

State of California  
The Resources Agency  
DEPARTMENT OF FISH AND GAME

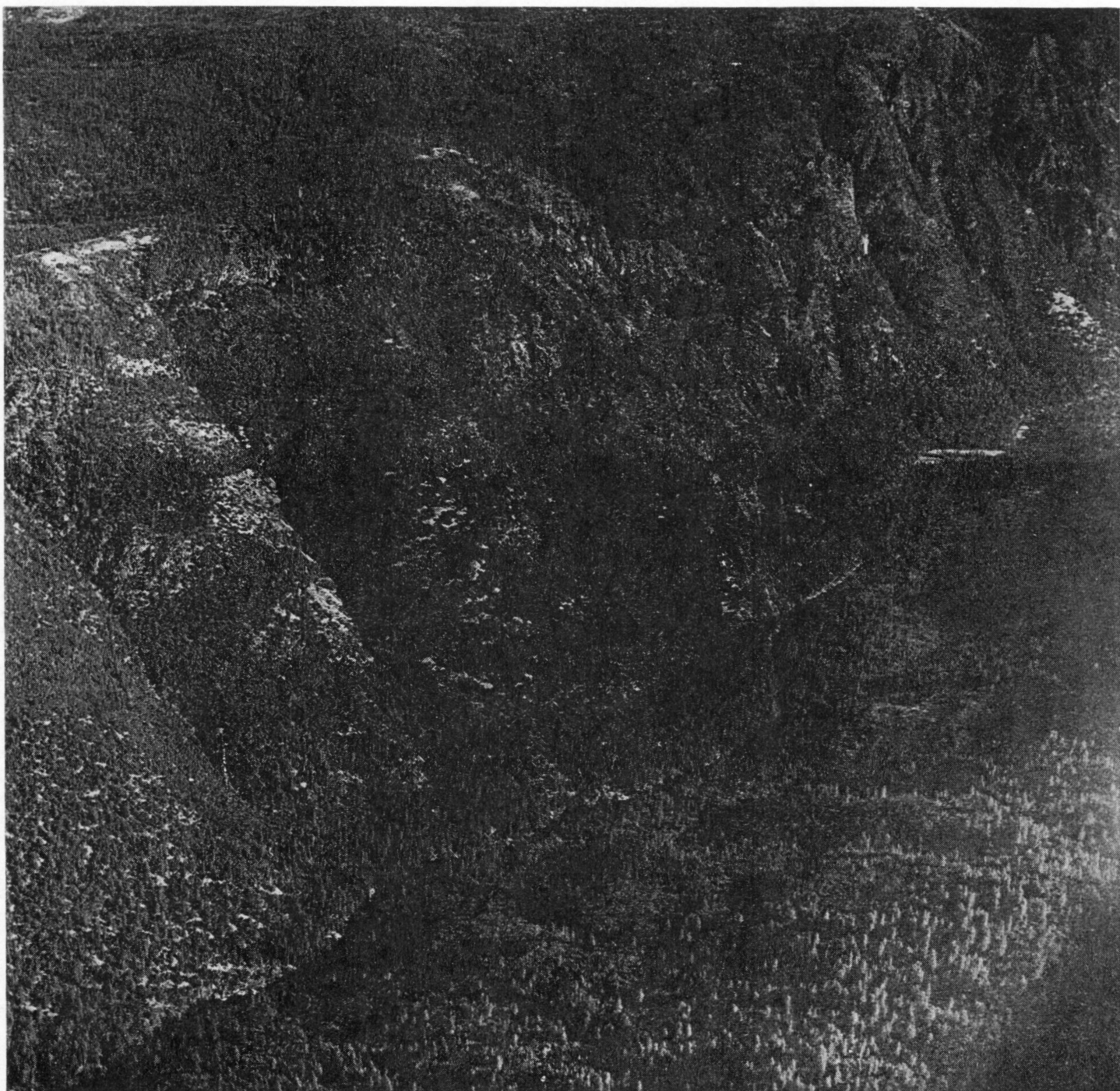
NORTH FORK AMERICAN RIVER WILD  
TROUT MANAGEMENT PLAN<sup>1/</sup>

Inland Fisheries Branch

July 1979

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<sup>1/</sup> This work was performed as part of Dingell-Johnson Project California F-10-R,  
"Salmonid Stream Study", supported by Federal Aid to Fish Restoration funds.



North Fork American River Canyon  
D.F.G. photo by: John Hummel - October 1975



# TABLE OF CONTENTS

	<u>Page</u>
PREFACE . . . . .	1
RESOURCE STATUS . . . . .	2
General Setting . . . . .	2
Land Ownership. . . . .	5
Access. . . . .	5
Description of Fishery . . . . .	9
Fish Species . . . . .	9
Fish Habitat . . . . .	9
Trout Growth . . . . .	10
Angling Use. . . . .	13
MANAGEMENT PROGRAM . . . . .	13
Management Goals. . . . .	13
Management Direction. . . . .	14
Fishery Management. . . . .	15
Recommendations. . . . .	15
Environmental Problems and Land Use Management. . . . .	15
Mining . . . . .	17
Timber Management. . . . .	18
Water Development. . . . .	20
Land Development . . . . .	20
Trail Bike Use . . . . .	21
MONITORING PROGRAM. . . . .	22
PROGRAM IMPLEMENTATION SCHEDULE . . . . .	24
REFERENCES. . . . .	25
APPENDIX . . . . .	26

## PREFACE

In 1966, the Department of Fish and Game in the California Fish and Wildlife Plan recommended expansion of trout management activities to "protect and enhance wild trout fisheries." In response to this recommendation and to concerns expressed by the public, the California Wild Trout Program was established by the California Fish and Game Commission in 1971. The primary purpose of the program is to preserve attractive trout stream fisheries which are naturally sustained by wild strains of trout as opposed to programs which feature the stocking of catchable-sized trout on a put-and-take basis. Emphasis is placed on protecting the aquatic environment to perpetuate natural production and on preserving the natural character of the streamside environment to provide a quality angling experience.

Since 1971, the Fish and Game Commission has designated eight backcountry<sup>2/</sup> and nine roadside streams as wild trout streams. Each wild trout stream is to have its own management plan and regulations which will emphasize individuality and diversity.

Specific management objectives for each stream will use the general objectives of the wild trout program as guidelines. The guidelines are:

1. To maintain wild trout populations at levels necessary to provide satisfactory recreational angling opportunities.
2. To maintain and enhance where possible the habitat required for optimum wild trout production.
3. To preserve the natural character of the streamside environment.

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<sup>2/</sup> Remote with access largely provided by trails.

Management of backcountry streams such as the North Fork American River will also emphasize maintenance of the remote secluded quality of the angling experience, which generally involves minimizing angler encounter with man's activities.

Management of the lands surrounding the North Fork American River pursuant to its designation as a State wild and scenic river, a national wild and scenic river, and a wilderness study area, is essentially meeting the objectives of the wild trout program. As such, much of this plan is intended to identify the need for active pursuit of the management directions defined in the North Fork American River Waterway Management Plan. Most of the information contained in this plan was obtained from the Waterway Management Plan.

