LOWER EAST FORK WATERSHED

(Previously named Antimony Watershed)

Antimony and Kingston, two rural farming communities, are both located along Highway 62, within the Lower East Fork Watershed. Early settlers in the area utilized the riparian grasses to raise cattle and subsequently grow alfalfa. The chemical element antimony (stibnite), discovered in Antimony Canyon, was sold and used by settlers to strengthen lead and other metals. The Upper Sevier River, from Antimony to Kingston, is a popular recreation area for local waterfowl hunters and fishermen. Otter Creek Reservoir, located outside the watershed, and Piute Reservoir, located within the City Creek Watershed, are popular recreation destinations for boaters and fishermen. Highway 62, between the two reservoirs, runs parallel to the Upper Sevier River, and is heavily utilized by recreation vehicles during summer months.

Good riparian areas are found along some sections of the Upper East Fork Sevier River, especially in the Black Canyon and Kingston Canyon areas.

Land Ownership

U.S. Forest Service (89,907 acres), Bureau of Land Management (39,890) and state lands (15,826) make up the majority of the watershed, with only 11,261 acres of private land occurring in this watershed (Fig. 4-42). Public access from BLM and state lands to areas along the Upper East Fork Sevier River has increased throughout this area. Numerous habitat improvement projects have been conducted in this watershed, on BLM, Utah Division of Widlife Resources and private lands. Six subwatersheds encompassing 156,887 acres are located within the Lower East Fork (Fig. 4-43, Table 4-25).

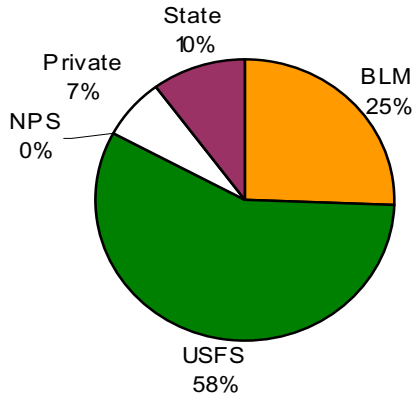


Fig. 4-42. U.S. Forest Service lands dominate land ownership within the six Lower East Fork subwatersheds.

Lower East Fork Subwatersheds	Acres
Antimony Creek	21845
Antimony-East Fork Sevier River	18878
Coyote Hollow-Antimony Creek	38018
Dry Wash	14522
East Fork Sevier River Outlet	52653
Lost Spring Draw	10970
Total	156887

Table 4-25. The six subwatersheds in the Lower East Fork occupy 156,887 acres.

Vegetation Types

Pinyon-juniper (58,538 acres) and sagebrush grasslands (43,391 acres) dominate the valley areas within the Lower East Fork. In the higher elevations, aspen (17,818 acres), intermixed with mixed conifer (2,067 acres) and ponderosa pine (4,074) provide valuable habitat for deer and elk. Lower elevation pinyon-juniper/sagebrush grasslands provide important winter forage for numerous wildlife species, including deer, elk, and sage grouse (Table 4-26, Fig. 4-44).

Vegetation Type	Acres	%
Agriculture	4805	3%
Aspen	17818	11%
Grass/Forb	1180	1%
Mixed Conifer	2067	1%
Pinyon/Juniper	58539	37%
Ponderosa Pine	4075	3%
Sagebrush/Grass	43392	28%
Spruce/Fir	20870	13%
Other	4141	3%
Total	156887	100%

Table 4-26. Historic sagebrush/grasslands and pinyon-juniper communities occur in the Lower East Fork Sevier River; however, in recent years many sagebrush/grasslands have been displaced through pinyon-juniper expansion.

Elevation, Roads & Streams

Highway 22 travels through Black Canyon (northwest corner of the Middle East Fork Watershed) to Kingston, running parallel to the Upper East Fork Sevier River, the road increases sediment transport in some areas within the watershed. However, the area from Kingston Canyon to Antimony continues to support good riparian and wetland habitat. Several important wild trout streams are contained within the watershed, including Antimony Creek and Pole Canyon.

Riparian areas along some sections of the Upper Sevier River contain diverse assemblages of grasses and woody vegetation.

