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BIRCH CREEK AQUATIC HABITAT MANAGEMENT PLAN

IDAHO FALLS DISTRICT
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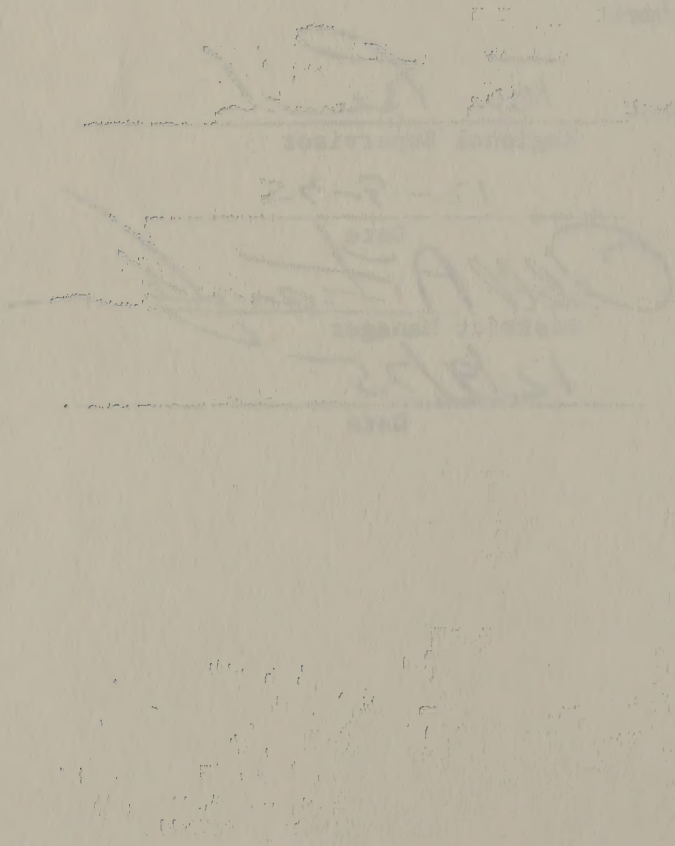

FOREWORD

Birch Creek Valley is the eastern portion of the Birch Creek-Little Lost River Planning Unit. The major feature in the valley is a unique, spring-fed, blue-ribbon trout stream considered to be one of the most important for sport fishing on national resource lands in Idaho.

Birch Creek originates from widely scattered springs in the upper two miles of the valley floor and reaches maximum flow near Kaufman Guard Station. The stream loses 4-1/2 percent of its flow per mile in the 16 miles from Kaufman to the Reno diversion. Flows at the Blue Dome gauging station, midway in this reach, ranged from 53 to 149 cfs from 1967 to 1973.

Birch Creek is in a closed basin. The water sinks into the Snake River Aquifer on irrigated private lands and in the confines of the Idaho National Engineering Laboratory of the Energy Research and Development Administration. The valley is dry with an annual precipitation of approximately seven inches. It is natural that the stream, with average summer flows of 40 to 80 cfs of high quality, is the life support system of aquatic and terrestrial wildlife, domestic animals, and humans in the basin.

Riparian areas and aquatic habitat have been severely abused. Man has altered the channel and historic and recent over-grazing by livestock has adversely affected vegetation and damaged stream banks.

This habitat management plan was designed to enhance and protect riparian and aquatic habitat. Many photos of the stream can be seen in Appendix F.

BIRCH CREEK AQUATIC HABITAT MANAGEMENT PLAN

INTRODUCTION

The planning area encompasses the Birch Creek watershed; 256,000 acres in Butte, Clark, and Lemhi Counties, Idaho (Figure 1). The community of Blue Dome (population six) in the approximate center of the study area is 28 miles northwest of Mud Lake on State Highway 28.

Most national resource lands lie in the plains and talus slopes of the Beaverhead Mountains on the east and the Lemhi Mountains on the west. State Highway 28, a primary route from Idaho Falls to Salmon, is a major north-south access route through the valley. The prominent feature on the valley floor is the spring-fed Birch Creek. Water feeding Birch Creek originates from springs in the Reno area in Township 11 N., R. 29 E. The stream flows southeasterly through the valley and empties into the Snake River Aquifer. Approximately 20 miles downstream from the headwaters, Birch Creek is completely diverted during the irrigation season at the Reno ditch to irrigate lands on private property (refer to Appendix A for flow information, Appendix B for water rights).

Birch Creek is characterized by a constant spring-fed flow, high water quality, and has the reputation of being an excellent trout stream. The stream sections on national resource and state lands are readily accessible.

There are approximately 20 miles of stream habitat that will be affected by the management plan. Over 90 percent of the lands in the drainage are in public ownership. However, approximately 50 percent of the land immediately adjacent to the stream is privately owned.

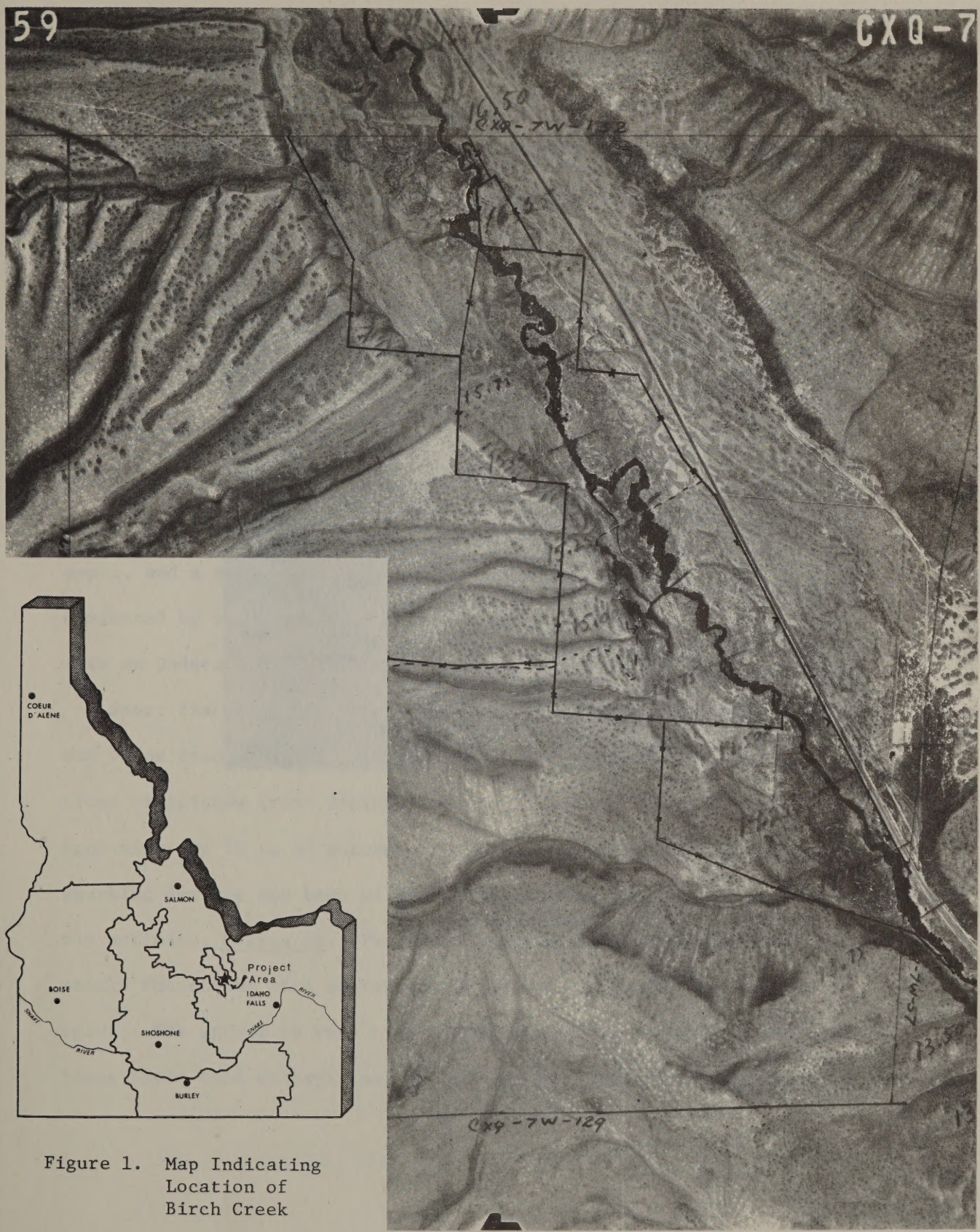

Figure 1. Map Indicating Location of Birch Creek

Channel changes, annual addition of bentonite to the stream by downstream water users, and overuse of riparian habitat by livestock have restricted aquatic improvements (Figure 2). These problems predominate in the lower six miles of stream on national resource lands.

Figure 2. Channel alteration and historic heavy livestock use has reduced riparian vegetation and trout habitat.

Based on experiments by the Bureau of Land Management and Idaho Fish and Game Department, it is assessed that a combination of protection and stream improvement can benefit fish and wildlife in the Birch Creek drainage. The plan for habitat management of Birch Creek was formulated after collection of information by the Bureau of Land Management as recorded in the Unit Resource Analysis (URA), through field jobs in the basin, and management and inventory work by the Idaho Department of Fish and Game.

There is a vivid contrast between the riparian vegetation along Birch Creek and the non-irrigated flood plain and valley floor through which the stream meanders before diversion for other uses. Dominant vegetation along the stream is black birch, willow, small areas of aspen, and a variety of sages, grasses, and forbs. The valley floor is dominated by black sagebrush, Artemisia nova, and is sparsely covered with an understory of native grasses and forbs.

Sport fish found in Birch Creek are rainbow trout, Salmo gairdneri, and brook trout, Salvelinus fontinalis. Both stocked and native populations of rainbow trout dominate the catch and the existing fish population. Approximately 50 to 60 percent of the population sampled with electric shocking devices has been wild. The only other fish in the drainage are the sculpins, Cottus sp. The Idaho Department of Fish and Game annually stocks the stream with approximately 20,000 catchable size rainbow trout. The stream is very rich in benthic insects including preferred trout foods such as mayflies, Ephemeroptera; caddisflies, Trichoptera;

stoneflies, Plecoptera; various trueflies, Diptera; and other common aquatic organisms. Detailed information about the aquatic ecology of Birch Creek is in a thesis by Andrews (1972) on file in the District Office.

Important big game species inhabiting the planning unit are mule deer, Odocoileus hemionus, and antelope, Anilocapra americana. Rare or infrequent big game species include mountain lion, Felis concolor; black bear, Ursus americanus; and Rocky Mountain elk, Cervus canadensis nelson.

Mountain goats, Oreamnus americansus, have recently been introduced into the high areas adjacent to the planning unit. Also, bighorn sheep, Ovis canadensis, were transplanted into Long Canyon in 1976. The herd is expected to be supplemented in 1977 by additional animals brought in from a Salmon River herd. Other wildlife inhabiting national resource lands include the bobcat, Lynx rufus; coyote, Canis latrans; red fox, Fulpus fulva; badger, Taxidae tasus; weasel, Mustela frenata; striped skunk, Methitis mephitis; mink, Mustela vison; porcupine, Eroethizon dorsatus; muskrat, Ondatra zibenthica; and numerous small rodents. Pygmy rabbit, Silvilagus idahoensis; and black-tailed hare, Lepus californicus; are common.

There are upland game birds, both endemic and exotic, that frequent the valley. Native forms are the sage grouse, Centrocereus urephasiamus; blue grouse, Dendragapus obscurus; ruffed grouse, Bonosa umbellus; and mourning dove, Zenada macroura. Exotic species that may inhabit the lower portion of the unit in agricultural areas include the ringneck pheasant, Phasianus colchicus; the grey partridge, Perdix perdix; and chukar, Alectoris chukar.

Birch Creek has a resident mallard, Anas platyrhynchos. Population numbers increase twofold during the migration season when there is an influx of nonresidents. Other waterfowl are common. Important raptors include the turkey vulture, Cathartes aura; goshawk, Acciptor gentilis; sharped-shinned hawk, Accipitor cooperii; redtailed hawk, Buteo jamaicensis; Swainson's hawk, Buteo swainsoni; ferruginous hawk, Buteo regalis; marsh hawk, Circus syaneus; golden eagle, Aquila chrysaetos; and bald eagle, Halicaectus leucocephalus. Falcons known to exist in the area are the peregrine, Falco peregrinus, an endangered species, and more commonly, the prairie falcon, Falco mexicanus.

The Birch Creek Planning Area is in Idaho Fish and Game Management Unit 58. Because of the flat terrain in the valley and the deep talus slopes from the mountain ranges to the valley floor, little runoff reaches Birch Creek. Occasionally, rapid snow runoff creates gulleys. The major perennial tributary reaching Birch Creek is Pass Creek which begins in the Lemhi Mountains. Willow Creek, originating in the Beaverhead Mountains, is intermittent but could influence Birch Creek during spring runoff. Watershed studies indicate that the major source of silt in the stream is from streambank erosion.

There has been a history of protection and improvement of Birch Creek by the Idaho Department of Fish and Game and the Bureau of Land Management. The two agencies entered into a cooperative agreement to protect riparian habitat on national resource lands by fencing out livestock. In areas from which livestock have been excluded from BLM

admininistered land angler access points have been established (Figure 3). Instream structures were placed for fish habitat improvement. The structures have been functional in providing improved habitat for trout (Figures 4 and 5). Fencing in the test area has improved the riparian vegetation, especially for species such as black birch and willow. Breaks in the fences have permitted livestock to use this area. However, response of native grasses and sedges has been spectacular in years of complete protection. There is a noticeable benefit to the aquatic organisms from stabilizing streambanks. Influences of instream structures on trout in improved areas were evaluated by Idaho Department of Fish and Game biologists one year after installation. By then, trout populations had increased by 873 percent compared to 400 percent after a longer stabilization period had occurred.

MANAGEMENT OBJECTIVES

The Birch Creek Aquatic Habitat Management Plan if implemented would improve aquatic habitat which would complement the high productivity of the stream, contributing to higher population numbers of trout, thusly increasing angler success.

Eight years of protecting the riparian habitat on a test area along Birch Creek have demonstrated that streambanks can be stabilized and vegetation improved to reduce erosion and provide cover for fish, wildlife, and aquatic organisms.