#### RESOURCE STATUS

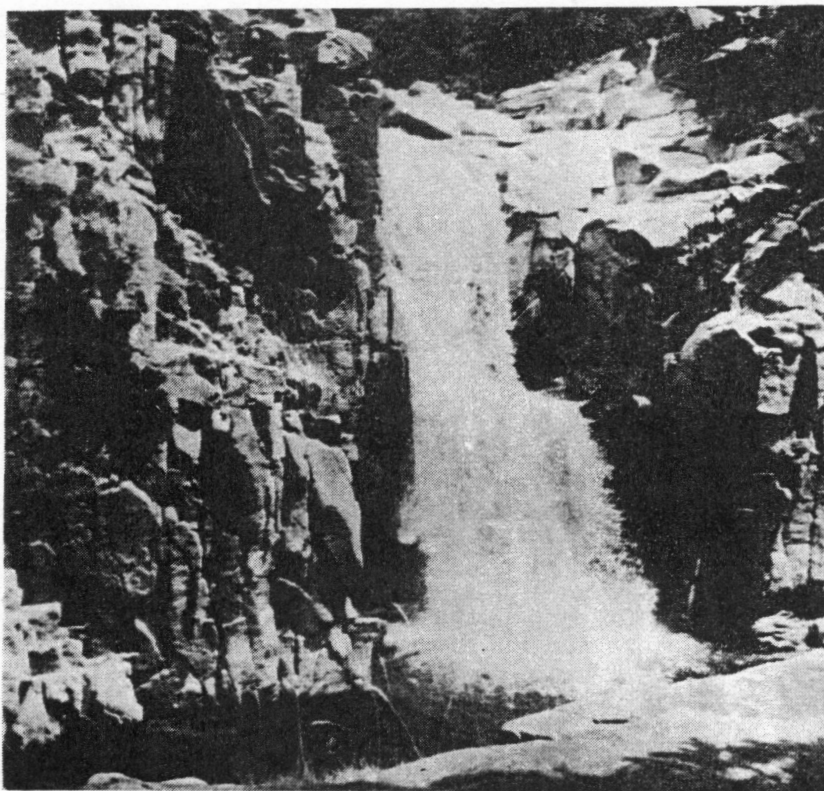
##### General Setting

The North Fork American River originates near the crest of the Sierra Nevada, in eastern Placer County, 4 miles southeast of Squaw Valley (Figure 1). It flows nearly 50 miles from Mountain Meadow Lake (7,900 ft) commonly identified as its source, to join the Middle Fork American River near Auburn (Figure 2). The wild trout area is 37 miles long, extending from the Colfax-Iowa Hill Road Bridge to Palisade Creek.

Most of the North Fork flows through a deep canyon carved through metamorphic rock. It has a very rugged character with very steep slopes and a narrow bottom. Slopes are steepest in the Giant Gap area. Deep pools framed by sheer cliffs, waterfalls cascading from 40 to 70 ft, and benches, densely wooded with alder and willow are typical of the natural beauty found in the North Fork Canyon.



Deep pools framed by sheer cliffs  
and waterfalls cascading up to  
70 feet are typical of the  
beauty found in the North Fork Canyon.



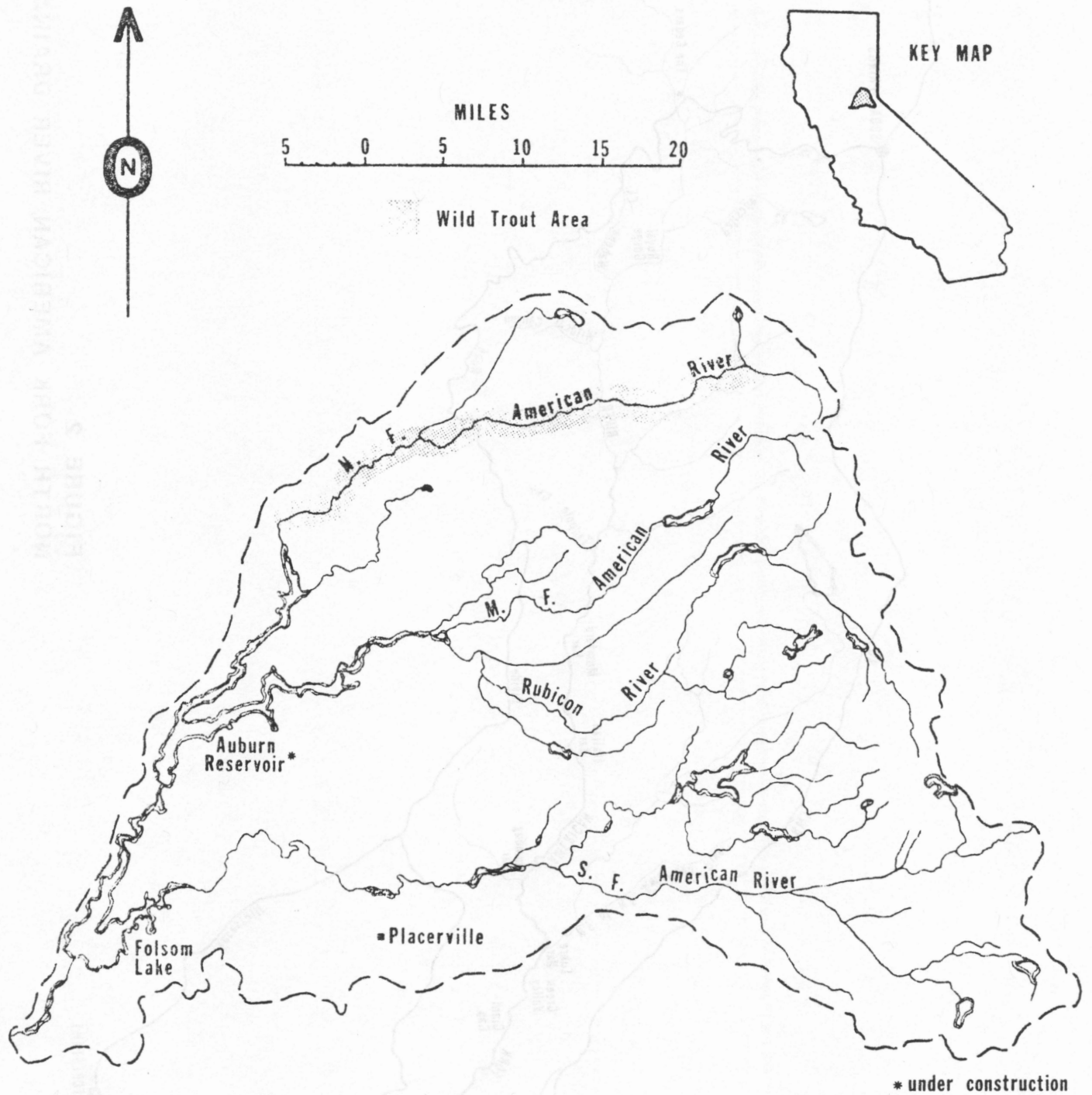


FIGURE 1 GENERAL LOCATION OF NORTH FORK AMERICAN RIVER.