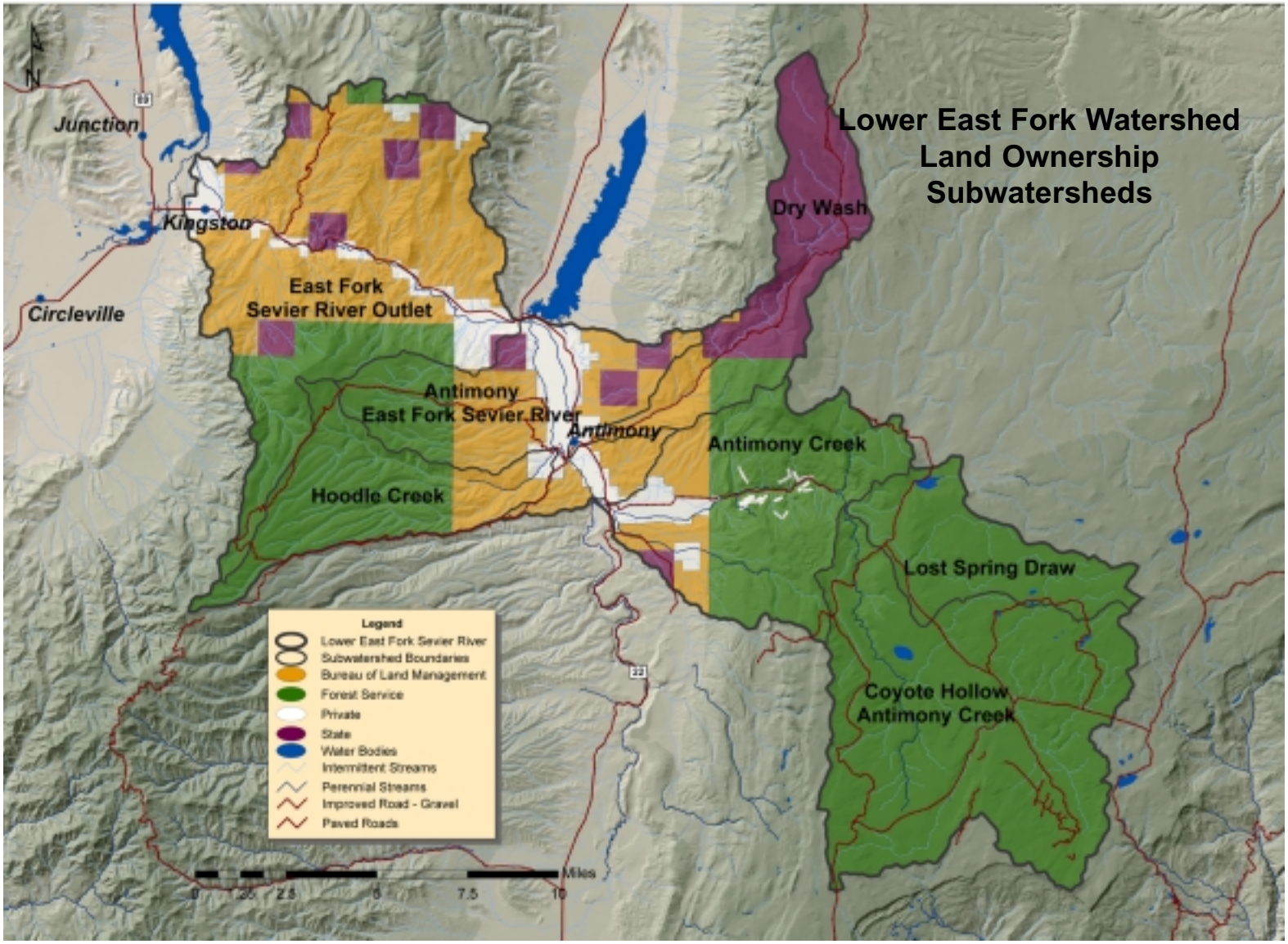


Fig. 4-43. Recreational opportunities, including fishing and hunting, occur along the East Fork Upper Sevier River, within the Lower East Fork Watershed.