Broad Objectives

1. Improve and protect riparian areas
2. Enhance water quality

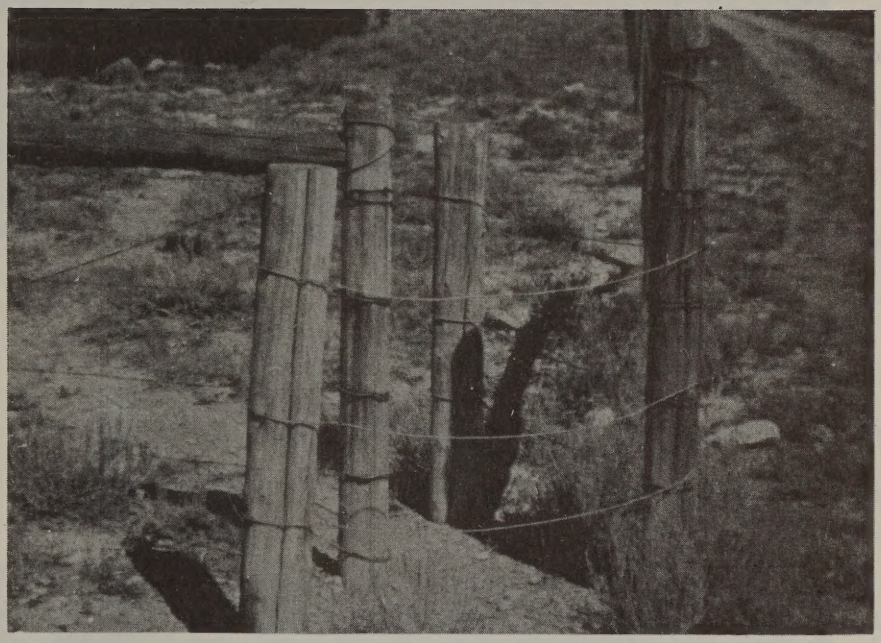

Figure 3. Angler access points to Birch Creek through livestock exclosure.

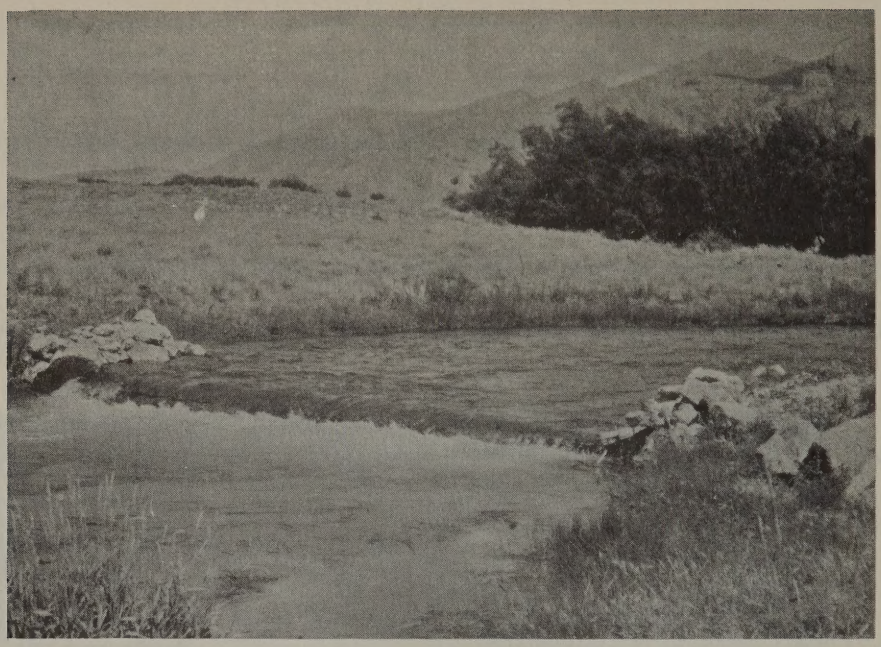

Figure 4. K-Dam in place on Birch Creek. Six-foot deep pool is formed below structure. Riparian vegetation response after one year of protective fencing.

Figure 5. Digger logs placed in upper Birch Creek by Idaho Department of Fish and Game. The structures provided deeper water habitat for trout. The area has had several years' protection from use by livestock.

3. Prevent unusual sediment loads from drainages and streambanks

4. Provide benefits for the multiple uses of water

5. Increase public recreation access

6. Enhance conditions for wildlife through riparian habitat protection

Specific Objectives

1. Protect all riparian vegetation along Birch Creek on national resource lands by control of livestock through a combination of fencing, water development, and shifting of grazing location.

   a. Increase the high shade cover from 20 percent to 50 percent of the stream.

   b. Provide for an increase of streamside overhanging grasses, woody species, forbs, and general ground vegetative cover from 20 percent to 95 percent along controlled portions of the stream.

2. Increase pool riffle ratios from 15:85 to 60:40 on national resource lands.

3. Increase rearing and holding habitat from 20 to 50 percent, or 20,000 to 25,000 fish, of the lower seven miles of stream.

4. Increase deepwater habitat by 100 percent with the goal of increasing the average size of rainbow trout in the lower seven miles of the stream from 8.5 inches to 10.5 inches.

5. Increase angler access from 40 percent to 80 percent of the stream.

6. Assure compliance with state regulations for unrestricted upstream and downstream movement of the trout population.

7. Reduce the loss of fish in irrigation diversions by 80 percent by improving stream habitat.

8. Protect the habitat of rainbow and brook trout in areas of known spawning and winter concentrations.

9. Reduce riparian habitat destruction by 75 percent by restricting human and vehicular use near streambanks.

10. Increase the quality of habitat for the following wildlife species on the riparian area of Birch Creek by the following percentages:

Deer	10 percent	Waterfowl	5 percent
Antelope	20 "	Song birds	25 "
Furbearers	20 "	Chukar partridge	10 "
Raptors	25 "	Sage grouse	40 "
Shore birds	10 "	Cottontail rabbits	100 "
		Non-game wildlife	50 "

11. Assemble water quality and quantity data and operate the stream gauges on a schedule necessary to evaluate effects of management. Install the equipment necessary for water-quality monitoring of temperature and turbidity. Train BLM employees to operate the equipment.

12. Develop and implement a watershed management system that will comply with these criteria:

a. Dissolved oxygen - saturation

b. Turbidity - Comply with the State of Idaho JTU standards

c. Total dissolved solids - not to exceed 200

d. Fecal bacteria - No more than 10 percent of total samples during any 30-day period to exceed 200/100 ml.

e. Total coliform - No more than 2 percent of total samples during any 30-day period to exceed 1000/100 ml.

13. Through personal contacts, public meetings, and distribution of the Aquatic Habitat Management Plan, make known planning goals and procedures to residents and resource users in the Birch Creek Basin and Idaho Falls District.

14. Provide for the unrestricted flow of water for legal rights at all withdrawal locations on Birch Creek. Use surplus water for controlling livestock use and enhancing aquatic and terrestrial wildlife.

15. Provide public information signs to explain the cooperative Birch Creek Habitat Management Plan.

16. In the development of the objectives, use methods that will retain or improve the open space concept and reduce visual conflicts.

17. Expand public uses such as wildlife viewing, hiking, rock hounding, and backpacking in the Lemhi and Beaverhead Ranges.

MANAGEMENT METHODS

Livestock Grazing

1. The immediate goal is to improve stream habitat by complete removal of livestock use within 250 feet of the stream's centerline. A buffer area will be investigated to consider esthetics, open-space concept, range condition.

2. Eliminate 400 acres from livestock use that are considered for the riparian area of Birch Creek on national resource lands. The elimination of these key 400 acres from livestock grazing is only one percent of the 37,000 adjudicated acres.

3. Develop water for livestock which will result in better use of existing forage. Construction of sixteen reservoirs, two pipeline and spring developments, one ditch and reservoir, and two wells with pipelines has been proposed. However, past experience has shown that reservoirs and wells are not feasible for supplying reliable stock water in Birch Creek allotments. The feasibility of supplying water tanks with pump lines from Birch Creek should be investigated.

4. Re-evaluate livestock forage conditions and trend. Based on condition and trend studies in 1975, areas in good, fair, and poor categories were 32, 48, and 20 percent, respectively. After a new inventory is completed, a grazing system will be developed to achieve overall multiple use objectives.

(Currently there are six livestock operators within the Birch Creek drainage, all economically dependent on national resource lands. There are five allotments with 4,822 AUMs combining both sheep and cattle.)

5. A fencing system will be developed to keep livestock off Highway 28 and away from Birch Creek's riparian vegetation. Several cattle per year have been killed along the highway, and some fencing has lessened this hazard. Fatal accidents to motorists could occur at any time.

6. Through management systems designed specifically for the Birch Creek area, it is anticipated that livestock forage production could be increased from 20 to 30 percent. Management of current grazing systems in the northern end of the Birch Creek drainage will be coordinated with the Salmon District. The Idaho Falls and Salmon Districts will coordinate development and implementation of grazing systems in the upper Birch Creek watershed.

7. Complete an inventory and develop plans for livestock control to protect the vegetative cover of the perennial water areas in the Kyle Creek, Pass Creek, Sawmill, and Spring Canyons.

Discussion

Each year livestock use is allocated for the entire allotment in which there are steep slopes, unwatered areas, and locations with poor livestock access and forage. Presently livestock concentrate on the banks of Birch Creek causing overgrazing, trampling of the banks, siltation of the streams, and loss of fish habitat.

Wildlife Use

Birch Creek is considered one of the most heavily fished trout streams in eastern Idaho. The Idaho Department of Fish and Game determined in 1971 that approximately 12,640 anglers fished Birch Creek for 44,744 hours and caught approximately 50,817 trout.

The fish and other aquatic animals are managed and harvest regulations are enforced by the Idaho Department of Fish and Game. Most rainbow and brook trout are naturally reproduced. The natural stocks are supplemented by the annual planting of 20,000 catchable-size trout during the angling season. The lower portion of the stream below Blue Dome is open to angling the entire year.

Idaho Department of Fish and Game has been engaged in extensive fish habitat improvement in the upper portion of the stream on state-controlled lands and on national resource lands in a cooperative project with the Bureau of Land Management. The Idaho Department of Fish and Game will continue legal and expert management of the fish stocks in Birch Creek and will be the major cooperator to help plan and implement approved habitat protection and improvement. Also, they will be involved with evaluating fish population responses after the plan is effectuated.

Present water quality of Birch Creek is excellent for spawning, rearing, and growth of trout. The high alkalinity and sufficient nutrients contribute to an abundance of aquatic organisms necessary for a productive fishery. However, physical factors such as siltation and applications of bentonite limit the numbers of aquatic organisms in some areas. Water quality in Birch Creek will be maintained by stabilized streambanks, improved range management, protected riparian vegetation, and controlled pollution.

Studies by Idaho Department of Fish and Game have indicated that impaired aquatic habitat in certain stretches of the stream has been a limiting factor for maintenance of a good fish population. In the lower

stream, on national resource lands, abuses such as straightening the channel to rapidly move water to the Reno irrigation ditch have eliminated pools and increased velocity, thus severely reducing the carrying capacity for trout.

In 1966, after inspection of this lower area by Idaho Department of Fish and Game and Bureau of Land Management biologists, a plan was devised to change the pool-riffle ratio to provide rearing and holding habitat for both stocked and wild fish. Instream structures to create pools were planned for the area in the channel below Blue Dome that had been straightened and constructed. The majority of natural obstructions providing fish habitat had been removed to increase the velocity of the water and to lessen percolation through the gravel.

Streamside vegetation in the lower seven miles of stream was in extremely poor condition and banks were unstable and eroded from trampling and overgrazing by livestock. A test area was surveyed in a cooperative program. K-dams were installed to provide pools. Fencing was done to protect riparian vegetation. The livestock exclosures and K-dams have been in place since 1967 and have measurably increased the fish population, improved riparian vegetation, and stabilized streambanks. This experience demonstrated that livestock removal and appropriate in-stream structures can greatly expand the carrying capacity for trout.

Habitat will be improved by protecting and encouraging growth of the riparian vegetation. First, the larger vegetation such as birch, willow, and aspen must be protected and increased to provide shade and cover to the stream. The shading effect from vegetation has protected and prevented increases in temperature due to direct contact with the sun (Lantz,1971; U.S. Forest Service, 1972).

A permanent grass and forb understory in the riparian area will be improved by complete protection. Protection will help increase overhanging vegetation that provides cover for fish and habitat for aquatic food, stabilizes the streambank, and reduces siltation (White, 1967). After a detailed stream study (Appendix C) it was concluded there is a need for varied habitat in large portions of Birch Creek. Some of the needed aquatic habitat will be restored by stabilizing the channel now subject to damage by livestock overuse. If the stream is permitted to meander in a normal manner, eventually fish habitat will also be improved.

Resting and holding areas will be provided by installing the following: 75 rock placements, 3 miles of streambank stabilization, 50 trash catchers, 25 digger logs, 30 log and board dams. A detailed program of implementation is listed in the schedule of the plan.

Cooperation of all private groups, government agencies, and private land owners concerned with the Birch Creek Basin will be needed to prohibit all channel changes except for aquatic habitat improvement. Appropriate regulations for federal, state, and private lands will be enforced to assure that channel changes will not occur.

Siltation of the lower stream will be improved immediately through the elimination of bentonite applications and by stabilization of streambanks. Stabilization of streambanks will also be accelerated by livestock removal, seeding of disturbed bank, and use of rock riprap where necessary.

Areas devoid of higher vegetation will be planted with black birch, willows, wild rose, sinque foil, aspen, and other beneficial species.

Domestic and livestock pollution will be investigated and then, plans for corrective measures will be developed. The Idaho Department of Fish and Game has conducted tests on the Reno irrigation diversion to determine the magnitude and importance of fish loss. In May 1975 diversion of Birch Creek into the Reno ditch (an annual occurance throughout the irrigation season) resulted in the loss of an estimated 2,800 catchable-size rainbow trout.

Other wildlife values in the immediate riparian areas of the stream are important. Protection of the vegetation and improvement of aquatic habitat will be beneficial to all forms of wildlife including big game, upland game, small mammals, raptors, song birds, waterfowl, reptiles, amphibians, and terrestrial and aquatic insects.

Several thousand acres of land and all streams crucial for certain animals have been identified in the Unit Resource Analysis of the Birch Creek Basin. Identified lands include habitat for mule deer, elk, and antelope. Critical habitat for bighorn sheep, mountain goat, sage grouse and waterfowl is also included. The planning area includes all-season ranges for both resident and migratory herds of mule deer. It is expected that the watershed plan in conjunction with the protection of Birch Creek will benefit mule deer herds. Elk habitat is limited in the planning area and no specific improvement activities are recommended for elk.

Antelope are residents of the planning area. Nearly all the home range of these animals is on national resource lands. The fact that succulent vegetation preferred by antelope is found only in a few places during the drier months warrants the protection of riparian vegetation for this important and unique animal. Antelope use could be extended by improving riparian habitat on the few perennial tributary streams to Birch Creek. Implementation of the livestock allotment management plan and the aquatic habitat management plan will benefit antelope.

Timber Management

Opportunities for development of existing stands of timber in the Birch Creek watershed on national resource lands are lacking. Douglas fir mixed with aspen are found in small 40-200 acre patches on the slopes. These existing islands of trees are excellent wildlife areas and should be preserved in their present condition.

There are opportunities for some revegetation of trees along Birch Creek and possibly some tributaries. Selected areas devoid of high vegetation could be restocked with black birch, willows and aspen. Native species compatible with existing vegetation should be established.

Major revegetation will be limited to denuded areas along the lower five miles of stream. After the areas have been protected by fencing, a program should be initiated to plant approximately 1,000 black birch seedlings, 2,000 willow cuttings, and 2,000 aspen stock. Coordination with the Idaho State Department of Lands and U. S. Forest Service personnel will be necessary to determine proper methods of planting to achieve maximum success.