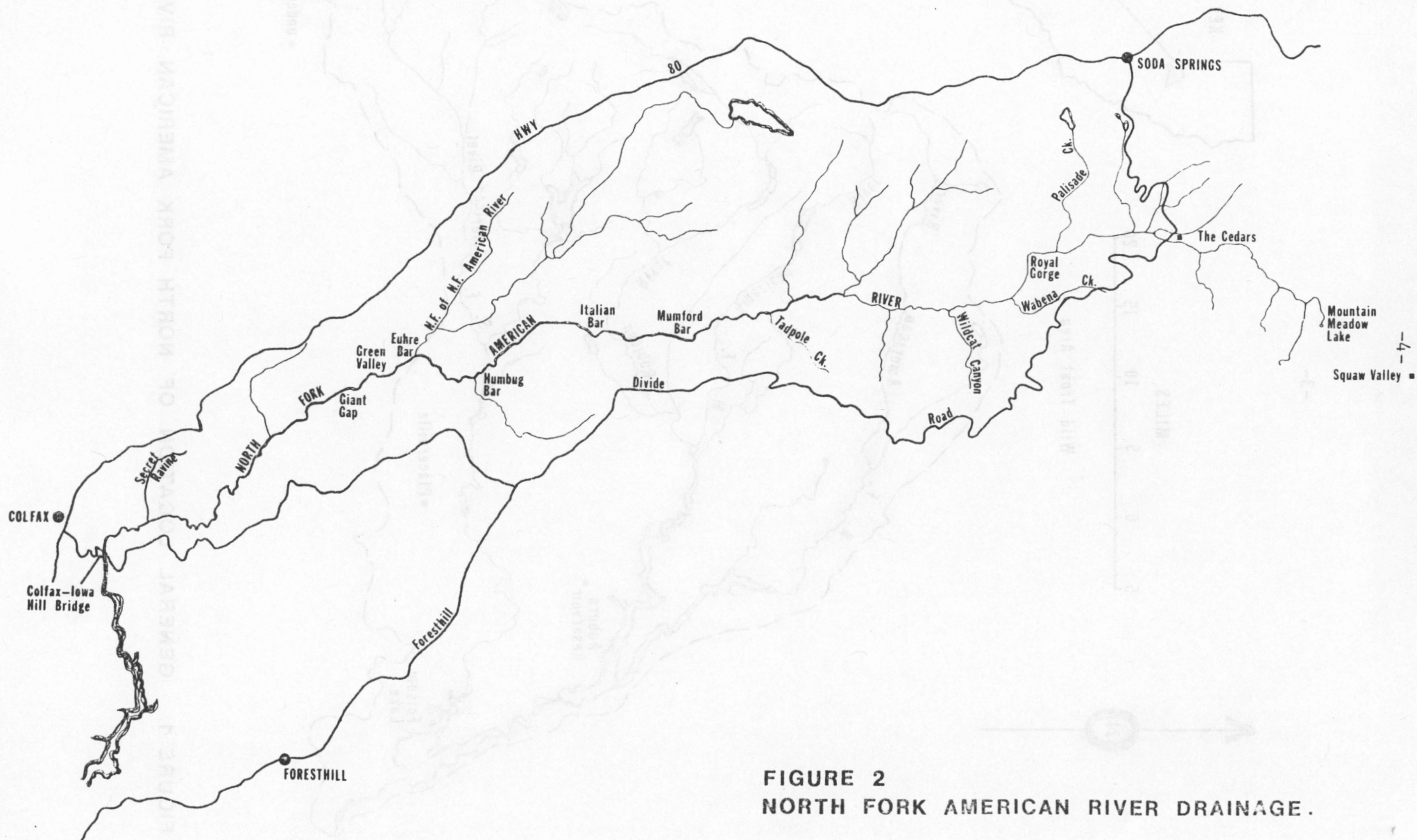


FIGURE 2  
NORTH FORK AMERICAN RIVER DRAINAGE.



The North Fork receives an annual average precipitation of 61 inches, 40% of which is snow. As much as 99% of the annual precipitation normally occurs between October and May. Flow is typically high during late spring and early summer (Figure 3).

Vegetation along the North Fork is typical of the middle and upper western slopes of the Sierra Nevada. At lower elevations, less precipitation and high summer temperatures result in a live oak, black oak, and ponderosa pine mix. Moving to higher elevations, the vegetation progresses to a ponderosa pine, incense cedar, douglas fir mix; to a sugar pine mix; and finally to a red fir and a lodgepole pine mix growth at the Sierra Crest.

#### Land Ownership

Most of the land adjacent to the wild trout area is under public ownership (60%) consisting of either National Forest or national resource land (BLM). Several large private sections do exist (Figure 4).

#### Access

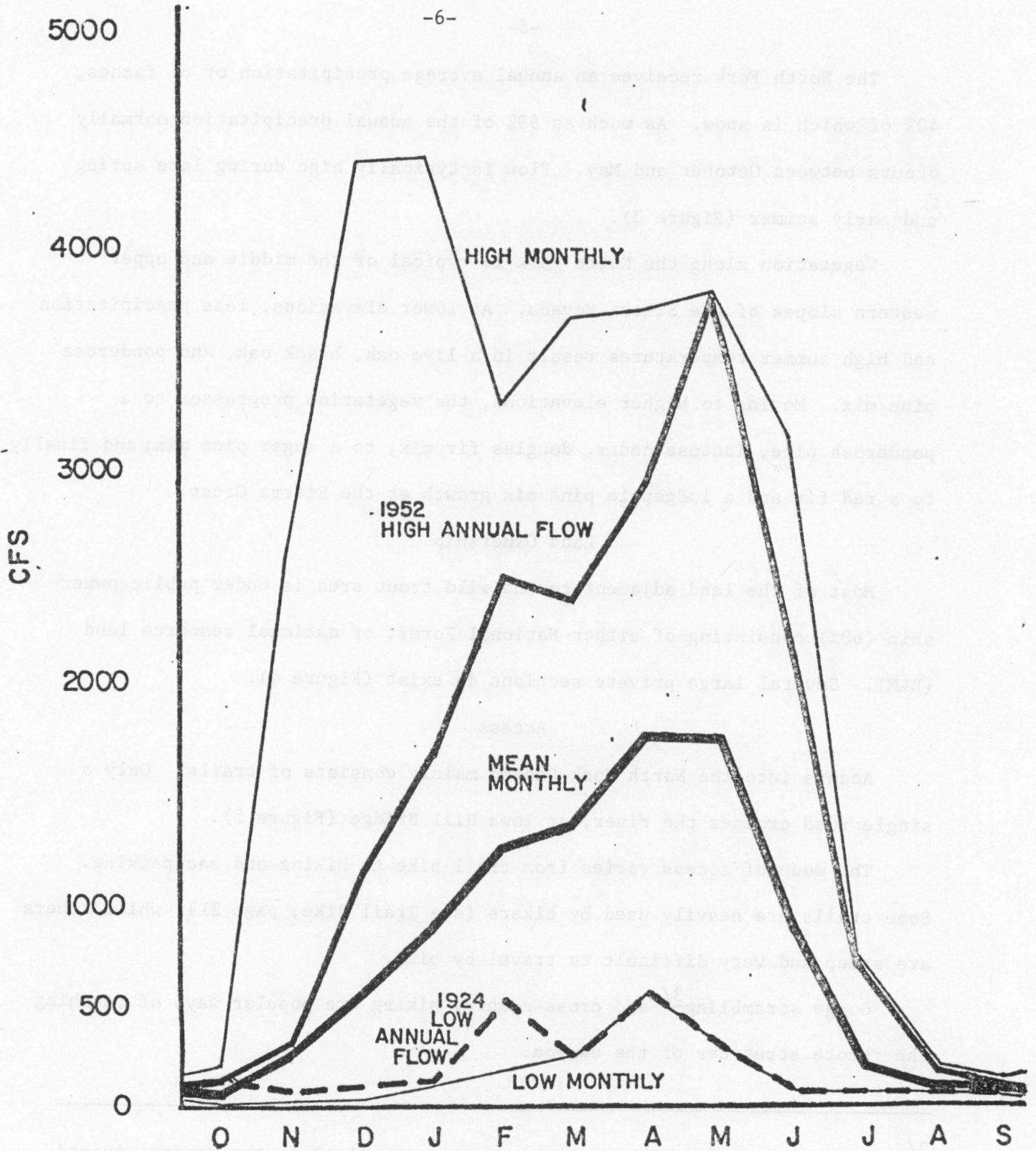
Access into the North Fork Canyon mainly consists of trails. Only a single road crosses the river, at Iowa Hill Bridge (Figure 5).

The mode of access varies from trail bike to hiking and backpacking. Some trails are heavily used by bikers (see Trail Bike, page 21), while others are steep and very difficult to travel by bike.

Gorge scrambling<sup>3/</sup> and cross-country hiking are popular ways of reaching the remote stretches of the canyon.