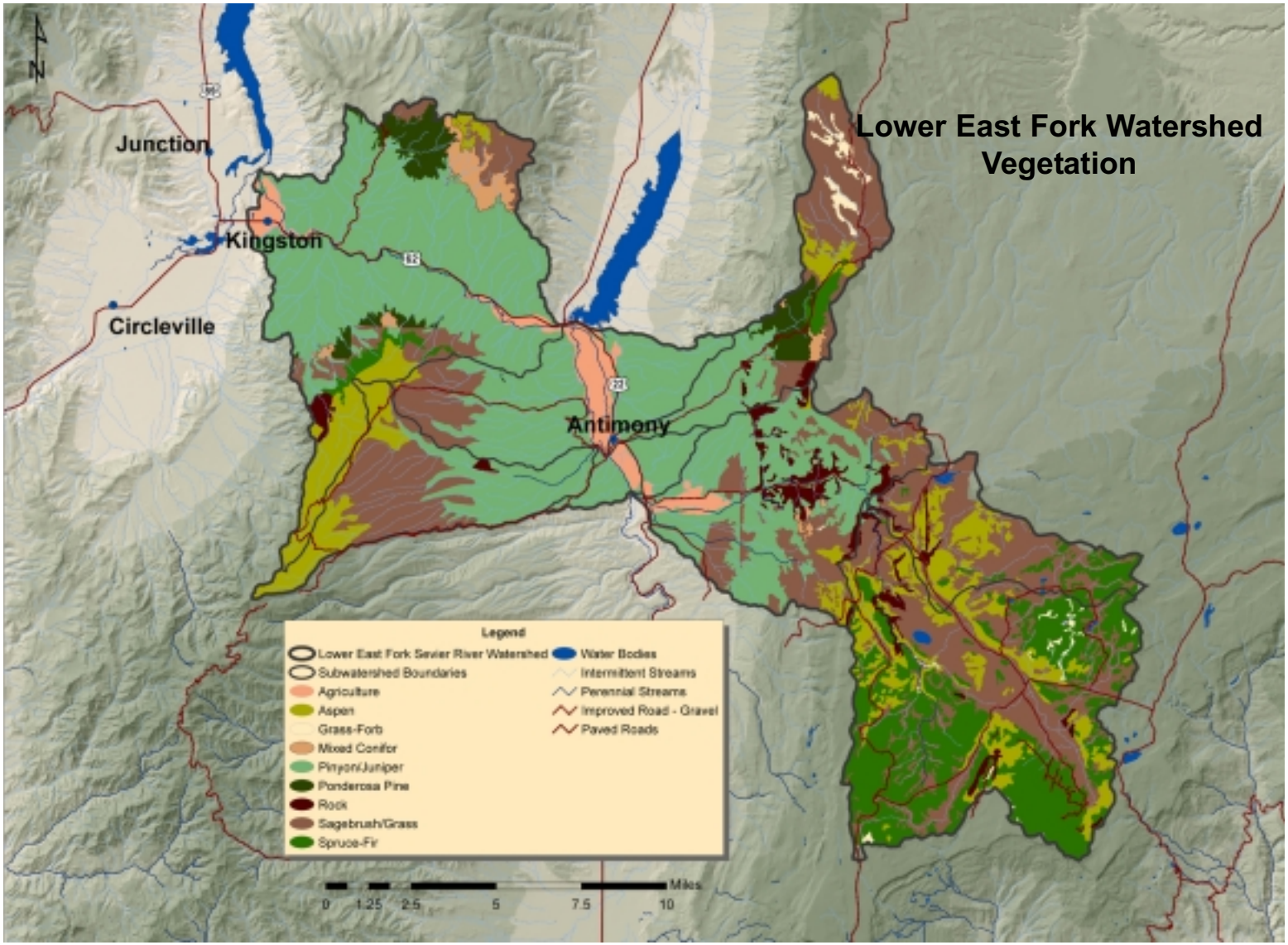


Fig. 4-44. Pinyon-juniper dominates much of the Lower East Fork Watershed.

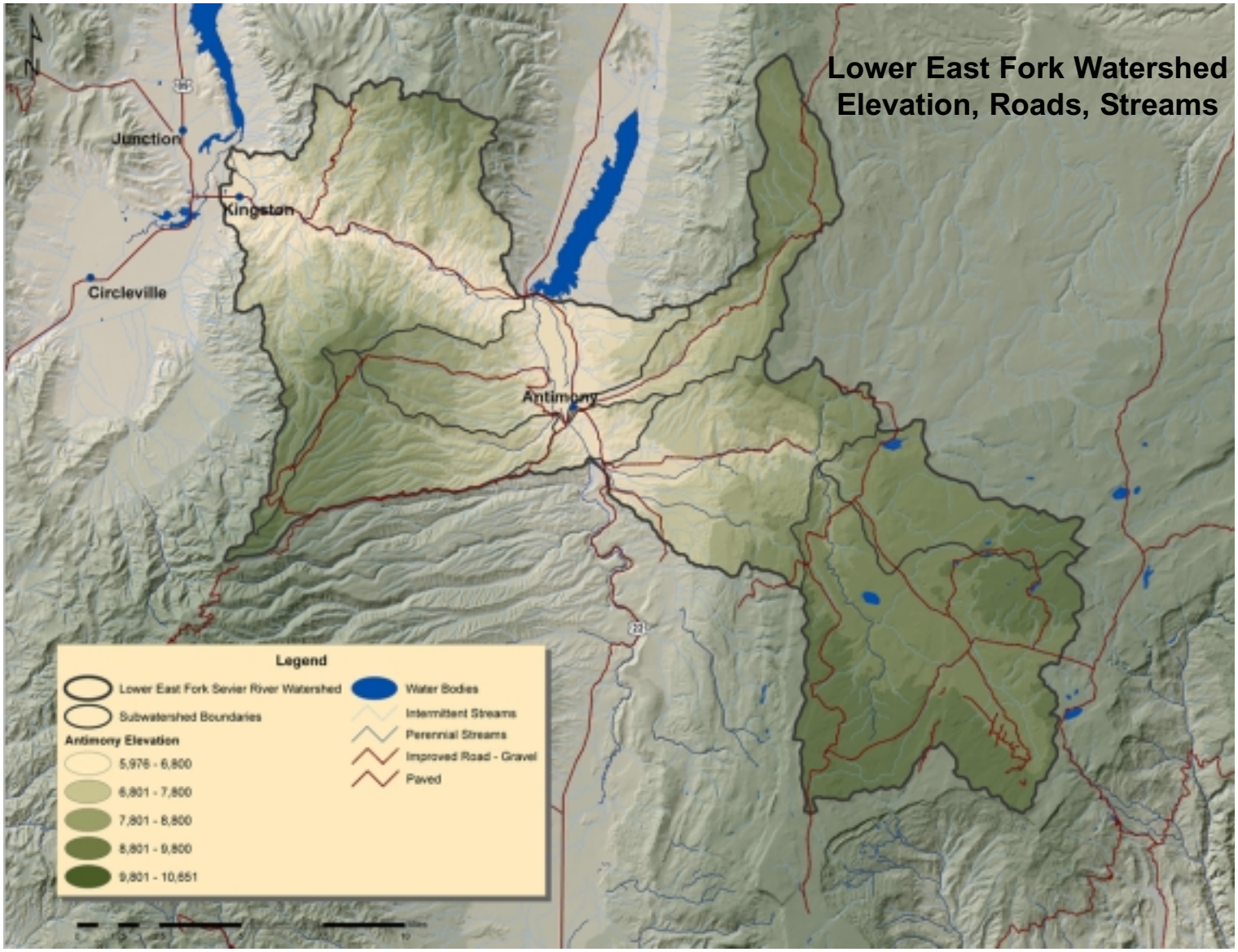


Fig. 4-45. Lowland areas along the East Fork Sevier River are utilized for grazing and agricultural . Healthy herds of Rocky Mountain elk and mule deer are found in higher elevations within the watershed.