The plan will be coordinated with the U. S. Forest Service so timber harvest operations within the Birch Creek watershed will complement management objectives. Particular attention should be given to new transportation routes and timber management practices that may have an impact on water quality and flow regimes.

Habitat Development and Improvement

The developments and improvements discussed here were chosen after a 1975 stream survey.

Fencing - There is a need to restrict livestock use on the riparian and other lands adjacent to the stream. The critical need is in the portion of the stream on national resource land downstream from Blue Dome to the Reno diversion ditch. Approximately 15 miles of fence will be needed to adequately protect the area. Some of the fencing can be accomplished by moving the existing fence paralleling Highway 28 from the east side to the west side of Birch Creek. Approximately 5 cattle-guards and 15 sportsmen's foot transportation entrances will be needed in the fencing system.

There is also need for streambank stabilization. Approximately three miles of streambanks are in an unsuitable condition. Rock riprap will be required on one-half mile of stream and 15 short gabions will be required in approximately one-fourth mile of stream. The remainder of the disturbed streambanks will be handworked and reseeded with stabilizing grasses and shrubs.

Stream Improvement - The five miles of stream below Blue Dome need more holding water for native and stocked rainbow trout. By installing in-stream devices in the areas where the channel has been straightened or

where there is a need for increasing the pool riffle ratio, holding water areas will be established. Another benefit of installation of in-stream devices will be that water loss rates will be lessened. The in-stream devices will consist of 10 trash catchers, 25 digger logs, and 30 log board dams.

Tree Planting - Many reaches of the stream lack higher vegetation which provides steamside cover and trout habitat. The density of trees and shrubs can be increased by planting older stock on streambanks in selected areas. The plantings will be made only after the area is protected from livestock.

Detailed revegetation plans are listed in the appendix. The initial projects will include establishemt of 200 birch seedlings, 250 aspen, and 2,000 willow cuttings.

Road Maintenance - Improve the stream crossing on the road to Eightmile Canyon on lower Birch Creek. Install gabions at the base level of the streams to permit a firm base for vehicles and provide easy upstream fish migration.

Access Development, Improvement, and Management

The entire length of Birch Creek could be readily accessible to the public from Idaho State Highway 28 that parallels the entire stream. Present access points to spur roads in the lower five or six miles of stream are sufficient for present and future needs.

Public and state lands in the upper section of Birch Creek at Kaufman Guard Station are accessible at Idaho Department of Fish and Game acquisition sites.

Riparian habitat on national resource lands could be enhanced in a few locations by closing and relocating existing dirt access roads away from streambanks to reduce human use. The program would not reduce angler access.

A positive program will be initiated by the Idaho Department of Fish and Game to provide angler access on private lands. Public access areas will be negotiated with individual landowners and special facilities such as stiles (approximately 25) will be installed to protect private fences. Signs will designate prohibited access areas in critical farm areas. Two hundred signs should be printed to explain the cooperative access program (the limitation of access near residences and outbuildings and other critical farmland).

Land Acquisition, Classification, and Withdrawal

Small, springfed stream systems appear to be major nursery grounds for trout that probably provide a constant source of restocking for the entire stream system. The majority of the upper valley is a wetland of excellent wildlife habitat with unique fishing areas especially adapted to artificial fly angling.

A program of land exchange with ranch owners was initiated by the Salmon District of BLM, but no specific exchanges were consummated. The plan of exchange could be continued as the number one priority of the access program of the Habitat Management Plan once the Gilmore Management Framework Plan is completed. The upper tributary system could be better managed for fisheries, wildlife, and public recreational purposes if the area was in public ownership.

Much of the upper valley supports nesting and seasonal populations of migratory waterfowl and shore birds. Approximately 500 acres of upper Birch Creek's tributaries could be considered for acquisition. If land cannot be acquired, negotiations should be initiated for a cooperative management plan with the landowners.

The second priority would be to obtain easements for fisherman access on private land along Birch Creek from above Kaufman Guard Station to a point several miles below Blue Dome.

Water Rights

There are at least four major diversions on Birch Creek to irrigate private lands. Approximately six miles below Blue Dome, the Reno diversion takes the entire flow of Birch Creek during the irrigation season. The diversion does not have a fish screen, and in 1975 it was estimated by the Idaho Department of Fish and Game that at least 2,800 catchable-size rainbow trout were lost during the spring diversion.

Studies will be initiated to enable biologists to determine if a pond could be built near the Reno diversion to hold downstream migrant fish that would normally be lost through the ditch or in the de-watered portion of Birch Creek.

In-stream water flows are reduced below Blue Dome due to upstream diversions and loss of water in the deep gravel deposits of the streambed that flows over the upper Snake River alluvial plain. Because of the water loss, irrigators have straightened the channel and tried to confine meandering areas. Annual additions of bentonite clay are placed in the stream to seal the bottom gravels. United States Geological Survey water

records from 1971 to 1974 are available in Appendix A showing the varied water readings at the stations from Kaufman down to Reno diversion.

To assess whether or not stream improvement devices would decrease flows, a study was conducted in 1976. It was concluded that seepage work be lessened in improved areas because particulate matter, as a result of decreased velocities, would settle and plug interstices of bottom substrates (Appendix D).

Installation of new in-stream fish habitat devices should not be done during the irrigation season to prevent interference with normal flow.

Minerals

The entire Birch Creek watershed has a history of active mineral exploration. Presently, major mineral activity is exploratory with the exception of the open-bed iron ore deposits in the upper portion of the Birch Creek Valley. Future exploration and development of minerals should be compatible with the proposed Habitat Management Plan.

Most mineral activity is located above the extensive talus slopes so that residues or effluent do not reach Birch Creek. The study area is highly mineralized and accelerated activity should be anticipated.

Other

Recreational Management - Primary recreation in the valley is fishing in Birch Creek. The streamside is also used for camping and resting by travelers. The area is expected to increase in popularity as a base from which to explore Beaverhead and Lemhi Mountains. Since it is one of the more popular angling streams in this part of Idaho, the need for overnight camping facilities will probably increase. Camping on NRL

in the lower portion of Birch Creek is not restricted. At least two campgrounds of 25 units with drinking water and complete facilities are needed here. By concentrating camping areas, riparian vegetation can be protected, sanitary facilities can be properly located, and the outdoor experience of angling can be enhanced. The public access points on private land and the Idaho Department of Fish and Game public access area at Kaufman Guard Station are well used. Idaho Department of Fish and Game estimated that 4,901 fishermen caught 50,817 trout. Most use of facilities will be from trout fishermen or campers.

Hunting, rockhounding, snowmobiling, motorcycling, hiking, horseback riding, picnicking, sightseeing, and camping are other recreational uses of the area. The plan may need modification as any one of the uses may increase in popularity.

Individual camping areas on private lands and on isolated state lands along Birch Creek are heavily used and sanitary facilities should be improved. Approximately ten new, small camps should be improved and maintained. Camping and picnicking should be located a sufficient distance from the stream to provide maximum protection of riparian habitat and prevent degradation of water quality.

The improvement of fishery habitat in lower Birch Creek should increase angler success by at least 300 percent. As a result, angler use of this area will increase by at least 150 percent.

Watershed Management - The protection of the water supply and improvement in quality is a primary objective of the habitat management plan. Certain weather conditions cause unusual runoff and opportunities for bedload movement from intermittent tributaries and canyons that enter the stream.

Watershed studies have been completed on Birch Creek. They will be updated and problems identified that may affect water quality. Improved allotment management plans could reduce rapid runoff by use of structures and management.

Much of the sediment found in Birch Creek during periods of thawing and heavy runoff comes from streambank sloughing. Streambank stabilization projects should prevent the immediate washing. Protection of riparian habitat will also reduce siltation.

Several portions of Birch Creek are subject to the development of anchor ice in the winter due to the lack of vegetation. This condition flushes water out of the stream channel and harms fish. Significant physical damage to the stream from anchor ice is not obvious. However, many aquatic organisms may be destroyed. The present watershed is classed as "stable" even with the poor vegetative cover.

MANAGEMENT EVALUATION

Recovery of riparian vegetation will be evaluated on five plots. There will be inventories annually during critical months such as August or early September. Changes in stream habitat, including riffle-pool ratio, will be evaluated by conducting stream surveys. Under this system, any one-quarter mile section can be evaluated and compared with the previous conditions.

Fish population studies by Idaho Department of Fish and Game have provided base line data. After improvement structures are installed, fish will be sampled annually for three years, prior to the stocking season, to obtain information about population responses including growth and standing crop.

Angler access will be evaluated by counting the number of areas made available and cooperative agreements negotiated on private property. Use counts will be conducted during peak recreation times such as holidays and opening days.

If a method is developed to screen or reduce loss of fish in irrigation diversions, state biologists will estimate the decrease in loss rates. Trend counts of wildlife will be conducted in conjunction with ongoing work of the biologists.

IMPLEMENTATION AND COST ESTIMATE

First Year

1. Install 25 rock placements in a selected area of Birch Creek as an initial phase of this type of in-stream structure. $3,000 cost estimate.

2. Construct five trash catchers for experimental study. $500 cost estimate.

3. Install five K-dams below the existing series of structures. $6,000 cost estimate.

Second Year

1. Construct and install twenty stiles to use on private fences in the area of Blue Dome. $750 cost estimate.

2. Negotiate for easements with private landowner.

3. Construct approximately 15 miles of fence to protect riparian areas and the national resource lands of Birch Creek. $75,000 cost estimate. (Examples JDRs in Appendix E).

PROVISION FOR REVIEW AND MODIFICATION

The Birch Creek Aquatic Habitat Management Plan is designed primarily to improve riparian habitat by complete protection from livestock use. Improved vegetation will greatly enhance aquatic habitat, which will be supplemented by in-stream structures and rock placements.

Range management techniques involving various grazing systems may be developed to protect or improve riparian vegetation. If the techniques are viable, the habitat management plan may be modified.

There will be reviews of the evaluation findings, objectives, and methods. If necessary, recommendations will be prepared for updating of habitat inventory and analyses, land use plan and the habitat management plan.

BENEFIT/COST ANALYSIS

Three types of tangible benefits are identified. They would be (1) reduced livestock-associated administrative costs, (2) increase in fisherman days, and (3) increase in hunter days. There would also be some intangible benefits such as better water quality and aesthetic improvements.

Three classes of costs have been identified. Net long-term costs include those for original construction of improvements and fencing. Net annual costs include those for project maintenance, loss of grazing fees,

and loss of AUMs to the livestock industry. Replacement costs would be associated with replacing the improvements and fences at some specified time during the life of the project.

The following assumptions were used in the preparation of the analysis:

1. Life of the project is 50 years.
2. Interest rate equals 6-1/8% (1976 Water Resources Council discount rate).
3. All long-term developments occur in Year 1.
4. All replacements occur at 20-year intervals.
5. Value of one AUM to livestock operators is $3.26 (Total SEPA livestock income/Total SEPA AUMs).

Implement Management Plan

Benefits:

Administrative - (annual savings x present value of 1)
$175 x 15.49 = $2,711

Fisherman days - (increase in use days x build up factor x value of one use day)
$5,600 x 13.72 x 10.00 = $768,320

Hunter days - (increase in use days x build up factor x value of one use day)
$200 x 13.72 x $6.00 = $16,464

Total benefits - $787,495

Costs:

Improvements (original construction costs)		$36,000
Fencing (original construction costs)		$17,465
Net long-term costs		$53,465
Maintenance (annual cost x P.V. of 1)	$750.00 x 15.49	$11,618
Fees foregone	$193.28 x 15.49	$ 2,994
AUM value ($3.26 x 128)	$417.28 x 15.49	$ 6,464
Net annual costs		$21,076

Improvement replacements (original cost x replacement factor)				
	$36,000	x	.42	$15,120
Fencing replacements	$17,465	x	.42	$ 7,335
Net replacement costs				$22,455
Total costs				$96,996

BENEFIT/COST = $787,495/$96,996 = $8.12

For each dollar of costs on the project, $8.12 is returned in benefits.

Alternative - No Management Plan Implemented

Benefits:

AUM value (value of 1 AUM x total AUMs x P.V. of 1)				
$3.26	x	128	x 15.49	$ 6,464
Grazing fees (value of fees x P.V. of 1)				
$193.28	x	15.49		$ 2,994
Total benefits				$ 9,458

Costs:

Administrative (administrative cost x P.V. of 1)				
$175	x	15.49		$ 2,711
Total costs				$ 2,711

BENEFIT/COST = $9,458/$2,711 = $3.49

For each dollar of costs on the action, $3.49 in benefits is returned.

Definitions

Costs

Improvement costs - labor, materials, supervision, and any other costs associated with the development of proposed improvements.

Fencing costs - labor, materials, supervision, and any other costs associated with the development of proposed improvements.

Maintenance costs - annual costs associated with maintenance of proposed improvements and fences.

AUM fees - value of fees paid to BLM for grazing privileges lost by implementation of Aquatic Habitat Plan.

AUM value - value of AUMs lost to the livestock industry by implementation of the Aquatic Habitat Plan.

Replacement costs - cost to replace improvements and fences at some year in the life of the project.

Total costs - summation of all improvement, fencing, maintenance, and replacement costs as well as the costs associated with the loss of AUM fees and AUMs to the livestock industry.

Benefits

Administrative - savings resulting from exclusion of livestock in the management area (administrative work is no longer necessary).

Fisherman days - increase in fisherman use in the management area.

Hunter days - increase in hunter use in the management area.

Total benefits - summation of administrative, fisherman, and hunter benefits.

Benefit/Cost - benefits divided by costs gives a ratio, B:C, stating that for every dollar of costs, so many dollars of benefits accrue (5:1 = for every dollar of cost, $5 of benefits accrue).

SEPA - Social Ecomonic Profile Area. In this instance, the Idaho Counties of Bannock, Bear Lake, Bingham, Bonnerville, Butte, Caribou, Clark, Franklin, Fremont, Jefferson, Madison, Oneida, Power, and Teton.

EVALUATION PLAN

The evaluation of Birch Creek habitat improvement work is an imperative part of the management processes. Evaluation is in progress and should continue as part of the Birch Creek HMP.

1. Fish population studies

   a. The original fenced area with K-dams was inventoried by IDF&G before structures were installed.

   b. Fish population studies were made a year later by IDF&G in the improved area.

   c. Fish populations should be continued to be sampled at least on a 2-3 year interval in the original area.

d. The 1976 fish habitat improvement area was sampled before structures were installed in May 1976. Data will be evaluated in order that base line information can be established for population densities average lengths, species composition, etc.

2. Continuing Program

Overall, a sampling program will be designed to provide data about the influences of habitat improvement on the fishery. The program will involve the following:

a. Plan for IDF&G to perform the fish sampling; if not possible, the BLM staff will perform the work. For all BLM field work, there will be strict adherence to terms stipulated in the supplement to the Master Understanding.

b. Estimate fish population numbers and average lengths and weights in the improved areas early in spring prior to trout stocking.

c. Plan to sample fish populations an adequate number of times after catchable trout have been stocked in order that use by wild and hatchery trout, in improved sections of Birch Creek, can be determined.

d. Sample the benthic community prior to and after improvements to determine influences of structures on species composition and standing crop.