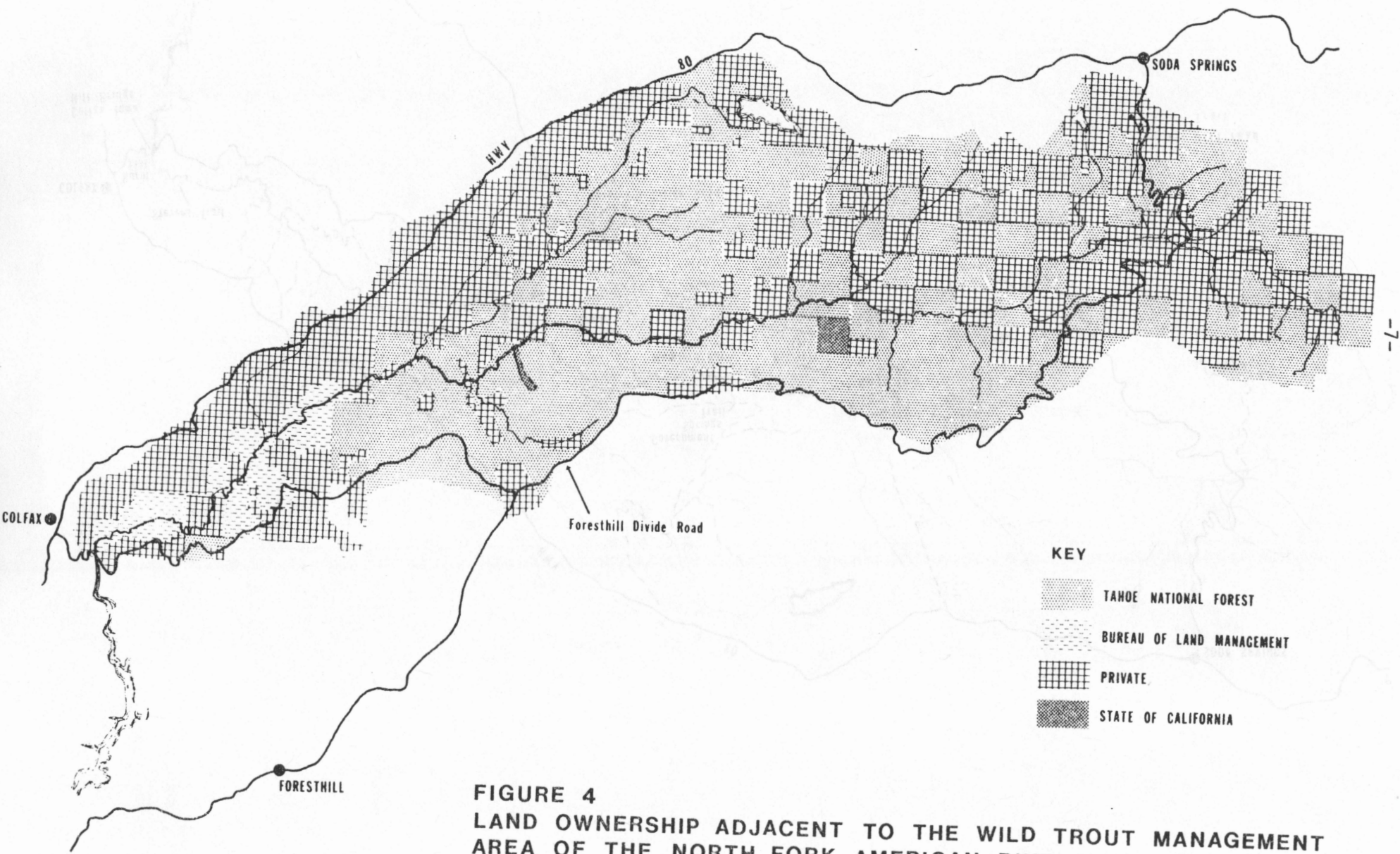
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<sup>3/</sup>Term locally used to denote cross-country travel along the remote, rugged sections of the river.



**FIGURE 3** NORTHFORK AMERICAN FLOW REGIMES NEAR COLFAX  
1911-1960 WATER YEARS (from the North Fork American  
River Waterway Management Plan)

NORTH FORK AMERICAN RIVER  
TRIPS AND BOATS PROVIDING ACCESS TO THE  
RIVER



**FIGURE 4**  
**LAND OWNERSHIP ADJACENT TO THE WILD TROUT MANAGEMENT**  
**AREA OF THE NORTH FORK AMERICAN RIVER.**



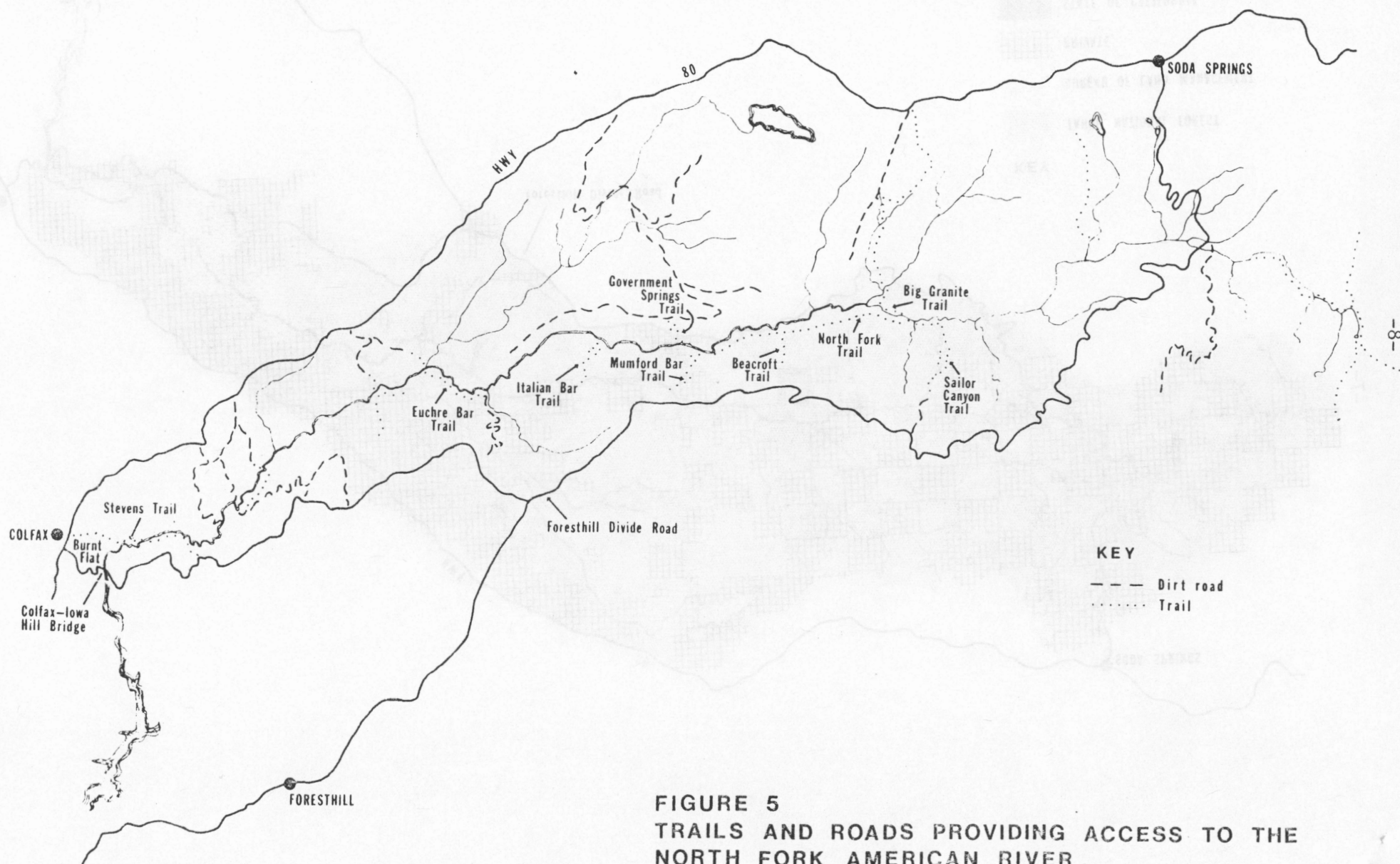


FIGURE 5  
TRAILS AND ROADS PROVIDING ACCESS TO THE  
NORTH FORK AMERICAN RIVER.