Key Issues

Key issues identified for the Lower East Fork Watershed are: 1) Access Management; 2) Dispersed Recreation; 3) Enhancement or Protection of Deer Habitat; 4) Enhancement or Protection of Fisheries Habitat; 5) Mountain Brush Species - Fuel Conditions, Vegetation Composition - Sagebrush/Grassland Areas, Mountain Brush Species 6) Noxious Weeds; 7) Pasture Management; 8) Pinyon-Juniper - Fuel Conditions, Vegetation Composition & Accelerated Erosion; 9) Riparian Vegetation Composition. (Fig. 4-46). (Other issues and rating within the Lower East Fork Watershed are listed in Table 4-27).

1. Access Management

Current Conditions, Patterns and Trends

The construction of Highway 89, and subsequent channelization of areas along the Upper East Fork have impacted riparian habitats in addition to providing additional access to the area. Increased ATV use and dispersed camping, especially in areas around Circleville Canyon, Antimony Canyon and Kingston Canyon have increased sediment transport, degraded stream conditions and may accelerate damage to adjacent upland areas. User-made trails, with an increased number of recreationists into pristine areas, such as Antimony Canyon, will likely bring long-term changes to the watershed.

ATV and recreation use of forested lands is increasing.

Historic Conditions, Patterns and Trends

Available roads have traditionally been used for harvesting timber, with less camping and recreating in riparian areas than is currently occurring. Few resource and user conflicts occurred from these types of activities, with little or no damage to riparian and upland vegetation. Roads and trails were adequate for needed uses. Lack of major highways limited visitor access to remote areas.

Natural/Human Causes of Changes Between Current/Reference Conditions

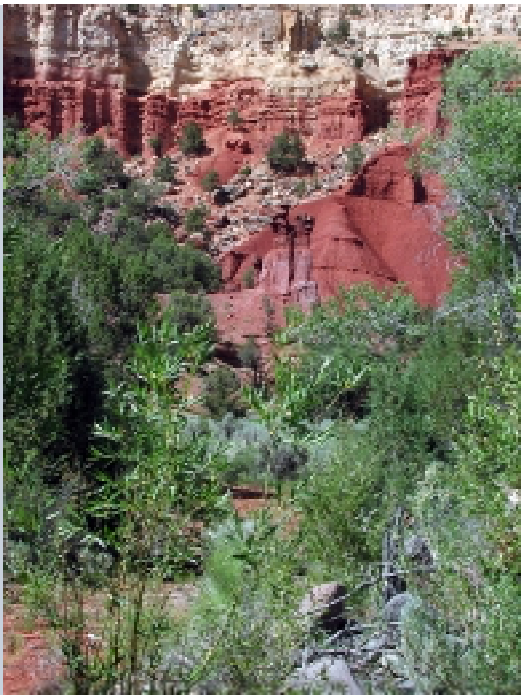
Increased recreational use of roads and riparian areas, with more off-road vehicle access, has decreased vegetation density and diversity, accelerated upland erosion, and reduced

condition of riparian vegetation and aquatic habitat in some areas. Development and associated impacts on habitat is a concern in the Antimony and Kingston Canyon areas. Roads developed to move livestock are also found throughnout this watershed and may not be adequately placed to minimize impacts to natural resources.

2. Dispersed Recreation

Current Conditions, Patterns and Trends

Recreation use of forests, grasslands and riparian areas continues to increase. The desire to seek solitude in more primitive areas has increased dispersed camping throughout the Lower East Fork, especially in Antimony Canyon and forested areas adjacent to Otter Creek Reservoir. The associated impacts from dispersed recreation include vegetation loss through trampling of stream banks and upland areas, disposal of litter along travel corridors, improper human waste disposal, and increased foot/recreation traffic traveling to and from fragile areas.



Picturesque canyon formations and lush vegetation attracts recreationists to Antimony Canyon.

Reference Conditions, Patterns and Trends

Less human use of forests, grasslands and riparian areas occurred in the past, primarily because of lack of access. Few trails and roads existed, and those in existence were used mostly for moving livestock, gathering wood and/or limited hunting. Densely vegetated riparian areas hindered travel along these corridors, while existing recreation areas were adequate for desired uses.

Natural/Human Causes of Change Between Current/ Reference Conditions

Urbanization has fragmented and parcelized many sections of land, making it more difficult to get away from other users. Increased access to wildland areas by ATV and all-wheel drive vehicles has changed the way recreationists enjoy public lands and made these areas more accessible for use.

3. Enhancement or Protection of Deer Habitat

Current Conditions, Patterns and Trends

In mid-elevation areas within the Lower East Fork, pinyon-juniper is expanding and impacting critical deer winter ranges. In general the pinyon-juniper community lacks vegetative diversity and browse species, and has little or no understory. Pinyon-juniper is

The five-mile prescribed burn is one method that managers can use to improve habitat conditions for wildlife.

also replacing sagebrush communities that may provide the only food available for wintering deer.

Reference Conditions, Patterns and Trends

Sagebrush and pinyon-juniper communities occurred within historic ranges, with good understory cover and a diversity of grasses, forbs, and brush (which are browse species for deer). Habitat was maintained by periodic fire, which supported a diversity in wildlife species, and few roads, homes and human uses occurred during summer and winter months.

