



Map 3: Overview Map of three allotments on the Apache-Sitgreaves National Forest



Map 4: Overview of Apache trout reintroduction streams and the three allotments