## Description of Fishery

### Fish Species

Native fish presently found in the North Fork include rainbow trout, sculpin, dace, Sacramento squawfish, and western sucker. Nonnatives include smallmouth bass and green sunfish which appear in the lower reaches of the wild trout area and brown trout which are few and scattered.

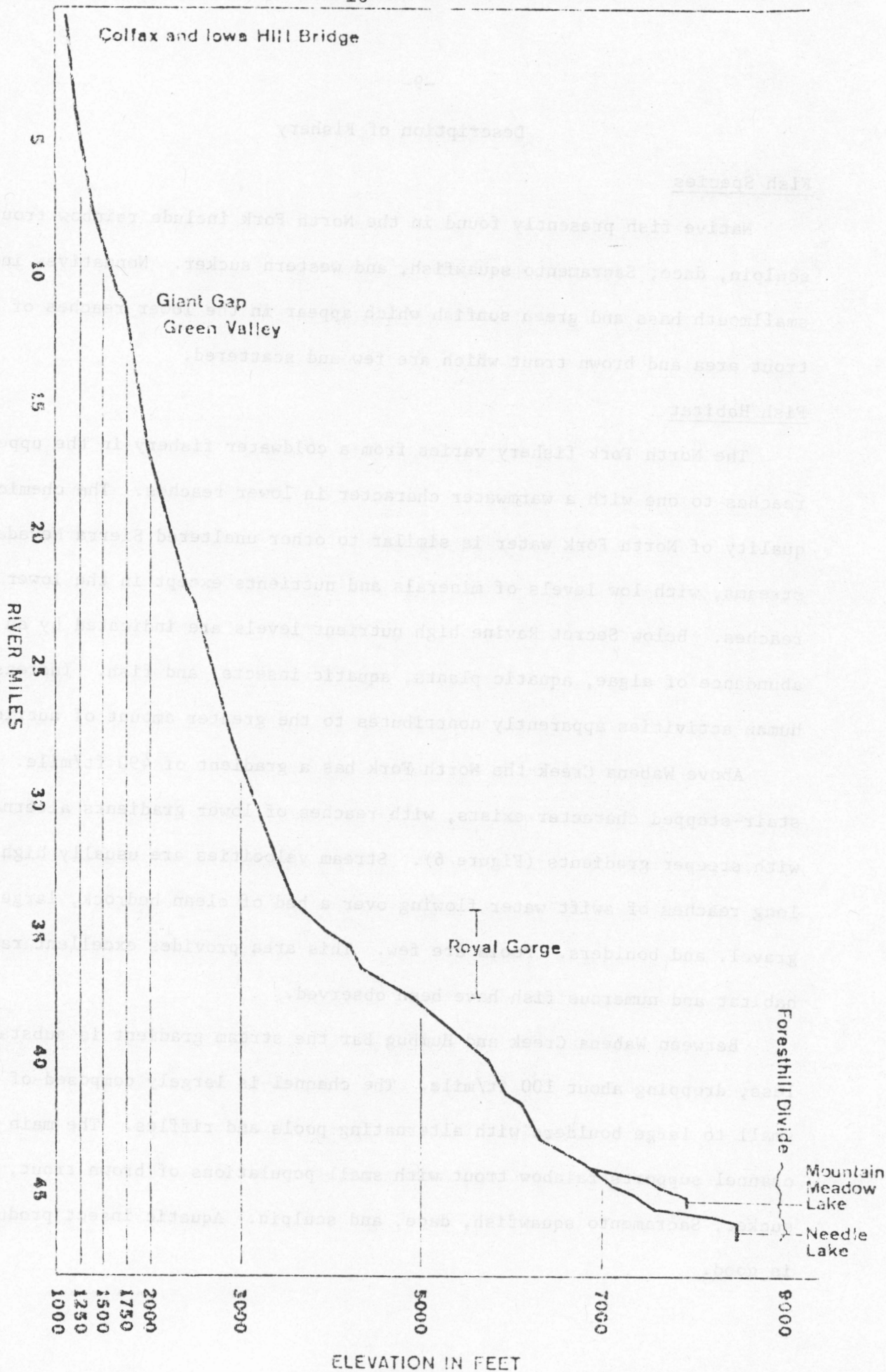
### Fish Habitat

The North Fork fishery varies from a coldwater fishery in the upper reaches to one with a warmwater character in lower reaches. The chemical quality of North Fork water is similar to other unaltered Sierra Nevada streams, with low levels of minerals and nutrients except in the lower reaches. Below Secret Ravine high nutrient levels are indicated by an abundance of algae, aquatic plants, aquatic insects, and fish. Increased human activities apparently contributes to the greater amount of nutrients.

Above Wabena Creek the North Fork has a gradient of 490 ft/mile. A stair-stepped character exists, with reaches of lower gradients alternating with steeper gradients (Figure 6). Stream velocities are usually high with long reaches of swift water flowing over a bed of clean bedrock, large gravel, and boulders. Pools are few. This area provides excellent rainbow trout habitat and numerous fish have been observed.

Between Wabena Creek and Humbug Bar the stream gradient is substantially less, dropping about 100 ft/mile. The channel is largely composed of small to large boulders with alternating pools and riffles. The main channel supports rainbow trout with small populations of brown trout, western sucker, Sacramento squawfish, dace, and sculpin. Aquatic insect production is good.

FIGURE 6 LONGITUDINAL STREAM PROFILE - NORTH FORK AMERICAN RIVER





From Humbug Bar to Green Valley the stream gradient levels to about 30 ft/mile. The channel consists of deep, bedrock-lined pools with low water velocities separated by shallow gravel riffles. Summer water temperatures reach as high as 80°F and both floating and attached forms of algae are abundant. The fishery is largely comprised of rainbow trout with a few brown trout in the upper reach progressively changing toward warmwater species such as smallmouth bass, suckers, and squawfish in the lower reaches.

Below Green Valley, in Giant Gap, the stream gradient increases to 180 ft/mile as the stream cuts through more resistant metavolcanic rocks. This reach is characterized by swift water during high flows and alternating quiet pools and steep rapids during low flows. Rainbow and brown trout are the dominant species.

In the lowermost reach of the wild trout area, between Giant Gap and the Colfax-Iowa Hill Bridge, the stream again levels to a gentle gradient (50 ft/mile). Pools are often shallower, shorter, and swifter than those in Green Valley, and alternate with numerous gravel-bottomed riffles, which provide good habitat for benthic fauna. Flow is generally swift, restricting algal growth to the attached forms, and water temperatures are warmer than upstream. Predominant fish species include smallmouth bass, sucker, squawfish, and sunfish. A few rainbow trout are present.