Natural/Human Causes of Change Between Current/ Reference Conditions

Past treatment efforts within sagebrush grassland areas focused on resource commodity uses (farming, ranching, grazing, timber harvest), removing vegetation from within natural ranges. Vegetation range, pattern, and structure have been further impacted through intensive grazing and fire, allowing increased establishment of pinyon-juniper and decreased grass/forb production.

Antimony Creek supports a self-sustaining wild trout fishery.

4. Enhancement or Protection of Fisheries Habitat

Current Conditions, Patterns and Trends

Several high value riparian and stream habitats occur within the Lower East Fork. The East Fork Sevier River, in the Antimony area and through Kingston Canyon, supports good riparian and wetland habitats, while other riparian areas along the East Fork are in poor condition due to a lack of willow, cottonwood, and other woody plant species. Important

riparian habitat also occurs along Pole and Antimony Creeks. Currently Antimony Creek supports an excellent self-sustaining wild trout fishery, with good fishery habitat that needs to be protected from activities which may impact this fishery. Pole Creek also supports a wild trout fishery, but needs some riparian and fish habitat rehabilitation. The Sanford Fire, which burned in 2002, and subsequent downstream sediment transport, has impacted many sections along the Lower East Fork Sevier River, necessitating further streambank stabilization and water quality monitoring. Riparian and wetland areas provide habitat for the highest diversity and abundance of wildlife species in the Lower East Fork Watershed, and need to be protected or enhanced.

Reference Conditions, Patterns and Trends

Nongame fish species such as sculpin, speckled dace and leatherside chub (a Utah 'Species of Special Concern"), inhabited areas of the East Fork. Bonneville cutthroat trout were once abundant throughout the watershed. Coarser stream substrate and natural stream meanders reduced sediment transport and maintained more natural flow regimes than currently occurs. Prior habitat improvement projects along the Upper East Fork, on BLM, private and state-owned property have increased fishery habitat and fishing opportunities.

Natural/Human Causes of Change Between Current/Reference Conditions

Water diverted for agriculture and grazing since settlement in the early 1900's has been a factor in eliminating riparian habitat. However, a high number of roads developed in recent years are impacting riparian areas. Development and associated impacts are a concern in the Antimony and Kingston Canyon areas. Years of fire suppression, followed by an intense wildfire and flooding (Sanford Fire in 2002) left many upland areas in poor condition, and erosion and sediment transport under these conditions is extreme.

5. Fuel Conditions and Vegetation Composition - Sagebrush/Grassland Areas & Mountain Brush Species

Current Conditions, Patterns and Trends

Black sage, important winter wildlife forage, currently dominates many sites where effective soil moisture is limited. Native grasses have been replaced with high densities of exotic species such as smooth brome and crested wheatgrass. Forbs are lacking throughout the watershed, with viable seed sources no longer available. Lack of vegetative cover and overland flow from rain is causing surface soil

Sagebrush provides important cover and forage for a variety of wildlife.

erosion and deposition in riparian areas. In some areas, where wildfires have occurred, sagebrush has regrown to rabbitbrush. Mountain brush species are the primary staple of wintering big game and other wildlife species, such as sage grouse.

Reference Conditions, Patterns and Trends

Mixed age classes of sagebrush, with less than 15% canopy cover were dominant prior to Euro-American settlement. Patchy vegetation patterns, with several age and canopy classes of sagebrush and grasses were present and maintained by periodic fire, which occurred approximately every 20-40 years. Soil stability and productivity remained fairly intact, with little or no bare mineral soil exposed.

Natural/Human Causes of Change Between Current/Reference Conditions

Exclusion of fire has resulted in pinyon-juniper encroachment into sage/grass areas. Small, dense pondorosa pines have also displaced mountain brush ecotypes. Loss in vegetation species diversity and accelerated erosion within some areas of the watershed may be the result of high-intensity grazing throughout the valley.

6. Noxious Weeds

Current Conditions, Patterns and Trends

The potential for noxious weed introduction within the Lower East Fork Watershed is high, as recreation use increases along Highways 62 and 22, and along other highly traveled corridors. Recreational vehicles often act as weed vectors, transporting weeds great distances from their initial source, and once established, reduce forage production and compete with native plant and animal species for sunlight, moisture and nutrients.

User made ATV trails not only look unsightly, but are a likely place for introduction of noxious weeds.

Reference Conditions, Patterns and Trends

Historically, limited populations of noxious weeds occurred within the watershed. Infested livestock feed most likely introduced noxious weeds to the area; however, most populations remained small or were outcompeted by native vegetation. Noxious weed establishment on disturbed sites, such as in livestock, agricultural or mechanical treatment areas (chainings) was typically noted, but with limited dispersal.

Natural/Human Causes of Change Between Current/Reference Conditions

Currently, trails and roads serve as the single-most common points of noxious weed invasion, providing channels for weeds to migrate into more remote rangelands, agricultural and forested areas (USDAFS, 2002). Horses (if utilizing infected hay), ATV's and other motorized and nonmotorized vehicles travelling in recreation and roaded areas, act as vectors for noxious weeds, making wide-spread control difficult to accomplish.