3. Angler success

a. Compile data for the area originally improved in order that effects on angler success can be assessed.

b. Compile creel census data for Birch Creek each year. The information will enable trends to be established.

4. Riparian Habitat Studies

   a. Test plots have been established.

   b. Photographs will be taken annually of test plots in addition to measurements.

   c. There may be a need for more stations to be established in order that vegetation changes can be documented for problem areas.

5. Aquatic Habitat Studies

   a. Riffle-pool ratios have been recorded where improvements are to be made.

   b. After improvements, areas will be resurveyed to document habitat changes.

   c. Aquatic Vegetation

      (1) In sites where major structures (K-dams and trash catchers) are planned, the abundance and types of aquatic vegetation will be documented in August.

      (2) After two years of operation, changes in aquatic vegetation in area influenced by structures will be recorded.

      (3) Range transect techniques will be used to measure vegetation. To establish a record of aquatic vegetation response, photographs will be taken by use of a polaroid lens.

6. Water Flow

   a. Continue USGS Recording Stations.

   b. A gauging station will be installed at the Reno Ditch.

   c. Analyses will be conducted to continue to assess influences of improvement devices on flow rates.

7. Water Quality

a. Idaho Public Health cooperation will be obtained for collecting bacterial water analyses in spring, summer, and winter.

b. Permanent water quality sampling stations will be established.

c. USGS water sampling activities will be supplemented, if necessary.

d. In cooperation with EPA, determine if BLM is complying with PL 92-500 "best management practices" for non-point source of pollution when guidelines are established. Help of EPA may be needed for designing and implementing studies to assess if there is compliance.

8. Wildlife Evaluation

Population Response to Habitat Enhancement or Development

a. Study plots, in accordance with Bureau standards, have already been established. Range plot data studies should be conducted every three years. Photos of the range study plots should be taken yearly. Eight (8) additional study plots should be established in T. 9 N., R. 30 E., secs. 16, 21, 28, and 33.

b. Sweep net surveys will be made prior to and every two years after construction of protective fences to document invertebrate population characteristics or/and changes.

c. Systematic collection of small mammals for the purpose of determining population changes or characteristics will begin in 1977 and will continue annually until 1987.

d. Sage grouse booming ground surveys and production routes will be performed in cooperation with the Idaho Department of Fish and Game beginning 1977. Increases or other changes in population or production rates will be documented and analyzed and compared with regional data for significant variances.

e. Antelope production surveys (doe:fawn ratios) will be performed in cooperation with the Idaho Department of Fish and Game beginning early summer of 1977. Increases or changes in population or production rates will be documented and compared with regional data.

f. Present cooperation with the Energy Research and Development Administration with the Antelope Radio-Telemetry Study will be continued. Significant variation in antelope use in the ensuing years will be correlated with habitat changes.

g. Waterfowl production foot surveys will be performed in selected sections of Birch Creek prior to 1978 and annually after the protective fences are constructed to determine if there are changes in waterfowl use or production.

h. Population surveys on song and insectivorous avian species will be performed in selected sections of Birch Creek prior to 1978 and annually after protective fences are constructed to determine if there are changes in species use or reproduction rates.

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APPENDIX A

BIRCH CREEK FLOW RECORDS

Flow Data May - September for 1973 Water Year. Station Number 13117030 at Eight-Mile Canyon Road near Reno, Idaho.*

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1								-	47	48	60	52
2								-	46	47	56	47
3								-	46	47	56	46
4								-	44	46	58	43
5								-	43	47	58	42
6								-	43	48	58	42
7								-	43	47	58	42
8								-	42	46	58	43
9								-	41	44	54	42
10								56	42	43	54	42
11								62	42	44	56	43
12								60	43	46	58	44
13								60	43	46	56	46
14								60	49	46	54	48
15								52	49	49	56	50
16								48	50	50	56	52
17								48	48	49	54	52
18								48	47	52	49	50
19								49	46	54	49	52
20								52	46	66	49	-
21								52	43	68	50	-
22								52	43	68	52	-
23								50	42	70	52	-
24								48	43	64	49	-
25								48	44	62	50	-
26								49	44	62	50	-
27								49	43	60	50	-
28								48	44	58	50	-
29					------			45	47	60	50	-
30					------			45	48	60	50	-
31		------			------		------	42	------	62	49	------
TOTAL								-	1,341	1,659	1,659	-
MEAN								-	44.7	53.5	53.5	-
MAX								-	50	70	60	-
MIN								-	41	43	49	-
AC-FT								-	2,660	3,290	3,290	-

Flow Data May - September for 1973 Water Year. Station Number 13117020 at Blue Dome Inn near Reno, Idaho.*

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1								-	72	73	77	71
2								-	72	72	76	70
3								-	72	71	76	69
4								-	72	72	77	69
5								-	71	72	76	69
6								-	71	72	76	69
7								-	70	72	73	69
8								-	67	73	73	69
9								-	65	72	73	67
10								78	65	72	72	66
11								78	65	71	72	66
12								79	65	73	72	65
13								76	65	73	72	66
14								71	69	73	70	66
15								74	70	73	70	65
16								73	69	76	71	66
17								73	69	77	72	66
18								73	70	78	70	66
19								73	70	79	70	66
20								74	70	85	71	-
21								74	70	84	70	-
22								74	70	85	72	-
23								74	71	82	71	-
24								72	71	80	70	-
25								72	71	79	70	-
26								72	72	78	69	-
27								74	72	78	69	-
28								72	72	78	67	-
29					------			70	72	78	67	-
30					------			70	73	78	67	-
31		------			------		------	70	------	77	67	------
TOTAL								-	2,093	2,356	2,218	-
MEAN								-	69.8	76.0	71.5	-
MAX								-	73	85	77	-
MIN								-	65	71	67	-
AC-FT								-	4,150	4,670	4,400	-

Flow Data May - September 1974 Water Year. Station Number 13117030 at Eight-Mile Canyon Road near Reno, Idaho.*

May				June				July				August				September			
Gage height		Discharge		Gage height		Discharge		Gage height		Discharge		Gage height		Discharge		Gage height		Discharge	
				1.10	+.02	48		1.01	+.07	43		1.07	.00	42		1.09	.01	43	
				1.10		48		1.04	+.04	43		1.08		43		1.10		44	
				1.09		46		1.05	+.03	43		1.11		46		1.10		44	
				1.09		46		1.03		41		1.11		46		1.09		43	
				1.10	+.02	48		1.03		41		1.09		44		1.09		43	
				1.10	+.03	50		1.03		41		1.11		46		1.09		43	
				1.10		50		1.05		43		1.16		55		1.09		43	
				1.10		50		1.05	+.03	43		1.18		59		1.08	-.01	42	
				1.10		50		1.06	+.02	43		1.19		60		1.08	.00	43	
				1.09		48		1.06		43		1.16		55		1.09		44	
				1.10		50		1.08		44		1.15		53		1.09		44	
				1.10		50		1.10		48		1.15		53		1.10		44	
				1.10		50		1.09		44		1.15	.00	53		1.10		44	
	1.20 [4&2]	.00	62	1.09	+.03	48		1.09		46		1.15	-.01	53		1.10		44	
	1.20		62	1.09	+.04	50		1.09	+.02	46		1.14		50		1.10		44	
	1.19		60	1.09		50		1.10	+.01	46		1.14		50		1.09		44	
	1.17		57	1.09		50		1.10		46		1.14		50		1.09		44	
	1.16	.00	55	1.08		48		1.09 [4&3]	-.01	44		1.14		50		1.08		43	
	1.15	+.01	55	1.07	+.04	46		1.10		46		1.14		50		1.08		43	
	1.15		55	1.04 [4&3]	Y	44		1.10		46		1.18		57		1.08		43	
	1.15		55	1.03	+.08	46		1.10		46		1.12		53		1.08		43	
	1.15		55	1.02		44		1.09		44		1.17 [4&5]		50		1.07		42	
	1.15		55	1.01		44		1.07		43		1.13		48		1.07		42	
	1.13		52	1.03	+.06	46		1.03		44		1.13		48		1.06		41	
	1.10		46	1.02	+.07	44		1.07		43		1.13		48		1.06 [4&6]	-.00	41	
	1.10		46	1.03		44		1.07	+.01	43		1.13		48		a		41	
	1.09	+.01	44	1.03		44		1.07	.00	42		1.12		46				41	
	1.10	+.02	48	1.03		44		1.09		44		1.10		44				41	
	1.10		48	1.02		44		1.09		43		1.09		43				40	
	1.12		52	1.01	+.01	43		1.07		42		1.09		43		a		40	
	1.11	+.02	50					1.07	.00	42		1.09	-.01	43					
						1413				1356				1529				1281	

Flow Data May - September for 1974 Water Year. Station Number 13117020 at Blue Dome Inn near Reno, Idaho.*

April		May		June		July		August		September		
Gage height	Discharge	Gage height	Discharge	Gage height	Discharge	Gage height	Discharge	Gage height	Discharge	Gage height	Discharge	Day
				1.60 +.13	77	1.58 +.05	65	1.62 +.02	66	1.61 +.05	69	1
				1.61 +.13	78	1.59	66	1.63	67	1.62	70	2
				1.60 +.12	76	1.60 .05	67	1.65 +.03	70	1.62	70	3
				1.59	74	1.59 +.04	65	1.66 +.03	72	1.63	71	4
				1.61	77	1.59	65	1.64	70	1.63	71	5
				1.60	76	1.59 +.04	65	1.63	69	1.63	71	6
				1.59 .12	74	1.60 +.03	65	1.65	71	1.63	71	7
				1.61 +.11	76	1.60 +.03	65	1.65	71	1.63 +.05	71	8
				1.60	74	1.60 +.02	64	1.66	72	1.63 +.04	70	9
				1.59	73	1.61	65	1.65 +.03	71	1.63	70	10
				1.60 +.11	74	1.62 +.02	66	1.64 +.04	71	1.63	70	11
				1.59 +.10	72	1.61 +.01	64	1.64	71	1.63	70	12
				1.58	71	1.60	63	1.64	71	1.64	71	13
		1.63 Est +.17	85	1.58	71	1.61	64	1.64	71	1.63	70	14
		1.64	86	1.57	70	1.61 +.01	64	1.63	71	1.63	70	15
		1.62 +.17	84	1.57 +.10	70	1.61 .00	63	1.64 +.04	71	1.63	70	16
		1.61 +.16	82	1.57 +.09	69	1.61	63	1.63 +.05	71	1.62	69	17
		1.62	83	1.58	70	1.61 Est .00	63	1.63	71	1.62	69	18
		1.60	80	1.60	72	1.62	64	1.63	71	1.62	69	19
		1.62 +.16	83	1.59 Est	71	1.63 .00	65	1.67	76	1.62	69	20
		1.63 +.15	83	1.59 +.09	71	1.63 +.01	66	1.64	72	1.62	69	21
		1.63	83	1.59 +.08	70	1.62	65	1.64 Est	72	1.62	69	22
		1.63	83	1.58 +.08	69	1.62	65	1.64	72	1.62	69	23
		1.63 +.16	83	1.59 +.07	69	1.62	65	1.64	72	1.62	69	24
		1.60 +.14	78	1.58	67	1.62	65	1.64	72	1.61 Est +.04	67	25
		1.60	78	1.57	66	1.62	65	1.64	72	a	67	26
		1.60	78	1.58 +.07	67	1.62 +.01	65	1.63	71		67	27
		1.60	78	1.58 +.06	66	1.63 +.02	67	1.62	70		67	28
		1.59 +.14	77	1.58	66	1.64	69	1.61	69		67	29
		1.61 +.13	78	1.58 +.06	66	1.62	66	1.61	69	a	67	30
		1.61 +.13	78			1.62 +.02	66	1.61 +.05	69			31
				2142		2015		2194		2079		

APPENDIX B

WATER RIGHTS DATA FOR BIRCH CREEK

~~APPENDIX 6~~

STATE OF IDAHO

DEPARTMENT OF WATER RESOURCES
EASTERN DISTRICT

IDAHO FALLS, IDAHO 83401

June 4, 1975

Mr. Ralph Culvertson
Bureau of Land Management
940 Lincoln Road
Idaho Falls, Idaho 83401

Dear Ralph:

Pursuant to your request, please find enclosed information for water rights on Birch Creek and water measurements for the years 1971, 1972, and 1973, 1974.

Very truly yours,

Loy H. Johnson

LOY H. JOHNSON
Water Resource Supervisor

LHJ:CW

Enclosures

Actual field data is on file in the

Idaho Falls District Office.

Position	Info.	Act.	Init.
District Mgr.			
Resource Mgmt.			
Operations			

RECEIVED
U.S. D.I. JUN 5 1975 B.L.M.
Idaho Falls, Idaho

Administration			
Caribou RA			
Lost River RA			
Med. Lodge RA			
Twin Butte RA			

APPENDIX C

STREAM SURVEY DATA FOR BIRCH CREEK

BIRCH CREEK, IDAHO

STREAM SURVEY REPORT

BUREAU OF LAND MANAGEMENT

IDAHO FALLS DISTRICT

IDAHO DEPARTMENT OF FISH & GAME

IDAHO FALLS, IDAHO

JULY 1976

TABLE OF CONTENTS

BIRCH CREEK IDAHO STREAM SURVEY REPORT

Introduction

As a part of the intensive inventory of Birch Creek, a physical stream survey was conducted in June, 1975. The survey was an interagency project between Idaho Department of Fish & Game, Fisheries Division, and personnel from the Bureau of Land Management. Training, assistance and analysis of the survey data were provided by the Fisheries Biologist from the BLM Oregon State Office.

The survey was conducted on the portion of Birch Creek from the Reno Ditch diversion up to and including all the tributaries forming the headwaters, a stream distance of approximately 22 miles.

Personnel involved in the survey were as follows:

R. Culbertson, Wildlife Biologist, Idaho Falls District
R. Borovicka, Oregon State Office, BLM
H. Hendrick, Salmon District, BLM
S. Robinson, Idaho Falls District, BLM
W. Ball, Idaho Department of Fish & Game
P. Jeppson, Idaho Department of Fish & Game

Description

Birch Creek is the major feature of the valley floor that drains the area between the southern end of the Lemhi Mountains on the west and the Beaverhead Mountains on the east. The stream originates from a complex of springs in the upper portion of the valley. The creek meanders through private, state and national resource lands. During the irrigation season, the water is completely diverted into the Reno irrigation ditch, approximately 20 miles downstream from the headwaters. The stream system is in a closed basin where undiverted water sumps out on the Idaho National Engineering Laboratory of the Energy Research and Development Administration. It is presumed that the water becomes a part of the Snake River Aquifer. Limnological data for the creek have been compiled by Andrews (1972).

The stream carries a flow of high quality water on a perennial basis that averages between 53 to 149 cfs. Birch Creek is considered medium to rich in abundance and quantity of aquatic organisms (Table 1).