#### Trout Growth

The growth rate of rainbow trout in the North Fork American River is slow relative to that exhibited in more fertile, nongranitic basin streams such as Hat Creek and Fall River. Age-length data (Figure 7) indicate that Age III + rainbow are between 8 and 9 inches long. Inasmuch as rainbow trout

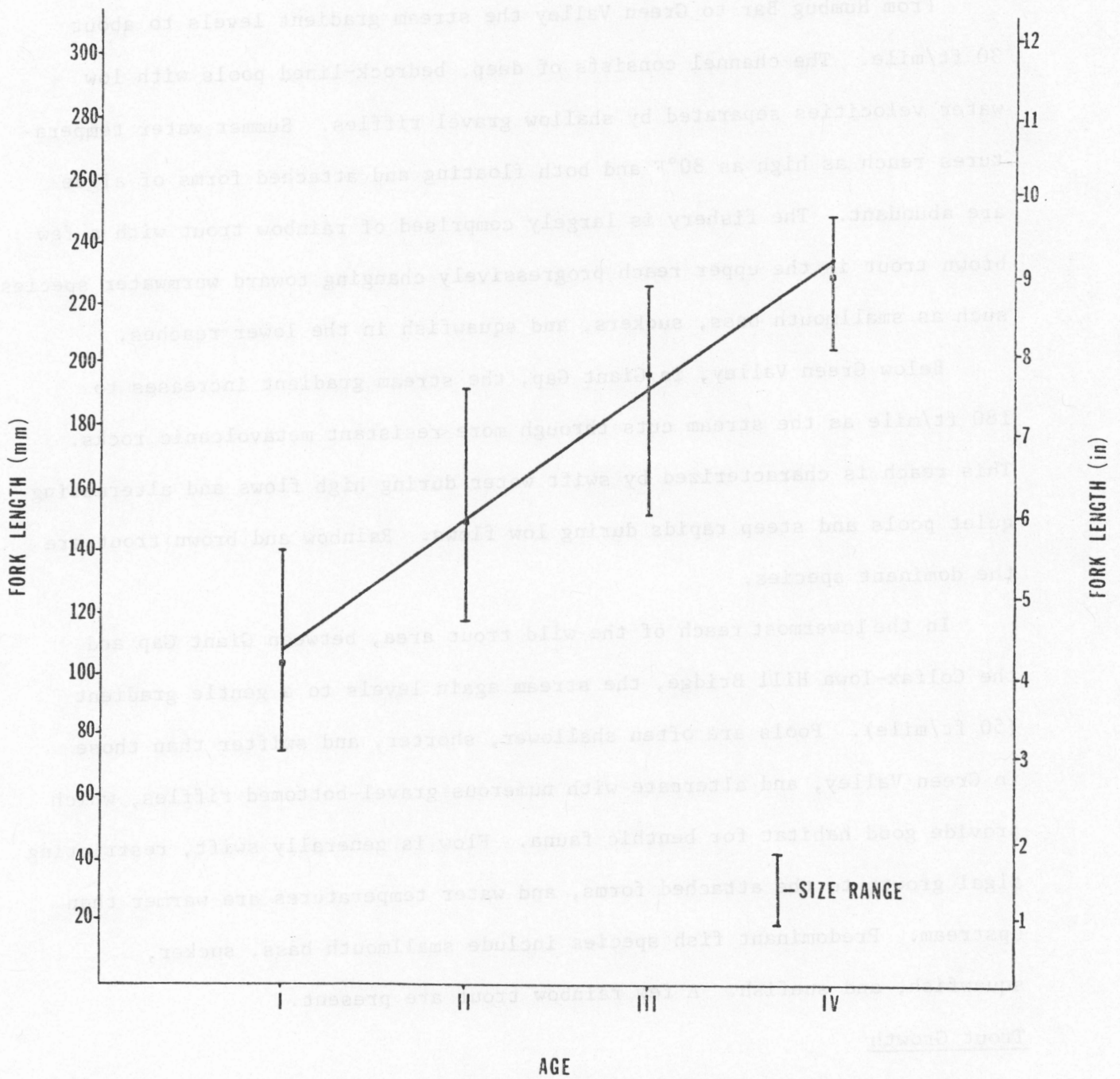


FIGURE 7 AVERAGE LENGTH OF RAINBOW TROUT AT ANNULUS FORMATION.

are short-lived (few fish live more than four growing seasons) the number of fish growing to be more than 10 inches long is extremely low. A 12-inch long fish would apparently be over 5 years old (Age V+), a rarity in a river like the North Fork.

#### Angling Use

In 1975, 109 rainbow trout were tagged and released in the upper reaches of the wild trout area (Appendix). Tag return results as of June 1977 indicate that use is fairly high for a rugged canyon stream and that it appears to be evenly distributed along all trail access points within the upper river. Access was mostly achieved by hiking, however, horses and trail bikes were also used.

Trail bike access is easier in the lower reaches of the river (see Trail Bike, page 21) which appears to generate even greater angling pressure. The average size of fish caught for tagging in the upper reach of the river was 8 inches fork length, while surveys conducted in past years within the more accessible lower reaches revealed an average length of 6 inches. The smaller average size is assumed to be a result of heavy pressure which in turn is the result of easy access.

### MANAGEMENT PROGRAM

#### Management Goals

The goals of wild trout management on the North Fork American River are:

1. To protect the aquatic environment of the North Fork American River and its tributaries.
2. To perpetuate a naturally sustained, balanced<sup>4/</sup> population of rainbow trout.

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<sup>4/</sup> Including optimum numbers of adult-age 3 trout (8 inches and greater) to maintain an adequate spawning stock and to provide quality angling in terms of catch per hour and average size of trout caught. (Specific numbers to be identified with the implementation of this plan.)



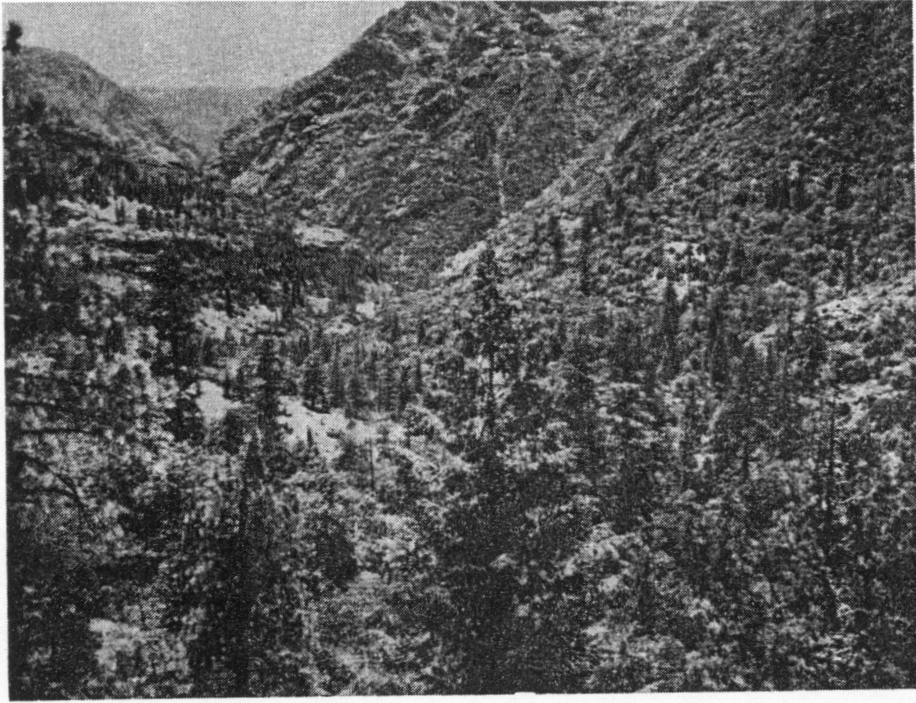
3. To provide a quality backcountry angling experience characterized by a naturally scenic streamside environment.