7. Pasture Management

Current Conditions, Patterns and Trends

Grazing has been an integral use of lands within the Lower East Fork area since pioneers first settled in the late 1800's. Although today's grazing practices are much better than those of the past, better pasture management is still needed to ensure long-term use within the watershed. Newer pasture management practices increase productivity, maintain vegetation diversity, discourage weed introduction, and leave riparian areas intact. Effective pasture management practices include developing pasture management plans, rotating animals through pastured areas, limiting herd size, fencing livestock from riparian areas, maintaining browse species diversity, and leaving trees and shrubs within pastures and near stream banks intact.

Good pasture management involves providing limited access of ungulates to critical riparian areas.

Reference Conditions, Patterns and Trends

Extensive grasslands, forbs and sagebrush/pinyon-juniper ecotypes, maintained by periodic fire, existed on many lower elevation sites within the Lower East Fork Watershed. Abundant and diverse riparian grasses, willow and cottonwood occurred along stream channels. Loamy soils facilitated water run-off, reducing erosion and maintaining plant species diversity and vigor. Prior to Euro-American settlement, free-range grazing was limited to native animals such as deer and elk.

Natural/Human Causes of Change Between Current/Reference Conditions

Prior to 1950, little or no pasture management occurred, driven by the desire to homestead and utilize an apparent abundance of natural resources. Pasture management was first recognized in the 1950's, but is just beginning to be seen as a means to increase productivity, while minimizing destruction to rangelands and riparian areas.

8. Pinyon-Juniper - Fuel Conditions, Vegetation Composition & Accelerated Erosion

Current Conditions, Patterns and Trends

Pinyon-juniper encroachment into historic sagebrush/grassland communities has reduced ground cover, decreased grassland species density and diversity, resulting in elimination of portions of prime mule deer and livestock winter range. Erosion has increased due to little understory vegetation to help retain soil, with an increased wildfire risk in areas of high pinyon-juniper densities. Areas of particular concern include: Antimony, East Fork Sevier River Outlet; Antimony East Fork Sevier River; Hoodle Creek and Antimony Creek.

Reference Conditions, Patterns and Trends

Pinyon-juniper historically occupied rocky redges, outcrops and slopes within the watershed. Periodic, low intensity fires (10 to 30 years) helped maintain pinyon-juniper density

Exclusion of fire during the past 50 years has resulted in a change in vegetation types in some areas. Pinyon-juniper expansion to sagebrush grasslands has decreased forage, increased upland erosion and resulted in high fuel conditions.

and diversity, while preventing encroachment into other vegetation types. The pinyon-juniper habitat is important for wildlife species such as pinyon jay, gray viero, black-throated gray warbler, juniper titmouse and pinyon mouse. Rocky Mountain juniper typically occurs in riparian areas and in ponderosa pine and mixed conifer stands. Pinyon-juniper is typically found below the mixed conifer and ponderosa pine communities, interspersed with sagebrush, oak, and mountain brush. Pure pinyon stands occur at moderate elevations.

Natural/Human Causes of Change Between Current/Reference Conditions

Competition for available moisture and high ungulate use have substantially reduced the grass forb component in mature and old, dense pinyon-juniper stand. Pinyon-juniper

distribution has also increased because of recent fire suppression efforts. Chainings were conducted in the 1960's and 1970's on private, forested and BLM lands to promote grass-forb communities; however, lack of additional disturbance, has allowed pinyon-juniper to re-establish on these sites.
Fire suppression, historical overgrazing and a shift to seeded monocultures has increased decadent sagebrush and pinyon-juniper, increasing overland erosion.

10. Riparian Vegetation Composition

Current Conditions, Patterns and Trends

The Lower East Fork contains stream in a variety of conditions, from fully functioning to non-functional.

Cottonwood galleries and willow have been lost or are decadent within riparian areas along the East Fork Sevier River Outlet, Antimony Creek, and Antimony, East Fork Sevier River. In some areas, willows have deliberately been cleared, and along the East Fork water diversions and willow clearings have reduced vegetation diversity in riparian communities. Pinyon-juniper expansion along Antimony Creek has decreased natural stream side vegetation.

Reference Conditions, Patterns and Trends

Extensive willow complexes were most likely present along the Upper East Fork area and tributaries prior to changes in water management in the 1880's. Expansive and diverse riparian grasses, along with willow and cottonwood, helped reduce sediment influx, maintained coarser stream substrate, contributed to cooler stream temperatures, and supported normal flow regimes.

Natural/Human Causes of Change Between Current/Reference Conditions

Changes in riparian vegetation have resulted from a variety of land uses, including water diversions, livestock grazing, channel adjustments, road construction, recreation, and cultivation.

Reference Conditions, Patterns and Trends

Extensive willow complexes were most likely present along the Upper East Fork Watershed and tributaries prior to changes in water management in the 1880's. Expansive and diverse riparian grasses, along with willow and cottonwood, helped reduce sediment influx, maintained coarser stream substrate, contributed to cooler stream temperatures, and supported more normal flow regimes than currently occurs.

Near Antimony, Utah, grazing along the Upper East Fork has been extensive. Pasture management is an essential tool for increasing range productivity and protecting critical natural resources.

Natural/Human Causes of Change Between Current/Reference Conditions

Changes in riparian vegetation have resulted from a variety of land uses, including water diversions, livestock grazing, channel adjustments, road construction, recreation, and cultivation.

In winter, much of the East Fork is dewatered along Kingston Canyon to maintain flows in Otter Creek and Piute Reservoirs.