Table 1, Invertebrate fauna collected in Birch Creek 1970-71. (From Andrews, 1972)

TAXON

Diptera

- Chironomidae
- Simulium sp.
- Tipula sp.
- Dicranota sp.
- Heleidae
- Pericoma sp.

Coleoptera

- Optioservus quadrimaculatus
- Bidessus sp.
- Hydaticus sp
- Dubiraphia sp.

Ephemeroptera

- Baetis tricaudatus
- Ephemerella grandis
- E. inermis
- Rhithrogena hageni
- Paraleptophlebia heteronea
- Ephemerella flavilinea
- Ameletus oregonensis
- A. velox
- Tricorythodes minutus

Plecoptera

- Acroneuria pacifica
- Isoperla fulva
- Arcynopteryx parallela
- Pteronarcella badia
- Alloperla sp.
- Classcuia sabulosa
- Isogonus sp.
- Capnia sp.
- Isoperla mormona
- Pteronarcys californica
- Nemoura sp.
- Isoperla patrica

Trichoptera

- Brachycentrus occidentalis
- Hydropsyche sp.
- Glossosoma sp.
- Arctopsyche grandis
- Lepidestoma sp.
- Helicopsyche borealis
- Hesperophylax sp.
- Limnephilus sp.
- Drusinus sp.
- Micrasema sp.
- Parapsyche elais
- Athripsodes sp.
- Oecetis sp.
- Chimarra sp.
- Rhyacephila vaccua
- Rhyacophila acropedes

Annelida

- Hirudinea

Acarina

- Hydracarina

Amphipoda

- Gammarus lacustris
- Hyalella azteca

Hemiptera

- Callicorixa sp.

Neuroptera

- Sialis sp.

Playhelminthes

- Turbellaria

Mollusca

- Lyrmaea sp.
- Physa sp.
- Gyraulus sp.
- Pisidium sp.
- Sphaerium sp.

Odonata

- Argia sp.
- Ophiogomphus sp.

State Highway 28 parallels and crosses the creek in three locations through the valley. Several unimproved roads parallel the stream on national resource lands. Physical access is available on all NRL and State lands and general fishing is permitted by permission on private lands. Birch Creek is located in Butte, Clark, and Lemhi Counties, Idaho and is in the eastern portion of the Birch Creek-Little Lost River Planning Unit.

The stream is considered one of the most important trout waters on NRL in eastern Idaho and is a very popular fishing area for both residents and tourists. Ease of access, good fish production and interesting outdoor habitat contribute to its popularity in Idaho. The extreme upper portion of the stream has outstanding natural reproduction of trout, both Rainbow and Brook. The lower portion of the water on NRLs contains natural stocks of fish but is periodically stocked by the Idaho Department of Fish & Game with catchable rainbows.

The creek is characterized by having only one live tributary (Pass Creek) in the central portion of the watershed. Pass Creek is entirely diverted for irrigation of fields during the irrigation season.

Methodology

The Physical and Biological Stream Survey Book, 6670-1, was used by field personnel during the survey. Data collected were compiled from the field form and transferred to 6670-2 Forms, Physical and Biological Stream Survey Reports (Exhibit A)*.

The most extensive survey was conducted on the lower nine miles of stream. This section is almost entirely on NRL with some interspersed State of Idaho lands. The reason for the more intensive survey in this area was the condition of the habitat and the opportunity for management on NRL. All of the stream on private lands was surveyed to determine condition of the aquatic habitat, riparian cover and riffle-pool frequency. The upper portion of the stream near Kaufman Guard Station was surveyed to determine the amount of riffle and pool area and the general condition of the aquatic and riparian habitat. Aerial photographs (1-20,000) were used to divide the area in quarter-mile sections for purposes of the survey. Survey data were collected by sub-section in the normal quarter-mile section that is standard for this method of stream survey.

Little water quality data were collected because of the detailed analysis available in the files of Idaho Department of Fish & Game and the data available as a result of the Limnological investigations published in the thesis by (Andrews, 1972).

* A sample Physical and Biological Stream Survey Report Form is attached as Exhibit A. Other supporting data referred to are in Files in the District Office.

Should be in the MMP all data together

Objectives

1. To record the physical parameters by specific location as listed in BLM Stream Survey Manual 6671.

2. To analyze the collected data to determine limiting factors.

3. To inspect and record the need and location of possible habitat improvements as a basis for future fishery habitat improvement.

4. To use the survey as an important part of the intensive inventory of the Birch Creek Aquatic Habitat Management Planning Area.

Results

Physical Survey. The physical inventory that delineated the stream bottom type, including pool area, clearly depicted the contrast between the fishery habitat on NRL as compared to private and protected lands under State ownership. The statistics indicate the low percentage of pool area and streamside cover in the lower nine miles of stream on NRL. The national resource lands have had no protection from livestock grazing in the past, except for a small experimental area. The private lands from river mile 9 up to river mile 17 exhibit almost a 50-50 riffle-pool relationship and 75 percent stream shading. The majority of private lands along the stream have been fenced and have had limited livestock use because of cultivated fields or other agricultural uses. Some physical characteristics of Birch Creek are summarized in Tables 2 and 3 and Figures 1 through 4.

Discussion

Factors that limit the maximum production of fish in the aquatic habitat of Birch Creek are as follows:

1. There is historically heavy utilization of riparian vegetation by livestock along the stream on NRL. This heavy use of the riparian area has broken down stream banks and suppressed growth of woody plants. As a result, fish habitat in the form of pools, undercut banks and deep meanders has been eliminated.

2. Past channel changing activities for water flow movement have increased the velocity of the water and destroyed trout habitat.

3. Increases in water turbidity and sediment due to unstable streambanks affect water quality and cause impaction of gravel and covering of gravel with silt.

Table 2. Characteristics of Birch Creek as Compiled in 1975.

Item		Amount
Gravel -		
Mile	0.00 - 9.00	84,059 square yards
"	9.00 - 17.00	62,050 " "
"	17.00 - 22.00	25,420 " "
	Total	171,529 " "
Pool to Riffle Ratio		32 - 68
Pools		32%
Average area shaded		36%

Table 3, Comparison of percentage of pools and average stream area shaded by one mile sections.
Birch Creek, Idaho, 1975

Pools	Percent Area Shaded	Stream Milepost	Major Land Ownership
9	0	1	National Resource Lands
20	10	2	"
19	10	3	"
28	0	4	"
23	10	5	"
16	10	6	"
18	10	7	"
13	20	8	State-Private
29	50	9	Private
67	90	10	"
45	80	11	"
32	80	12	"
28	70	13	"
50	70	14	"
30	50	15	"
60	90	16	"
44	70	17	Private-State
35	70	18	Private
30	10	19	"
26	0	20	"
0	0	21	"
0	0	22	"

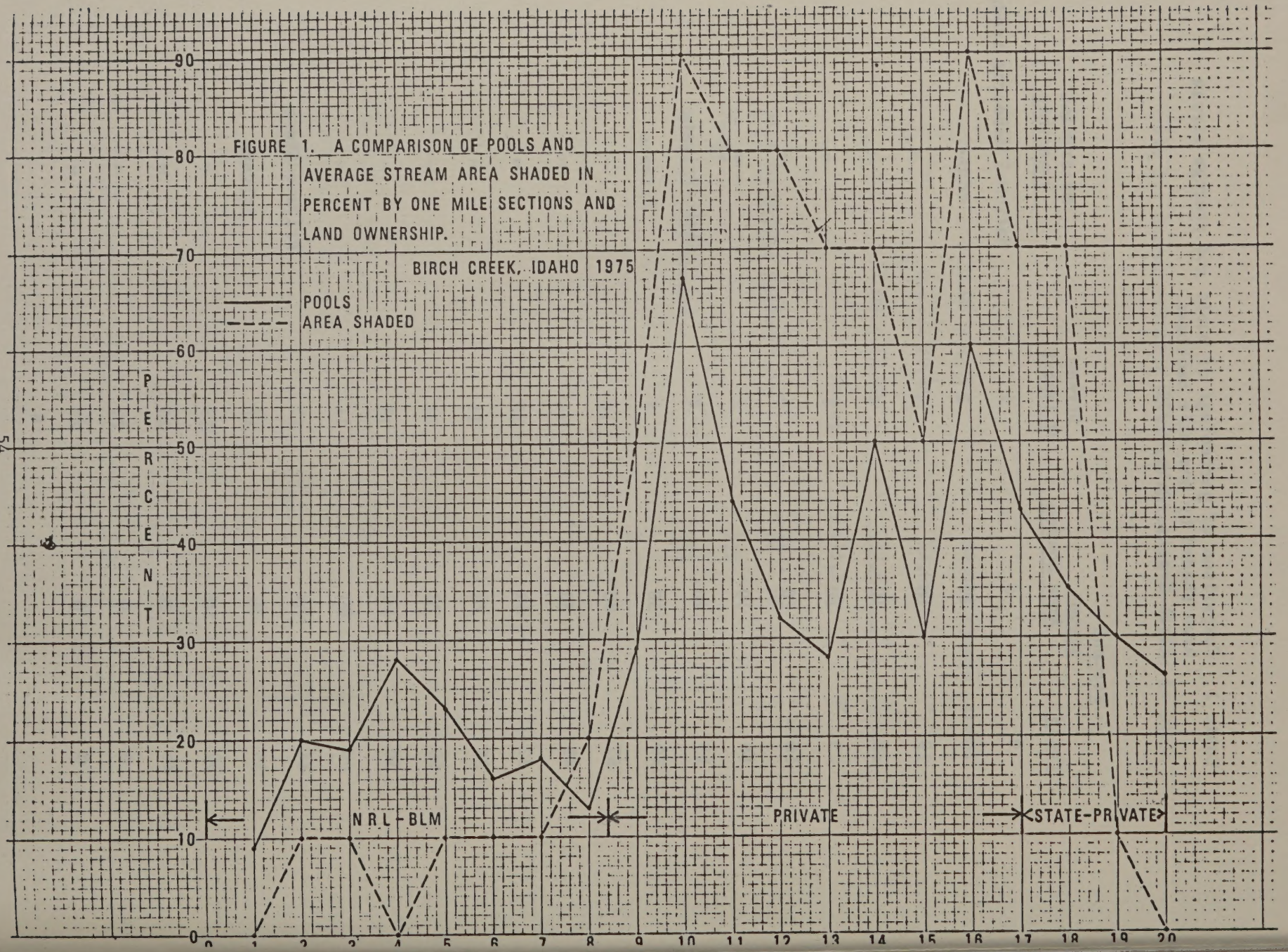
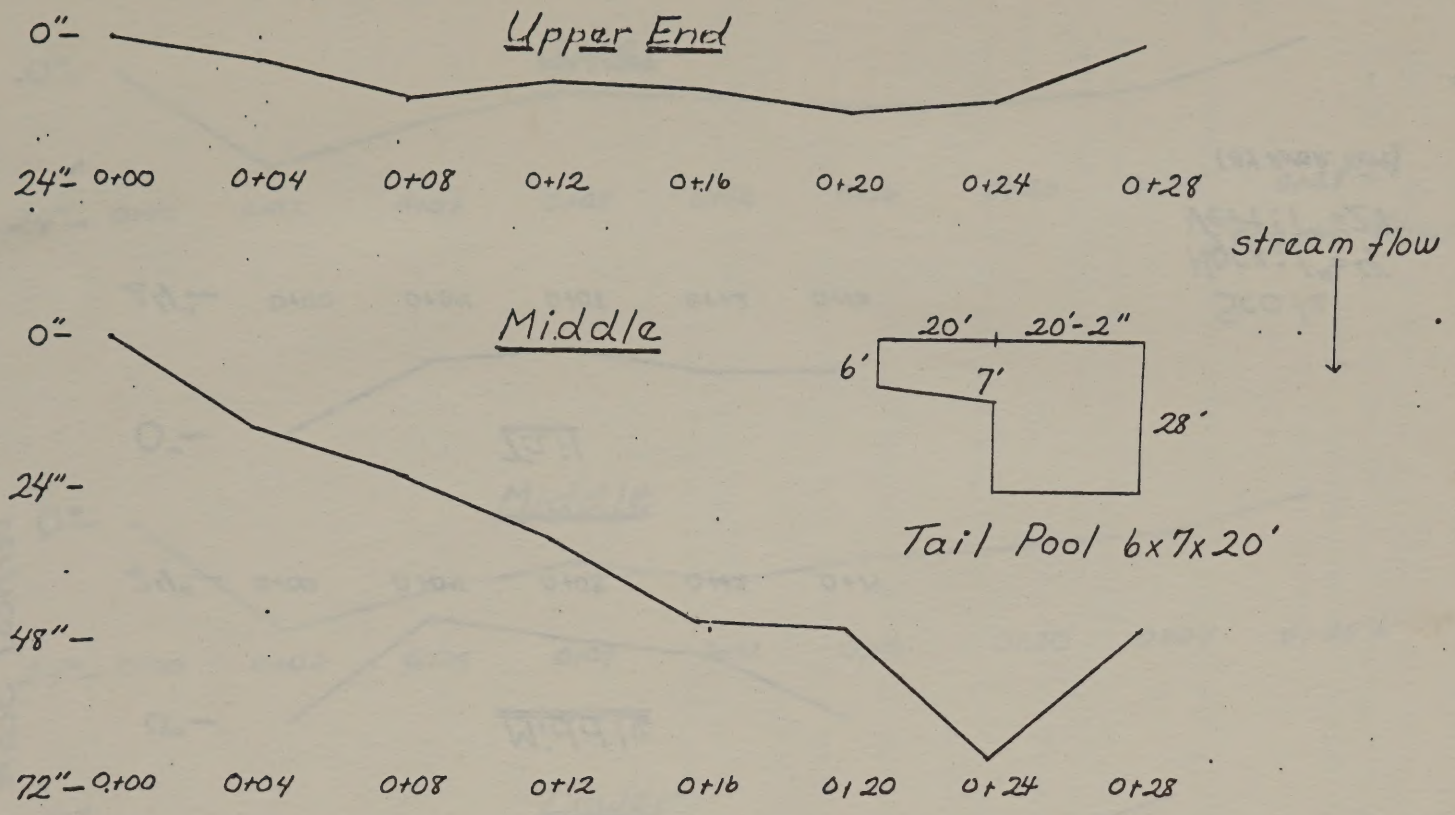
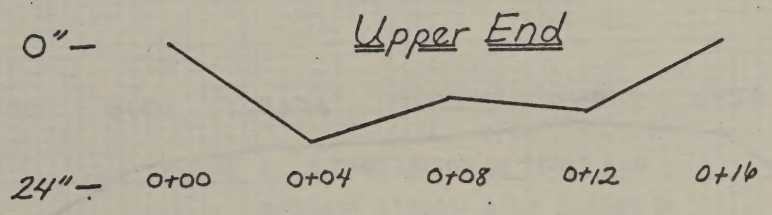
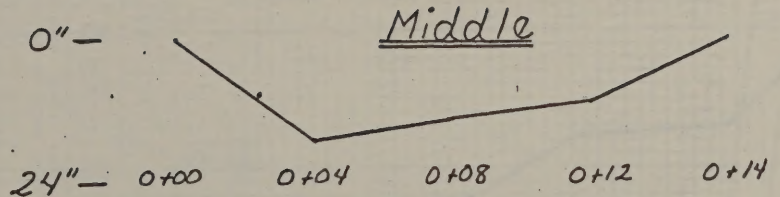