North Fork American River wild trout management goals are based on the following assumptions:

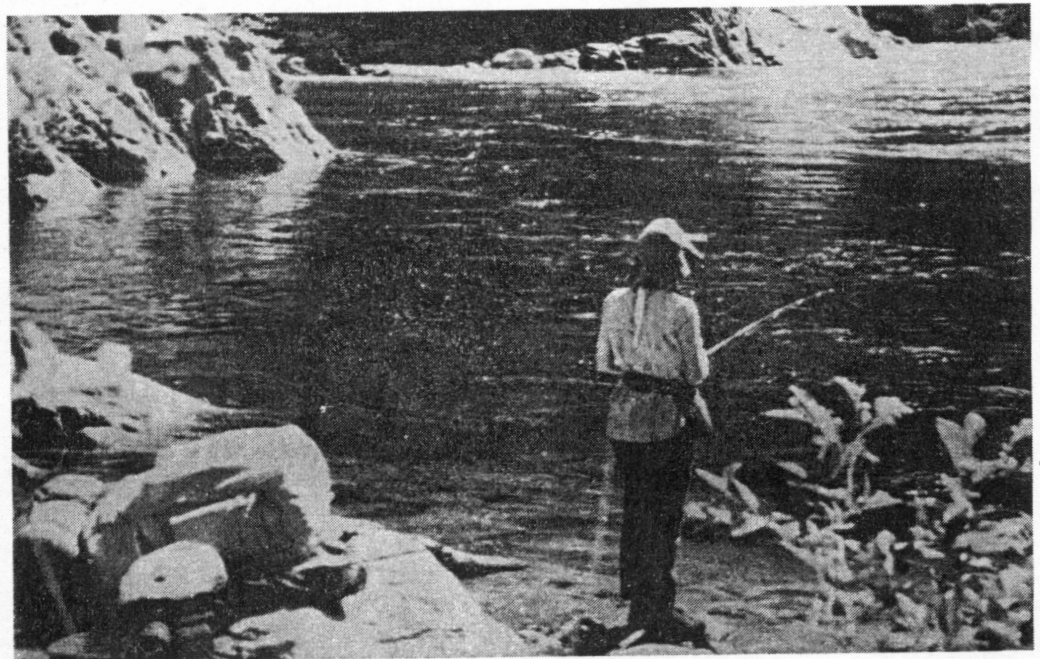
1. The demand for wild trout angling opportunities in California will continue and perhaps increase.
2. Wild trout anglers will continue to be more interested in the pleasure of fishing and in the challenge of catching larger "hard-to-catch" trout in attractive surroundings than in either angling convenience or the potential for creeling many trout.
3. The Department of Fish and Game will continue to manage the North Fork American River for wild trout, and hatchery trout will not be planted.

#### Management Direction

1. Determine the dynamics of the North Fork American River and make angling regulation changes, if needed, to achieve the objectives of this plan (page 15).
2. Monitor fishery as described on page 15 of this plan.
3. Actively pursue the goals and recommendations of the North Fork American River Waterway Management Plan (page 15).
4. Encourage the U. S. Forest Service to include the North Fork American River Wilderness Study Area in the National Wilderness Preservation System in as much as the designation would be most compatible with preservation of the wild trout resource of the river.
5. Determine the need for a fish barrier in conjunction with the Auburn Dam Project.



Most of the North Fork flows through a deep canyon carved through metamorphic rock.



Many anglers enjoy backpacking into the remote canyon areas of the North Fork.

### Fishery Management

General trout regulations currently apply to the North Fork American River trout fishery. The angling season extends from the last Saturday in April through November 15, the bag limit is 10 trout but not more than 10 pounds and one fish.

Cursory surveys of the North Fork's trout fishery indicate that the general regulations may not be providing the objective fishery in the more accessible, heavier use areas. For example, the length of fish caught in the upper, remote sections of the river was 8 inches while those caught in the lower, accessible reach was 6 inches.

### Recommendations

To identify the most appropriate management of the North Fork American River fishery the dynamics of the fishery must be defined. Natural and angling mortality rates, growth rates, and rate of recruitment are the key parameters which need to be identified. Table 1 lists those investigations which will be conducted in various areas of the river to obtain the needed information. Subsequent to these investigations angling regulations will be reevaluated relative to the goals of the plan and changes will be recommended, if necessary. Investigation of the fishery will continue in a 5-year cycle (Table 1) to monitor for needed changes in management.

### Environmental Problems and Land Use Management

The North Fork American River is one of the few remaining, free-flowing wilderness streams in California and because of this notoriety, has received various special designations from both the State and federal governments. In 1972 the State Legislature included the North Fork, from Colfax-Iowa Hill



TABLE 1. Fishery Management Activities on the North Fork American River.

- 
- I. Transect evaluation to be initially conducted for 2 consecutive years. then at 5-year intervals (starting in 1979).
    - A. Establish three, 500-ft long, permanent sampling stations: one in an area of heavy use (e.g., Iowa Hill Area); one in an area of moderately light use (e.g., Euchre Bar Area); one in an area of very light pressure (e.g., Wildcat Creek area).
    - B. Make standing crop estimates using standard techniques (mark-and-recapture or catch-and-removal).
    - C. Collect age, length, and weight data for use in developing growth information, etc. (for trout only).
  - II. Tagging program to be repeated every 5 years to obtain fishery dynamics data and observe trends in angling use (to be conducted concurrent with transect evaluation).
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Bridge to its source, in the State Wild and Scenic River System. A management plan is being prepared to implement the mandate of the California Wild and Scenic River Act: to preserve the river in its free flowing state, together with its immediate environments, for the benefit and enjoyment of the people of the State.

In 1978, the North Fork was designated a National Wild and Scenic River. A federal study is also ongoing to determine whether a wilderness area should be designated on lands in the basin, which include a significant reach of the North Fork.

### Mining

The North Fork American River was once the site of extensive placer and hydraulic gold mining. Tent towns and rock flumes along with numerous diggings dotted the canyon bottom until rising costs closed down most mining operations in the early 1900's.

Today, suction dredge mining is a popular activity on the North Fork. Weekend and vacation visitors, as well as those miners who take up residence during the dredging season (June 1 to October 15), are common to several of the more accessible areas of the canyon. During the height of the season there may be 20 or more dredges in operation between the Colfax-Iowa Hill Bridge and Secret Ravine, with a few permanent operations between Secret Ravine and Wildcat Canyon.

Suction dredge mining causes short-term streambed flow in the stream's ecosystem and tends to inhibit the survival of otherwise undisturbed benthic organisms. The noise and lodging facilities associated with the operations represent an intrusion into an otherwise wilderness environment which degrades the wild trout angling experience.

Under federal law, no new mining activity may be permitted within the Federal Wild and Scenic River area subsequent to the date the area was designated for study (January 3, 1975). The prohibition applies to the federal lands in the reach from the Colfax-Iowa Hill Bridge to The Cedars.

Recommendations. The North Fork American River Waterway Management Plan recommends that placer mining claims as of the date of designation of the river be permitted to continue and that the Department of Fish and Game indicate as part of their regulations that the North Fork is closed to new mining activity subsequent to January 3, 1975. It is also recommended that no dredges over 4 inches in diameter be permitted. Sanitation facilities are recommended at the Colfax-Iowa Hill Bridge to accommodate day users and longer-term users and that minimum camps, appropriate to the use of the claim, be allowed only for working claims with proven economic value, subject to existing available access, sanitary requirements of the county, and the environmental protection requirements of appropriate federal agencies.

As for hard rock operations, the plan recommends that existing operations continue as long as they are consistent with the provisions of the Waterway Management Plan and that new operations be discouraged (only to be permitted within the guidelines of the plan).

The Waterway Management Plan also recommends that the U. S. Forest Service and the Bureau of Land Management carefully evaluate plans of operations for placer mines to ensure that the intended operations are warranted by the value of the deposit.

#### Timber Management

Logging becomes incompatible with wild trout management when trout habitat is disturbed, when the natural character of the streamside environ-



ment is altered, or, in the case of the North Fork Canyon, when access is improved or extended to remote roadless or trailless areas. Many of the timber harvest activities on National Forest lands within the North Fork Canyon have been deferred pending Congressional action that would designate the roadless area as a Wilderness Area and/or the North Fork as a National Wild and Scenic River. However, timber harvesting can occur on private lands within a designated Wild and Scenic River area, or, a roadless, even though the effects may be adverse.