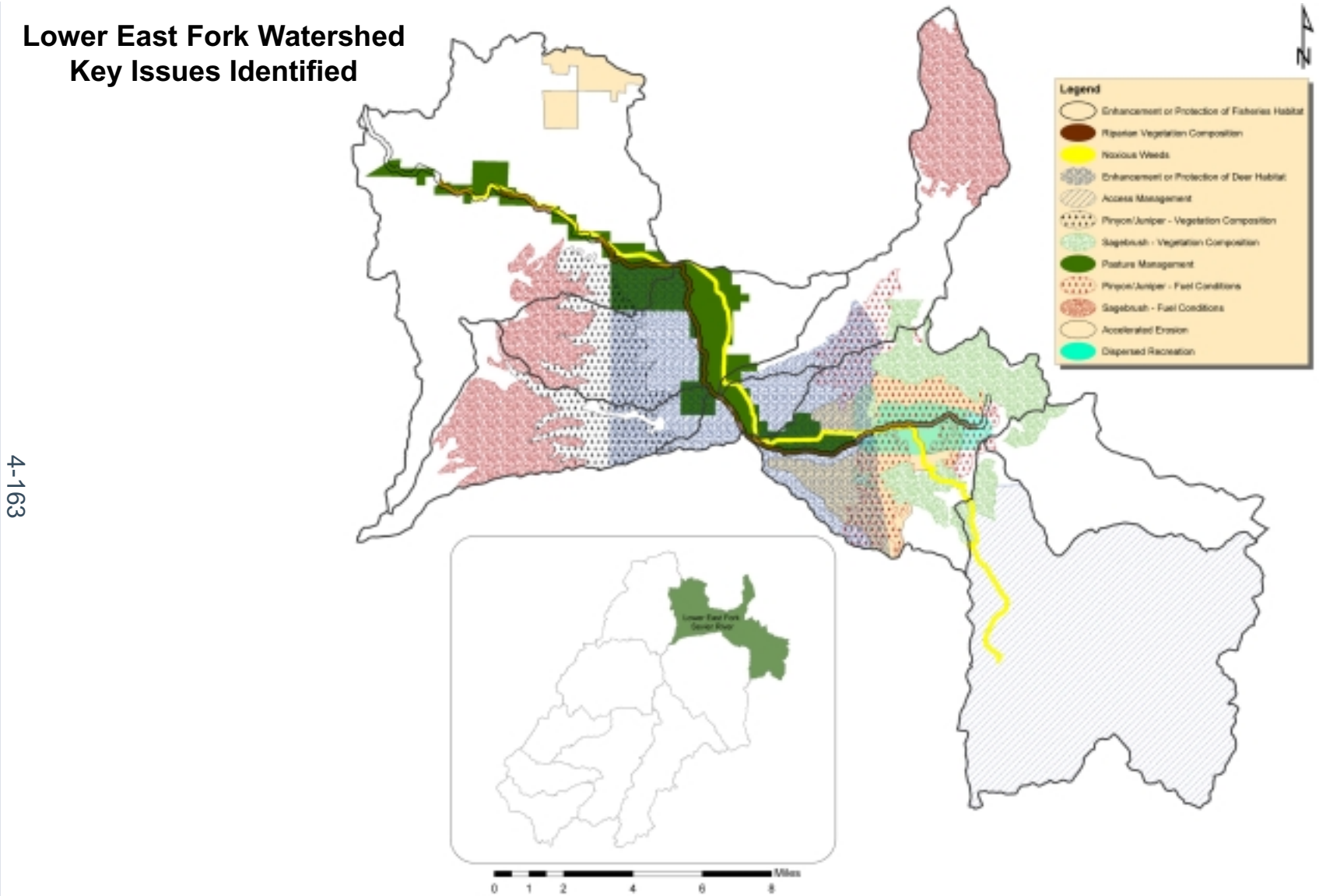


Fig. 4-46. The ten key issues identified for the Upper East Fork Watershed represent input from agriculture, fire, human uses, hydrology, species and habitat, and vegetation technical advisory committees.