FIGURE 1. A COMPARISON OF POOLS AND AVERAGE STREAM AREA SHADED IN PERCENT BY ONE MILE SECTIONS AND LAND OWNERSHIP.
BIRCH CREEK, IDAHO 1975
POOLS
AREA SHADED
PERCENT
90
80
70
60
50
40
30
20
10
0
NRL-BLM
PRIVATE
STATE-PRIVATE
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

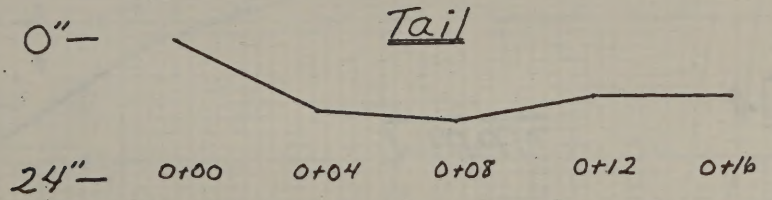

Upper End
0"
24"
0+00
0+04
0+08
0+12
0+16
0+20
0+24
0+28
stream flow
Middle
0"
24"
48"
72"
Vertical Scale
20'
20'-2"
6'
7'
28'
Tail Pool 6x7x20'
0+00
0+04
0+08
0+12
0+16
0+20
0+24
0+28
Tail Out
0"
24"
0+00
0+04
0+08
0+12
0+16
0+20
0+24
Scale
Horz: 1"=4'
Vert: 1"=24'
(BY Engr. Dept.)



stream flow

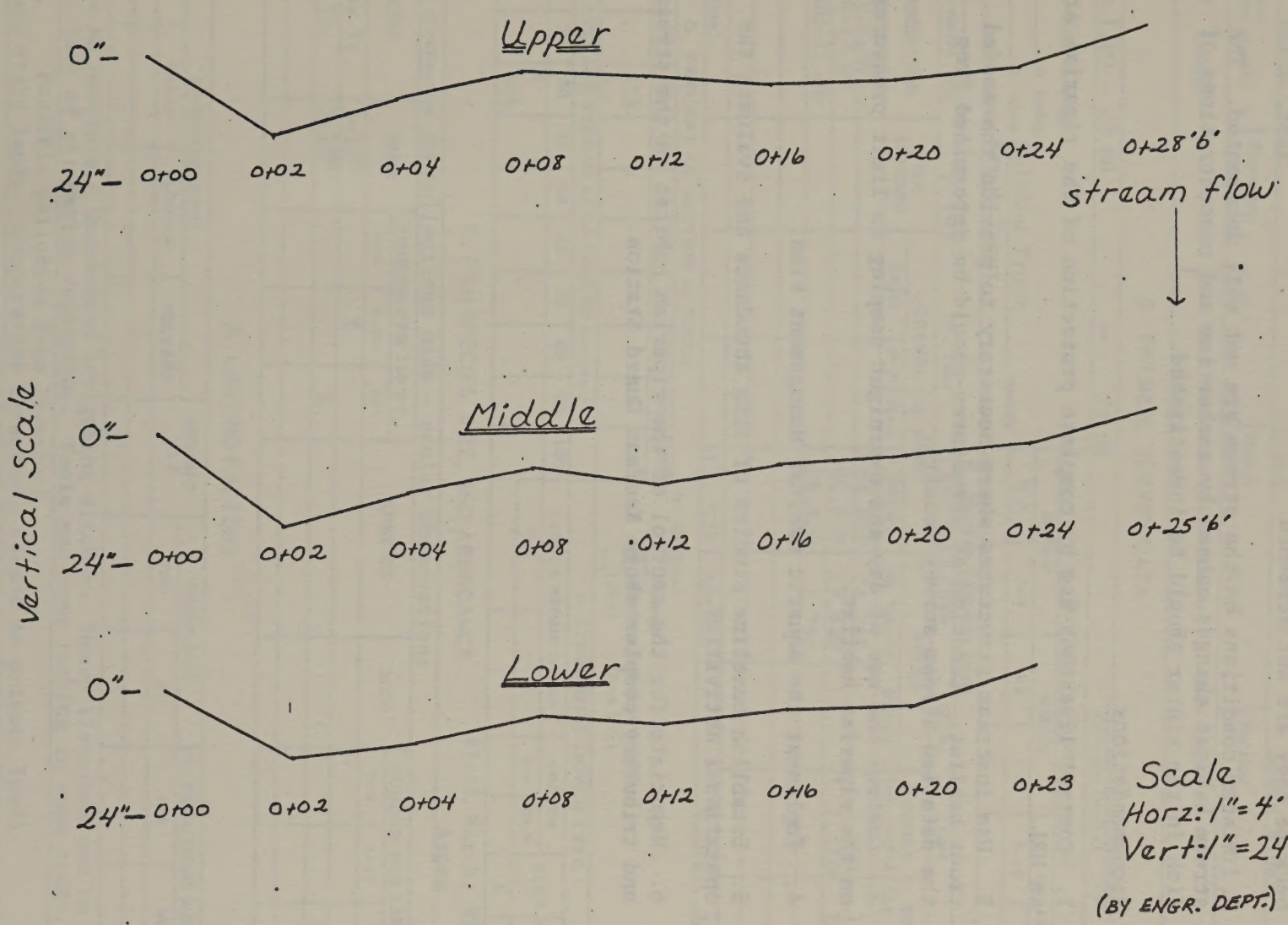


Vertical Scale



Scale
Horz: 1" = 4'
Vert: 1" = 24'

(BY ENGR. DEPT.)


Upper
0"
24"
0+00
0+02
0+04
0+08
0+12
0+16
0+20
0+24
0+28'6'
stream flow
Middle
0"
24"
0+00
0+02
0+04
0+08
0+12
0+16
0+20
0+24
0+25'6'
Vertical Scale
Lower
0"
24"
0+00
0+02
0+04
0+08
0+12
0+16
0+20
0+23
Scale
Horz: 1" = 4'
Vert: 1" = 24'
(BY ENGR. DEPT.)

4. Headwater streams need habitat protection to increase trout habitat and to protect water quality.

5. Excessive recreational use by campers along the stream has reduced riparian vegetation in some areas.

6. There may be a serious loss of trout in the irrigation ditches because they are not screened.

7. Winter conditions on the stream are not well documented. The stream habitat changes caused by anchor ice and concentrations of fish in the winter should be investigated.

Recommendations

1. Control livestock use by complete protection of the riparian area on NRL.

2. Use instream structures where necessary to provide the needed trout habitat. Location of structures should be determined from the detailed stream survey results.

3. Control the use of day and overnight camping to limit pressures on the riparian habitat.

4. Implement the Aquatic Habitat Management Plan.

5. Establish baseline studies of fish abundance and evaluate the operational activities.

6. Negotiate for the control of the riparian habitat on the stream and tributary complex above Kaufman Guard Station.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

PHYSICAL AND BIOLOGICAL STREAM SURVEY REPORT

Date 5/28/75 - 6/18/75

1. Surveyor A. Culbertson, H. Hendrick, P. Jeppson, B. Borovicka

Agency BLM, Idaho Dept. Fish & Game

2. Stream	a. Tributary	b. Basin
Birch Creek	closed	Snake River

3. Location (stream mouth)	Township	Range	Section
	6 N	32 E	11

4. County	5. State Administration Unit Number	Code Number
Lemhi	Idaho - 6	

6. PHYSICAL SURVEY DATA

a. Station 1.00 - 22.00 to 22.00 distance (miles) 22

b. Stream width (average)
____ ft. today
15-30 ft. when Rainbow Trout spawn
____ ft. when Brook Trout spawn

c. TURBIDITY (Visibility in feet)

MUDDY		MURKY		CLEAR	
<.5	.5–1	1–2	2–5	5–10	10+
			X		

d. Jackson Turbidity Units

e. Temperature: Air °F, Water °F, Time , Flow (c.f.s.) Now , High , Low

f. GRAVEL, POOL AND RUBBLE AREA

SUBSECTION	FISH SPECIES	GRAVEL (sq. yards) GOOD	GRAVEL (sq. yards) MARGINAL	GRAVEL (sq. yards) TOTAL	POOLS SQ. YARDS	POOLS DEPTH	RUBBLE (sq. yards)	TOTAL (sq. yards)
0.00-9.00				84,059	24,266		7,994	116,319
9.00-17.00				62,050	58,820		1,210	122,080
17.00-22.00				25,420	3,780		-	29,200
Total				171,529	86,866		9,204	267,599

G. PERCENT OF SECTION IN POOLS

0	10	20	30	40	50	60	70	80	90	100
			32% X							

h. Gradient
- [ ] Steep (2.5 + %)
- [X] Moderate (1.0 to 2.5 %)
- [ ] Flat (0 to 1 %)

i. AVERAGE STREAM AREA SHADED (percent)

0	10	20	30	40	50	60	70	80	90	100
			X 36%							

j. STREAMSIDE COVER TYPE

LOGGED WITHIN (years) 0–5	LOGGED WITHIN (years) 6–10	GROWTH 2nd	GROWTH OLD	HERB	OTHER
				X	X

7. FISH SPECIES, SIZE, AND ABUNDANCE

Black Birch; Willow; Aspen

a. Method of collection No collections made - ocular observations

SPECIES	SIZE	NUMBER PER 100 FT. 0–5	6–50	50+	SPECIES	SIZE	NUMBER PER 100 FT. 0–5	6–50	50+
Rainbow Tr.	5-12"		X						
Brook Tr.	5-10"			X					

8. LIMITING FACTORS

BARRIERS (type) DAM	FALLS	LOGJAM	CULVERT	HEIGHT (ft.)	PASSABLE YES	PASSABLE NO	CORRECTIONS NEEDED YES	CORRECTIONS NEEDED NO

Other factors No barriers. Unscreened irrigation ditches. Heavy livestock use in many areas. Lack of streamside vegetation. Pools and runs lacking in some areas.

9. Access Possible pollution from livestock. Good on NRL and state lands. Cooperative agreements needed on private lands.

(Continued on reverse)

10. Additional Comments

See stream survey narrative.

INSTRUCTIONS

1. District office completes two (2) copies upon request of Stream Surveyor.
2. Submit original to permanent District file and carbon to Stream Surveyor for final stream survey report.
3. See Form 6670–1 for specific instructions.

☆ U.S. Government Printing Office:1973-784-258/2231 Region 8

APPENDIX D

WATER LOSS ANALYSIS

OPTIONAL FORM NO. 10
JULY 1973 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

6670

Memorandum

Water Loss

TO : Birch Creek Aquatic Study File

DATE: November 22, 1976

FROM : Ralph Culbertson, District Wildlife Management Biologist

SUBJECT: Joint meeting with State of Idaho Water Resource Department Water Users and BLM

On November 10, 1976, a meeting was held at the Idaho Water Resource Department Office between BLM, SIDWR personnel and the water users of Birch Creek.

The purpose of the meeting was to once and for all clarify the Bureau's position as to the use of the waters of Birch Creek for Federal Programs We also wanted to offer assurance to the water users of Birch Creek that the Bureau of Land Management in no way wanted to infringe on their decreed water rightas we developed the fisheries habitat on Birch Creek.

At first the discussion by the water users centered around hypothetical causes why the structures placed by the Bureau would cause excess water losses, but they had no definite facts to prove their theories.

The Bureau presented its findings showing the data collected in cooperation with SIDWR and summarized in a study entitled "Water Loss on Birch Creek an Aquatic Study" which is on file in the district. The study shows a substantial difference between water loss rates in portions of the stream that have had no structures placed and that 1.41 miles of stream that has either K-dams, trash catchers, digger logs or rock placement work done. The rate of water loss for the "Unaltered" (no structures) portion of the stream is 2.3 cfs per mile while the "altered" (with structures) section has a loss rate of only 1.9 cfs per mile which is .4 cfs per mile less loss. It was the Bureau's contention that by slowing the water velocity down, the fine silts came out of suspension and "sealed" the natural gravels somewhat and thereby reduced water loss. The Idaho Water Resource Department and the water users themselves agreed that perhaps this was taking place and with the data at hand could only conclude that the Bureau's action to date has not interferred with any decreed water and may have actually helped the situation.

The discussion turned to our upcoming plans in FY'77 where we told those present that we intended to:

1. Construct 5 K-dams.
2. Construct 5 trash-catchers and place approximately 80 cu yards of boulders (up to 20" diameter) in Birch Creek using YCC hand labor

5010-110

On the proposed project plans very little resistance was encountered and it was agreed that with IWRD help, we would do measurements before, during, and after constructions of the projects to see if there was a significant loss of water.

The water users then wanted to know what practices would be allowed in stream channelization on federal lands.

Ross Sharp informed them that there would be no work allowed in the main stream channel on Federal lands. Small diversions resulting from heavy spring runoff could be turned back into the main channel by working from the outside bank in.

The water users were also informed that the Bureau could not, nor would not, authorize the dumping of bentonite into the stream on Federal lands but that the government has no authority over private actions on private land nor does it want that authority.

Overall I believe the meeting strengthened the Bureau's position on managing the cold water fisheries habitat on NRL and yet gained the respect and cooperation of the water users on Birch Creek.

fba: 11-22-76 Ralph E. Colbertson

Calculation

ANALYSIS OF DISCHARGE MEASUREMENTS TAKEN FROM BIRCH CREEK

Introduction:

The rate of discharge was measured at four sites on Birch Creek, of the Little Lost River, Birch Creek Planning Unit, located in the Idaho Falls District, Bureau of Land Management. The rationale behind the location of these four sites was to elucidate two parameters:

1) The amount of water flow into the Reno diversion.

2) The amount of water lost through percolation on a specific 1.41 mile length of stream.

Materials:

The apparatus utilized in measuring the discharge were:

1 type AA current meter
1 100' nylon tape measure
1 stop watch

Methods:

The physical aspects most desirable when selecting a site for measurement are smooth flowing water and little or no slow water by the stream bank. The tape measure is then laid at a right angle intersecting the stream channel and staked down above streamtop level with the 1 foot mark at waters edge.

In this survey all measurements were taken starting from the left bank, except the first which was the right bank. (Right and left determined when facing downstream.) The initial point on the bank was called zero and hence had no depth. The first starting point was as close to the bank as the meter would record, all others at one foot intervals. This procedure was followed for all sites except the Reno diversion which was measured at one-half foot intervals.

The type AA meter is so constructed as to measure the water depth, then can be adjusted to automatically position the meter blades at a distance of 60% of the depth from the bottom. When properly positioned, the number of revolutions of the blades per a given time period was measured.