Recommendations. The Waterway Management Plan recommended that the State Board of Forestry expand the Forest Practices Rules definition of Special Treatment Areas to include land within federally-designated National Wild and Scenic River Study Areas. The California Division of Forestry, in reviewing timber harvest plans for the North Fork Canyon, was encouraged to emphasize protection of visual and environmental values, to ensure that the harvest did not threaten valuable aesthetic, recreational, wildlife, or other resources or detract in any way from potential congressional designation of such areas as part of the National Wild and Scenic Rivers System or as a Wilderness Area. If Congress designates the North Fork Canyon a Wilderness Area, these temporary special treatment areas would become subject to federal acquisition. Those lands within the National Wild and Scenic River management boundaries are subject to federal easement, purchase, or restrictive management control by regulatory agencies in cooperation with the federal government. Lands within 200 ft of the federal government management boundary will remain within special treatment area designation. Timber harvesting within this permanent special treatment area is limited to preserve the natural integrity of the area.

### Water Development

The State Wild and Scenic Rivers Act precludes any new impoundments, except federal water resources development projects. Designation as a National Wild and Scenic River prevents federal impoundments as well. However, the federal area excludes the 7-mile reach of the North Fork upstream from The Cedars. While construction of a federal dam above The Cedars is not imminent, the possibility exists. Designation of the remaining headwaters reach as a National Wild and Scenic River would provide additional protection from impoundment facilities with no adverse consequences.

The future of the Auburn Dam project is still to be determined. The location of the dam may be changed due to geologic problems associated with the present site. Also, funding could be lost.

Construction of the dam would result in inundation of the North Fork American River as far upstream as Iowa Hill Road Bridge. Reservoirs situated at similar elevations on the west slope of the Sierra Nevada have resulted in nongame fish proliferation to the detriment of wild trout resources. The same problem could occur in the North Fork.

Recommendations. Construction of a nongame fish barrier above the area of inundation would prevent similar problems from occurring in the North Fork. The Department of Fish and Game should determine the need for such a barrier and recommend the inclusion of a barrier as part of the Auburn Dam project, if necessary.

### Land Development

There is relatively little development within the wild trout section of the river. Development is mostly limited to historical mining cabins, mostly

constructed of hand-hewn timbers, and relatively flimsy shacks. About 1 doz exist in all, scattered along the river. At Humbug Bar several year-round residences exist, reminiscent of the earlier popular mining community. Additional residential development above the current level, other than an occasional isolated cabin, not visible from the river or any existing trail, would be inconsistent with the wilderness characteristics of the river.

Recommendations. The most efficient means of controlling incompatible development of the streamside environment is to acquire all private inholdings along the river which should occur now that the river is a designated part of the National Wild and Scenic River System.

Placer County has recently (May 1978) released a draft environmental impact report regarding the rezoning of private sectors of the county, including the North Fork American River Canyon. The proposed rezoning would place the land in the canyon in a large lot zone district (320 acres to 640 acres) to preserve the wild and scenic character of the river. Land use would be classified Forestry. The Department should actively encourage adoption of the new zoning.

#### Trail Bike Use

Trail bike use occurs throughout much of the wild trout area (Figure 5). In the vicinity of the Colfax-Iowa Hill Bridge, use occurs along the ridge immediately west of the river, away from the canyon bottom. The Burnt Flat area has many bike trails and dirt roads which are also occasionally used by four-wheel drive vehicles. Bike use extends from the Colfax-Iowa Hill Bridge north along the low ridge intersecting the Stevens Trail, which is closed to trail bikers by Placer County. The Euchre Bar trail located farther upstream in the Green Valley area, is heavily used by trail bikes. In the river reach from Italian Bar to Sailor Canyon there is additional trail bike



use. From Mumford Bar, about 3 miles above Italian Bar, numerous bikers use the North Fork trail paralleling the stream for nearly 5 miles to Sailor Canyon. Beacroft, Government Springs, Big Granite Creek, and Sailor Canyon trails all provide access to the North Fork trail.

The use of trail bikes in numbers presents the potential for many resource conflicts. Erosion is commonly associated with trail bike use in areas of steep slope and friable soils. Noise generated by bikes detracts from the wilderness quality of the canyon and also appears to force out sensitive wildlife, including raptors. Trail degradation is also caused by excessive trail bike use. Trail bikes also facilitate access to the more remote reaches of the canyon, increasing angling pressure and overall people-to-people contact. The Forest Service, in their off-road vehicle plan, has already designated their wilderness study area as an area where ORV use will be restricted to specified trails; off-trail use will not be allowed.

#### MONITORING PROGRAM

A monitoring program should include periodic assessment of key qualities of the stream and its environment, and the monitoring of actions which can potentially affect the planning area. Monitoring of these two elements will allow the Department to remain informed of planning, regulating, and permitting activities and to the condition of the stream's environment and fishery.

The Department of Fish and Game should review, on an informational basis, relative plans and permits of local, federal, and other state agencies. This could be accomplished by informal understandings with each agency within already established frameworks. These review and contact arrangement will provide constant and immediate feedback to the agencies who have regulatory authority within the planning area. By working closely and repeatedly with the various agencies,

the Department should be able to directly help these agencies interpret and apply the intent of the management plan through careful use of their planning and approval authorities. If initiated at the earliest stage of planning, allowing the Department time to comment prior to a decision being reached, the process will have its maximum beneficial effect. This process will also allow a continuing evaluation of the Management Plan and the extent to which it anticipates and recommends solutions for potential conflicts.

By providing for a flight surveillance, it would be possible for the Department to make general assessments of development activity, including mining, forestry, and road construction. Aerial photography can provide a historical record of those changes, constituting an irrefutable visual image of the past.

Monitoring of the fishery can be achieved following the program proposed in the Fishery Management Section of this plan.

#### Recommendations

Personnel of the Department of Fish and Game (Region 2) should remain in frequent communication with the USFS; Regional Water Quality Control Board, Central Valley Region; and other agencies that may be actively involved in the planning area.

Aerial surveillance of the drainage should be conducted on an annual basis and black and white aerial photographs be taken of the entire basin every 5 years, at a scale of about 1:15,000 (Waterway Management Plan recommendation).

The fishery monitoring program discussed above be initiated in 1984 and repeated every 5 years thereafter.

# PROGRAM IMPLEMENTATION SCHEDULE

<u>Task</u>	<u>Department section responsible</u>	<u>Implementation date</u>
A. Fishery Management		
1. Conduct fishery investigation.	Region 2	Initiate in 1980.
2. Monitor fishery.	Region 2	Start in 1984, repeat every 5 years.
B. Waterway Management Plan Implementation		
1. Oversee implementation.	Planning Branch	Continually
2. Pursue management recommendations.	Planning Branch/ Region 2	Immediately
C. Water Development		
1. Determine need for fish barrier associated with Auburn Dam Project.	Region 2	
D. Federal Designation		
1. Encourage the U. S. Forest Service to include the North Fork American River Wilderness Study Area in the National Wilderness Preservation System.	Region 2	Immediately
E. Monitoring		
1. Aerial surveillance.	Planning Branch/ Region 2	Annually
2. Aerial photograph.	Planning Branch/ Region 2	Every 5 years beginning in 1979.
3. Review all activities in the drainage which could effect the wild trout resource.	Region 2	Continually



REFERENCES

Anonymous. 1977. North Fork American River Waterway Management Plan.  
Calif. Dept. Fish Game. 109 p.

Location	Number Caged	1975	1976	1977
Willow Canyon	44	8 (18%)	0	0
Tahoe Creek	34	6 (18%)	0	0
Big Granite Creek	21	2 (10%)	0	0
Total	109	16 (15%)	0	0

APPENDIX 1. Summary of 1975 Tagging Study.

Location	Number tagged	Returned 1975	Returned 1976	Returned 1977
Wildcat Canyon	44	8 (18%)	0	0
Tadpole Creek	34	6 (18%)	0	0
Big Granite Creek	31	2 (7%)	4 (13%)	0
Total	109	16 (15%)	4 (4%)	0