	East Fork Sevier River Outlet	Antimony East Fork Sevier River	Hoodle Creek	Dry Wash	Antimony Creek	Lost Spring Draw	Coyote Hollow Antimony Creek	**Total for Lower East Fork**
Hydrology/Water Quality								
Hydrology								
Dewatering and altered flow regimes	NA	H	NA	NA	M	NA	NA	**L**
Releases from Otter Ck. Res. may be causing bank erosion along E. Fork Sevier River	H	NA	NA	NA	NA	NA	NA	**L**
Diversion of water from Castle Creek to Deer Creek has caused severe channel degredation	NA	NA	NA	NA	NA	NA	NA	**NA**
Diversions along the Sevier R. may be affecting sediment transport capacity and channel equilibrium	NA	NA	NA	NA	NA	NA	NA	**NA**
Loss of riparian veg. has resulted in reduced bank storage and summer streamflows	M	M	NA	NA	M	NA	M	**L**
Hillslope Processes								
Accelerated erosion on high elevation meadows	NA	NA	NA	NA	NA	M	H	**L**
Accelerated erosion in pinyon-juniper and sagebrush stand	H	H	H	NA	H	NA	NA	**M**
Accelerated erosion associated with urban development	NA	NA	NA	NA	NA	NA	NA	**NA**
Accelerated erosion associated with roads	M	L	NA	M	M	L	M	**M**
Rill and gully erosion on hillslopes	NA	M	M	L	L	NA	M	**L**
Accelerated erosion associated with illegal ATV use	NA	NA	NA	NA	M	L	M	**L**
Riparian Vegetation Composition								
Lack of healthy composition of riparian veg, defined by the presence of late seral herbaceous plants and multiple age class distribution of appropriate wood plant species	H	M	NA	L	H	M	M	**M**
Water Quality								
Summer home development and associated impacts (I.e., groundwater contamination, erosion, recreation, etc.)	NA	NA	NA	NA	NA	NA	NA	**NA**
Accelerated erosion, grazing management, recreation use, roads	M	M	NA	M	M	NA	M	**M**
TMDL listed and potentially listed water bodies due to nutrients, sediment, phosphorous, DO, habitat alteration, or temperature	H	H	NA	NA	M	NA	L	**M**
Channel Morphology								
Active channel adjustments (vertical or lateral)	M	L	NA	NA	M	NA	L	**L**
Accelerated bank erosion	M	M	H	H	M	NA	M	**M**
Channelization	M	NA	NA	NA	NA	NA	NA	**L**
Agriculture								
Animal Feed Operations	NA	L	NA	NA	NA	NA	NA	**L**
Water conservation concerns (Sprinkler vs. Flood Irrigation)	M	M	NA	NA	M	L	NA	**L**
Pasture Mgt.	H	H	NA	L	H	L	L	**M**
Fertilizer Usage and Impacts	L	M	NA	NA	M	L	NA	**L**
Noxious Weeds	H	H	L	L	H	L	L	**M**
Wildlife Management in Agricultural Areas	M	H	L	L	H	L	L	**M**

Table 4-27. Priority ratings for all seven Lower East Fork Subwatersheds, as identified by technical advisory committees. Issues highlighted in blue are addressed in detail in this chapter.

	East Fork Sevier River Outlet	Antimony East Fork Sevier River	Hoodle Creek	Dry Wash	Antimony Creek	Lost Spring Draw	Coyote Hollow Antimony Creek	**Total for Lower East Fork**
Fire								
Communities at Risk	H	H	M	H	H	L	L	**M**
Fuel Conditions	M	M	M	H	H	M	H	**H**
Human Uses								
Development and Effects to Groundwater	H	L	L	M	M	L	NA	**M**
Development and associated recreation uses to adjacent lands	M	L	L	M	H	M	NA	**M**
Access Management	NA	M	L	M	H	M	M	**M**
Developed and Dispersed Recreation	NA	M	L	M	H	M	M	**M**
Vegetation								
Sagebrush/Grass	M	NA	M	H	M	H	H	**M**
Aspen	NA	NA	NA	NA	L	H	H	**L**
Grassland - Meadow	NA	NA	NA	L	L	L	NA	**L**
Mixed Conifer/Mountain Fir	NA	NA	NA	NA	NA	NA	NA	**NA**
Oak/Mahogany/Mountain Shrub	H	M	M	M	M	L	NA	**M**
Pinyon/Juniper	NA	NA	NA	H	H	L	NA	**L**
Ponderosa	H	H	H	H	H	L	NA	**H**
Spruce/Fir	NA	NA	NA	NA	L	H	M	**L**
Tall Forb	NA	NA	NA	NA	NA	NA	NA	**NA**
Noxious Weeds	H	H	NA	NA	H	L	NA	**M**
Species and Habitat								
Priorities for Enhancement or Protection of:								
Southwestern Willow Flycatcher Habitat	NA	NA	NA	NA	NA	NA	NA	**NA**
Utah Prairie Dog Habitat	NA	NA	NA	H	NA	H	H	**M**
Bald Eagle Habitat	M	M	M	L	M	L	NA	**M**
Spotted Bat Habitat	M	M	M	M	M	L	M	**M**
Townsend's Big-eared Bat Habitat	M	M	M	M	M	L	M	**M**
Flammulated Owl Habitat	L	M	M	L	M	L	L	**M**
Three-toed Woodpecker Habitat	L	L	L	L	L	M	M	**M**
Northern Goshawk Habitat	L	L	L	L	M	M	M	**M**
Peregrine Falcon Habitat	L	L	L	L	M	M	M	**M**
Sage Grouse Habitat	NA	L	H	M	H	H	M	**M**
Turkey Habitat	M	L	M	M	M	M	M	**M**
Deer Habitat	H	H	H	H	H	M	M	**H**
Elk Habitat	H	H	M	H	H	M	H	**H**
Pronghorn Habitat	NA	NA	NA	NA	L	M	M	**L**
Brian Head Mountain-Snail Habitat	NA	NA	NA	NA	NA	NA	NA	**NA**
Beaver Habitat	M	M	M	L	M	L	M	**M**
Boreal Toad Habitat	NA	NA	NA	NA	NA	NA	NA	**NA**
Bonneville Cutthroat Habitat	NA	NA	NA	NA	NA	NA	NA	**NA**
Riparian Areas	H	H	M	M	H	M	H	**H**
Fisheries Habitat	H	H	M	M	H	L	H	**H**

Table 4-27 (con't). Priority ratings for all seven Lower East Fork Subwatersheds, as identified by technical advisory committees. Issues highlighted in blue are addressed in detail in this chapter.

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