By determing the ratio of revolutions/seconds either one of two formules were utilized to calculate the velocity at that point. The specifications for the equations are:

$N = \frac{\text{Revolutions}}{\text{Seconds}}$ if $N > 1$ then $V = 2.224N + .016$

V = Velocity at that point if $N \leq 1$ then $V = 2.218N + .022$

Each point on the sites measured had its velocity calculated, then its area. The area was determined by multiplying the depth by the width, the width being defined as the distance from the preceeding point. The point discharge was tabulated by multiplying the area by the velocity. The sum of all discharge calculations for a site gave the total discharge of the stream at that location. Data for the four sites are given in Table I.

Personnel conducting the investigation were Lorne Holmes of the State Water Resources Board in Idaho Falls, Idaho and Sean Farley of the Bureau of Land Management, also of Idaho Falls, Idaho.

Specifics:

Site 1

This was measured at a point approximately one hundred feet downstream of the earthen dam constructed to direct water flow into the Reno diversion. It is pinpointed on aerial photo, Section 3, Township 8 North, Range 30 EAst, C X Q 1W - 102. (See Appendix I).* The maximum depth was 1.2', with a discharge of 1.842 c.f.s. at a distance 4.5' from shore. The maximum discharge was 3.248 c.f.s. at distance 12.0' and depth 0.85'. The width of the stream at this point was 15', with 1.25' on the right bank and .25' on the left being too shallow to record.

Site 2

This was recorded approximately one hundred feet downstream of the 'V' digger log in section 28, Township 9 North, Range 30 East, located on aerial photo C X Q 12W-17. The maximum depth at this site was 1.1' with a discharge of 3.43 c.f.s. at distance 15'. The maximum discharge was 3.54 c.f.s. at a depth of 1.0' and distance 14'. The total width of the stream was 23', with 1.5' on the left bank and 1.0' on the right being too shallow to measure.

Site 3

Measurements here were recorded at a point approximately 80' upstream of the most northerly K-dam south of Blue Dome Inn. This may be found on aerial photo section 16, Township 9 North, Range 30 East, C X Q 12W-16. Maximum depth here was found to be 1.20' with a discharge rate of 3.05 c.f.s., at distance 5'. The maximum discharge was 3.08 c.f.s., at a point 7' from the bank and with a depth of 1.10'. Total stream width was 24' with 1.0' on each bank too shallow to measure.

Site 4

This site was located approximately 60' downstream of the intersection of the southern fence of the bull pasture and the creek. The bull pasture is located approximately ¼ mile south of the John Day Historical Site. It is pinpointed on aerial photo section 5, Township 9 North, Range 30 East, C X Q 12W-15. The deepest point was 1.4' with a discharge of 2.37 c.f.s. at distance 23'. The maximum discharge was 4.69 c.f.s. at a depth of 1.4' and distance 21'. The total width of the stream was 24' with 2.5' on the left bank and .5' on the right, too shallow to record.

*Appendices including maps and field data are in Unit Files.

Discussion:

The structures built on the 1.41 mile stretch of altered land were designed to impede water flow and create pools. In doing so, there arose two possible ramifications greatly affecting water loss.

First, the increased surface area of water could allow greater contact with the ground surface and thereby possibly enhance the likelihood of increased percolation.

Second, the slow-down of water would cause a faster rate of sediment deposition which could 'seal' the stream bottom and decrease the water loss through percolation. From an original flow of 53.0 c.f.s. at Site 4, only 37.7 remains at Site 1 to be diverted at Reno diversion. This 15.3 c.f.s. loss can be delineated and charged to specific altered and unaltered sections of the stream. Of this 15.3 c.f.s., 5.6 are lost in a section of unaltered land that has a loss rate of 2.3 c.f.s./mile. The other unaltered stretch of stream is 2.52 miles long and loses 6.9 c.f.s. at a rate of 2.3 c.f.s./mile. However, the altered stream section is 1.41 miles long and loses only 2.7 c.f.s. at a rate of 1.94 c.f.s./mile.

Conclusion:

Data would be indicative that the alteration of the stream as done in such a manner to impede water flow and form pools reduces the loss rate of water through percolation. Depending upon the rate of deposition, its advantages might outweigh the future disadvantages.

Sean Farley 8-5-76

TABLE I

Site No.	Location	Time Measured	Discharge c.f.s.	Distance from Preceeding Site (miles)	Status	Rate of Loss c.f.s./mile
1	NE¼, sec. 3, T. 8 N., R. 30 E.	1030	37.7	0		
2	NE¼, sec. 28, T. 9 N., R. 30 E.	1120	44.6	2.52	Unaltered	2.3
3	NW¼, sec. 16, T. 9 N., R. 30 E.	1215	47.3	1.41	Altered	1.9
4	Sec. 5, T. 9 N., R. 30 E.	1340	53.0	2.44	Unaltered	2.3
			TOTAL	6.37		

APPENDIX E

EXAMPLES OF JOB DESCRIPTION

REPORTS FOR IMPROVEMENTS

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JOB DOCUMENTATION REPORT

JOB IDENTIFICATION

1. State (2–3) . . . . . ID
2. District (4–5) 03
3. Job No. (6–9) 4295
4. Transaction Code (10) . . . . .

I – GENERAL DESCRIPTION — Card 1

5. Job Name (11–30): BIRCH CRK DAMS #3

LOCATION CODES

6. Special Project Code (31–34) . . . . .
7. Planning Unit (35–36) 02
8. Sub-Basin (37–38) 42 — 9. County (39–41) 033
10. Watershed No. (42–44) 004
11. Allotment No. (45–47) . . . . .
12. Wildlife Habitat Area (48–50) A03

SITE AND VEGETATIVE DESCRIPTION

13. Present SSF (51–52) — 14. % Slope (53–54)
15. Exposure (55) — 16. Soil Texture (56) . . . .
17. Precipitation (inches) (57–58) . . . . .
18. Elevation (feet) (59–63) . . . . .
19. Vegetative Subtype (64–66) . . . . .

COMPOSITION *(Percent)*

20. Grasses (67–68) — 21. Forbs (69–70) . .
22. Browse (71–72) . . . . . .

COVER *(Percent)*

23. Vegetative (73–74) — 24. Litter (75–76) .
25. Bare Ground (77–78) . . . . . .

II – ANNUAL WORK PLAN INPUT DATA — Card 2

75. Subactivity (11–14) 1285
76. Work Job Code (15–18) 6011

UNITS PLANNED

77. Primary (19–24) 2.5
78. Secondary (25–29) . . . . . .

TIME OF AWARD

79. Fiscal Year (30–31) 77 — 80. Third (32) . . . 3

TIME OF COMPLETION

81. Fiscal Year (33–34) 77 — 82. Third (35) . . . 3

BLM COST — 83. Method (36) 2

84. Material (37–41) 1100
85. Contract (42–47) . . . . . .

CONTRIBUTED COST

86. Material (48–52) . . . . . .
87. Labor/Equipment (53–57) . . . . .

MAINTENANCE

88. Responsibility (58) 1 — 89. Cycle (59–61) . 702

III – JOB DETAILS AND BENEFITS — Card 3

37. Primary Job Objective (11) 7

PLANT AND PEST CONTROL

39. Chemical (12) — 42. Method (13) . . . . .
45. Mechanical – Method (14) . . . . .

ARTIFICIAL REVEGETATION

47. Pounds Seed/Acre (15–17) . . . . .
48. Seedlings/Acre (18–21) — 49. Method (22)
51. AUM's Livestock Forage Added (23–26) . .
52. Future SSF (27–28) . . . . . .

WATERSHED TILLAGE — 54. Method (29) . . . .

FACILITIES — 55. Type (30) — 56. Other Misc. (31)

WATER DEVELOPMENT/CONTROL

59. Structure Type (32) . . . . . .

STORAGE (Ac. Ft.) 60. Flood (33–38)
61. Silt (39–44)

WILDLIFE HABITAT DEVELOPMENT/PROTECTION

62. Type (45–46) 66 — 63. Primary Species (47–49) 801
64. Animal Months (50–54) . . . . .
65. Number Increase (55–59) . . . . .
66. Pounds Fish Increase (60–64) 500
67. Rare/Endangered (65) . . . . . .

VISITOR DAYS ADDED — 68. Fisherman (66–69) 750
69. Hunter (70–73) — 70. Other (74–77)

IV – PROGRESS REPORT — Card 4

COMPLETION DATA

UNITS 90. Primary (11–16) . . . . .
91. Secondary (17–21) . . . . .
TIME 92. Fiscal Year (22–23) . . . . . .
93. Third (24) . . . . . .
94. Contract No. (25–29) . . . . . CT

CONTRIBUTION DETAIL

95. Agreement (30) — 96. Participant (31) . . .
97. Contributor's Name (32–51)

CONTRIBUTIONS

98. Deposited (52–56) . . . . . .

Undeposited

99. Materials (57–61) . . . . . .
100. Labor/Equipment (62–66) . . . . .

V – DETAIL ESTIMATE OF UNITS AND COSTS

WORK DESCRIPTION AND MATERIALS (a)	UNITS		BLM COSTS		COOPERATOR COSTS	
	EA. MILE, ETC. (b)	COST (c)	MATERIALS (d)	CONTRACT (e)	MATERIALS (f)	LABOR (g)
MATERIALS	2.5 mi.		$1133.			
YCC Labor to Install five "K" Dams (0.5 MM).						
TOTALS Materials			$1133			
Labor/Equipment						

Form 1630–8 (November 1972)

APPENDIX F

P H O T O S

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JOB DOCUMENTATION REPORT

JOB IDENTIFICATION

1. State (2–3) . . . . . ID
2. District (4–5) 03
3. Job No. (6–9) 4297
4. Transaction Code (10) . . . . .

I – GENERAL DESCRIPTION — Card 1

5. Job Name (11–30): BIRCH CR ROCK PLACE

LOCATION CODES

6. Special Project Code (31–34) . . . . .
7. Planning Unit (35–36) 02
8. Sub-Basin (37–38) 42 — 9. County (39–41) 033
10. Watershed No. (42–44) . . . . .
11. Allotment No. (45–47) . . . . .
12. Wildlife Habitat Area (48–50) A03

SITE AND VEGETATIVE DESCRIPTION

13. Present SSF (51–52) . . . . — 14. % Slope (53–54) . . . .
15. Exposure (55) . . . . — 16. Soil Texture (56) . . . .
17. Precipitation (inches) (57–58) . . . . .
18. Elevation (feet) (59–63) . . . . .
19. Vegetative Subtype (64–66) . . . . .

COMPOSITION *(Percent)*

20. Grasses (67–68) . . . . — 21. Forbs (69–70) . . . .
22. Browse (71–72) . . . . .

COVER *(Percent)*

23. Vegetative (73–74) . . . . — 24. Litter (75–76) . . . .
25. Bare Ground (77–78) . . . . .

II – ANNUAL WORK PLAN INPUT DATA — Card 2

75. Subactivity (11–14) 1285
76. Work Job Code (15–18) 6011

UNITS PLANNED

77. Primary (19–24) 50
78. Secondary (25–29) . . . . .

TIME OF AWARD

79. Fiscal Year (30–31) 77 — 80. Third (32) . . . 3

TIME OF COMPLETION

81. Fiscal Year (33–34) 77 — 82. Third (35) . . . 3

BLM COST — 83. Method (36) . . . . .

84. Material (37–41) . . . . .
85. Contract (42–47) . . . . .

CONTRIBUTED COST

86. Material (48–52) . . . . .
87. Labor/Equipment (53–57) . . . . .

MAINTENANCE

88. Responsibility (58) 1 — 89. Cycle (59–61) . 705

III – JOB DETAILS AND BENEFITS — Card 3

37. Primary Job Objective (11) 7

PLANT AND PEST CONTROL

39. Chemical (12) . . . . — 42. Method (13) . . . . .
45. Mechanical – Method (14) . . . . .

ARTIFICIAL REVEGETATION

47. Pounds Seed/Acre (15–17) . . . . .
48. Seedlings/Acre (18–21) . . . . — 49. Method (22) . . . .
51. AUM's Livestock Forage Added (23–26) . . . .
52. Future SSF (27–28) . . . . .

WATERSHED TILLAGE — 54. Method (29) . . . .

FACILITIES 55. Type (30) . . . . — 56. Other Misc. (31) . . . .

WATER DEVELOPMENT/CONTROL

59. Structure Type (32) . . . . .
STORAGE (Ac. Ft.) 60. Flood (33–38) . . . . .
61. Silt (39–44) . . . . .

WILDLIFE HABITAT DEVELOPMENT/PROTECTION

62. Type (45–46) 67 — 63. Primary Species (47–49) 801
64. Animal Months (50–54) . . . . .
65. Number Increase (55–59) . . . . .
66. Pounds Fish Increase (60–64) 500
67. Rare/Endangered (65) . . . . .

VISITOR DAYS ADDED — 68. Fisherman (66–69) 1250
69. Hunter (70–73) . . . . — 70. Other (74–77) . . . .

IV – PROGRESS REPORT — Card 4

COMPLETION DATA

UNITS 90. Primary (11–16) . . . . .
91. Secondary (17–21) . . . . .
TIME 92. Fiscal Year (22–23) . . . . .
93. Third (24) . . . . .
94. Contract No. (25–29) . . . . . CT

CONTRIBUTION DETAIL

95. Agreement (30) . . . . — 96. Participant (31) . . . .
97. Contributor's Name (32–51)

CONTRIBUTIONS

98. Deposited (52–56) . . . . .
Undeposited
99. Materials (57–61) . . . . .
100. Labor/Equipment (62–66) . . . . .

V – DETAIL ESTIMATE OF UNITS AND COSTS

WORK DESCRIPTION AND MATERIALS (a)	UNITS		BLM COSTS		COOPERATOR COSTS	
	EA. MILE, ETC. (b)	COST (c)	MATERIALS (d)	CONTRACT (e)	MATERIALS (f)	LABOR (g)
NO MATERIALS Rock placement along five miles of stream by YCC labor (0.5 MM supervision)	5.0 mi.					
TOTALS Materials						
Labor/Equipment						

Form 1630–8 (November 1972)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JOB DOCUMENTATION REPORT

JOB IDENTIFICATION

1. State (2–3) . . . . . ID
2. District (4–5) 03
3. Job No. (6–9) 4296
4. Transaction Code (10) 1

I – GENERAL DESCRIPTION — Card 1

5. Job Name (11–30): BIRCH CR TRASH CATCH

LOCATION CODES

6. Special Project Code (31–34) . . . . .
7. Planning Unit (35–36) 02
8. Sub-Basin (37–38) 42 — 9. County (39–41) 033
10. Watershed No. (42–44) 004
11. Allotment No. (45–47) . . . . .
12. Wildlife Habitat Area (48–50) A03

SITE AND VEGETATIVE DESCRIPTION

13. Present SSF (51–52) . . — 14. % Slope (53–54) . .
15. Exposure (55) . — 16. Soil Texture (56) . . . .
17. Precipitation (inches) (57–58) . . . . . .
18. Elevation (feet) (59–63) . . . . . .
19. Vegetative Subtype (64–66) . . . . . .

COMPOSITION *(Percent)*

20. Grasses (67–68) . . — 21. Forbs (69–70) . .
22. Browse (71–72) . . . . . .

COVER *(Percent)*

23. Vegetative (73–74) . . — 24. Litter (75–76) . .
25. Bare Ground (77–78) . . . . . .

II – ANNUAL WORK PLAN INPUT DATA — Card 2

75. Subactivity (11–14) 1285
76. Work Job Code (15–18) 6011

UNITS PLANNED

77. Primary (19–24) 2.5
78. Secondary (25–29) . . . . .

TIME OF AWARD

79. Fiscal Year (30–31) 77 — 80. Third (32) . . . 3

TIME OF COMPLETION

81. Fiscal Year (33–34) 77 — 82. Third (35) . . . 3

BLM COST — 83. Method (36) 2

84. Material (37–41) 900
85. Contract (42–47) . . . . . .

CONTRIBUTED COST

86. Material (48–52) . . . . . .
87. Labor/Equipment (53–57) . . . . . .

MAINTENANCE

88. Responsibility (58) 1 — 89. Cycle (59–61) . 702

III – JOB DETAILS AND BENEFITS — Card 3

37. Primary Job Objective (11) 7

PLANT AND PEST CONTROL

39. Chemical (12) . . — 42. Method (13) . . . . .
45. Mechanical – Method (14) . . . . . .

ARTIFICIAL REVEGETATION

47. Pounds Seed/Acre (15–17) . . . . . .
48. Seedlings/Acre (18–21) . . . . — 49. Method (22) .
51. AUM's Livestock Forage Added (23–26) . .
52. Future SSF (27–28) . . . . . .

WATERSHED TILLAGE — 54. Method (29) . . . . .

FACILITIES 55. Type (30) . . — 56. Other Misc. (31) .

WATER DEVELOPMENT/CONTROL

59. Structure Type (32) . . . . . .

STORAGE (Ac. Ft.) 60. Flood (33–38)
61. Silt (39–44)

WILDLIFE HABITAT DEVELOPMENT/PROTECTION

62. Type (45–46) 66 — 63. Primary Species (47–49) 801
64. Animal Months (50–54) . . . . . .
65. Number Increase (55–59) . . . . . .
66. Pounds Fish Increase (60–64) 250
67. Rare/Endangered (65) . . . . . .

VISITOR DAYS ADDED — 68. Fisherman (66–69) 600
69. Hunter (70–73) . . . . — 70. Other (74–77) .

IV – PROGRESS REPORT — Card 4

COMPLETION DATA

UNITS 90. Primary (11–16) . . . .
91. Secondary (17–21) . . . .
TIME 92. Fiscal Year (22–23) . . . . . .
93. Third (24) . . . . . .
94. Contract No. (25–29) . . . . . CT

CONTRIBUTION DETAIL

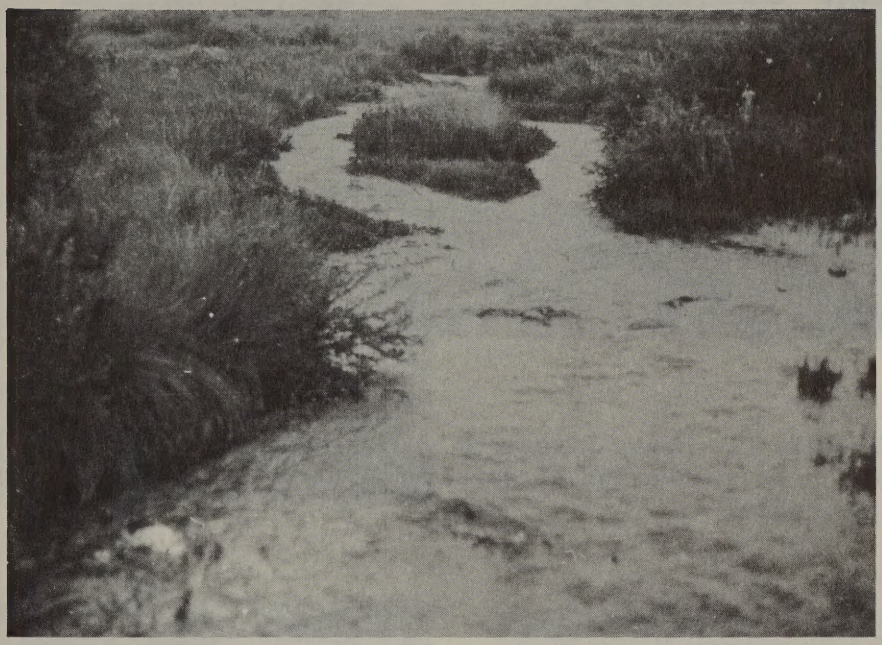
95. Agreement (30) . . — 96. Participant (31) . . .
97. Contributor's Name (32–51)

CONTRIBUTIONS

98. Deposited (52–56) . . . . . .
Undeposited
99. Materials (57–61) . . . . . .
100. Labor/Equipment (62–66) . . . . .

V – DETAIL ESTIMATE OF UNITS AND COSTS

WORK DESCRIPTION AND MATERIALS (a)	UNITS: EA. MILE, ETC. (b)	UNITS: COST (c)	BLM COSTS: MATERIALS (d)	BLM COSTS: CONTRACT (e)	COOPERATOR COSTS: MATERIALS (f)	COOPERATOR COSTS: LABOR (g)
MATERIALS YCC Labor to install five "Trash Catcher" Dams (0.5 MM)	2.5 mi.		$872.50			
TOTALS Materials			$872.50			
Labor/Equipment						

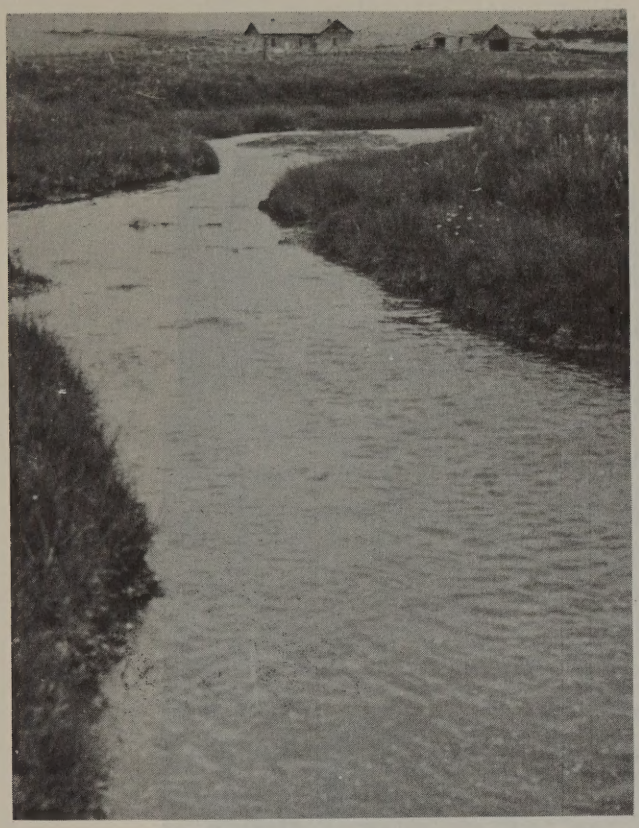


1. B-2, A major Tributary, protected from livestock use. note excellent bank stabilization and riparian habitat condition.*

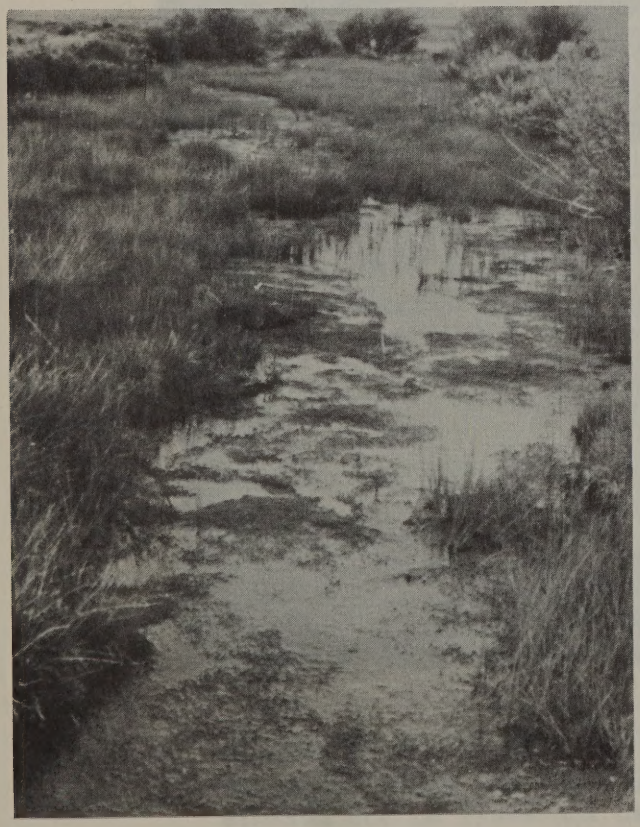
*Specific locations of areas photographed can be identified by use of maps or file in the District Office.

2. Tributary C. Heavy Livestock use has reduced bank "overhang". Note invasion of sagebrush due to a lowering of the water table.

3. Tributary D-2. Livestock grazing has caused siltation. Note the clogging of the tributary by emergent vegetation and the lack of gravels.

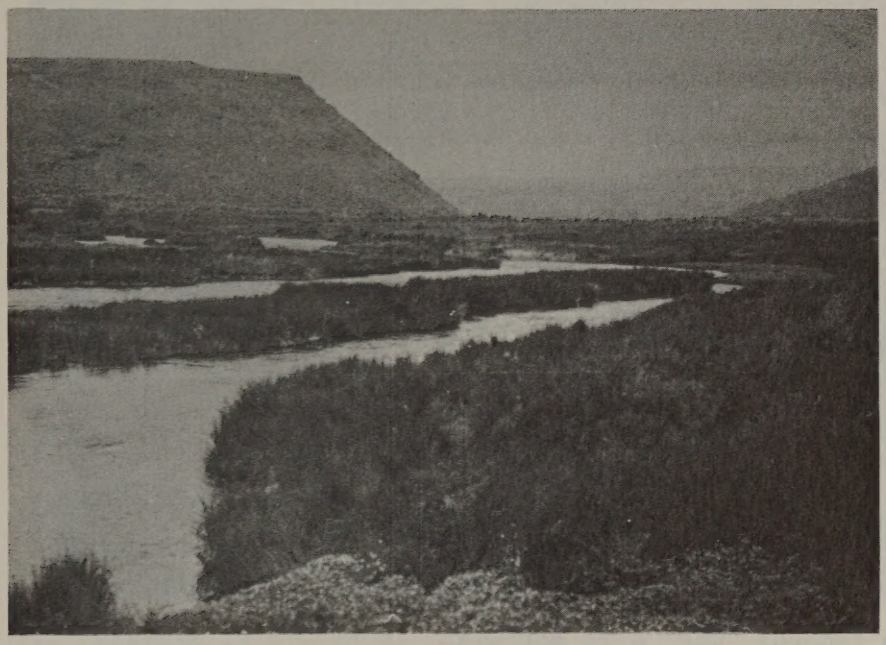


4. Tributary E-2
Good bank build up with "clean" gravel areas for spawning purposes. Area receives only moderate livestock use.

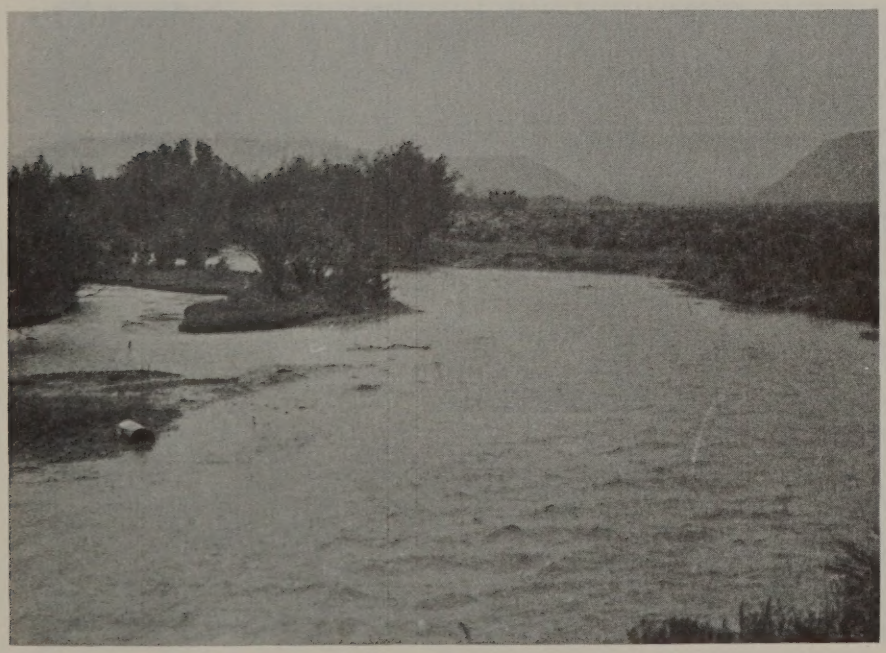


5. Tributary G.
Heavy siltation from "grazed" areas above has allowed vegetation to emerge in tributary channel.

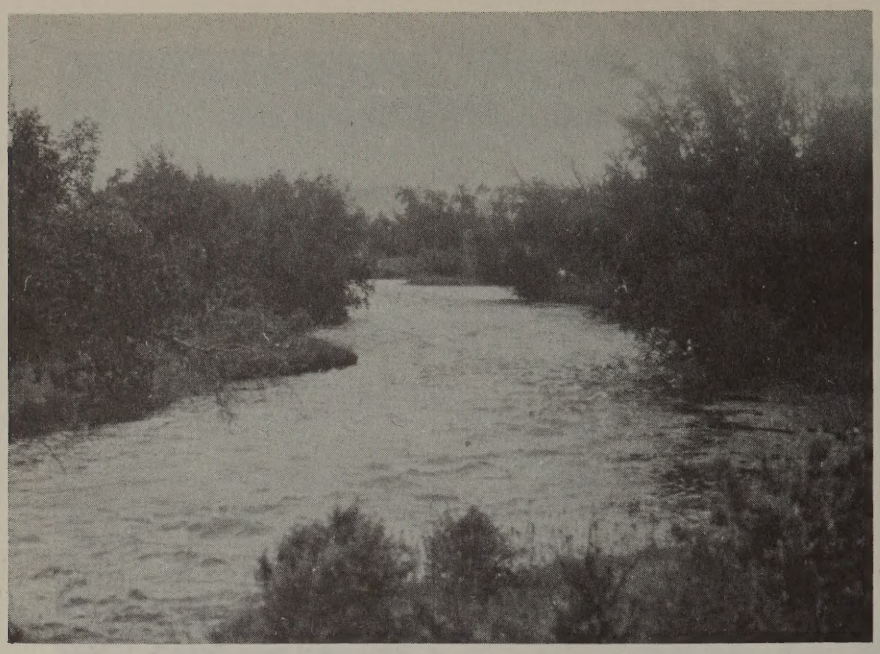
6. Heavy livestock use on a once productive meadow area has reduced its value as wildlife habitat. Tributary F comes in above the bridge and at the left side of the photo.



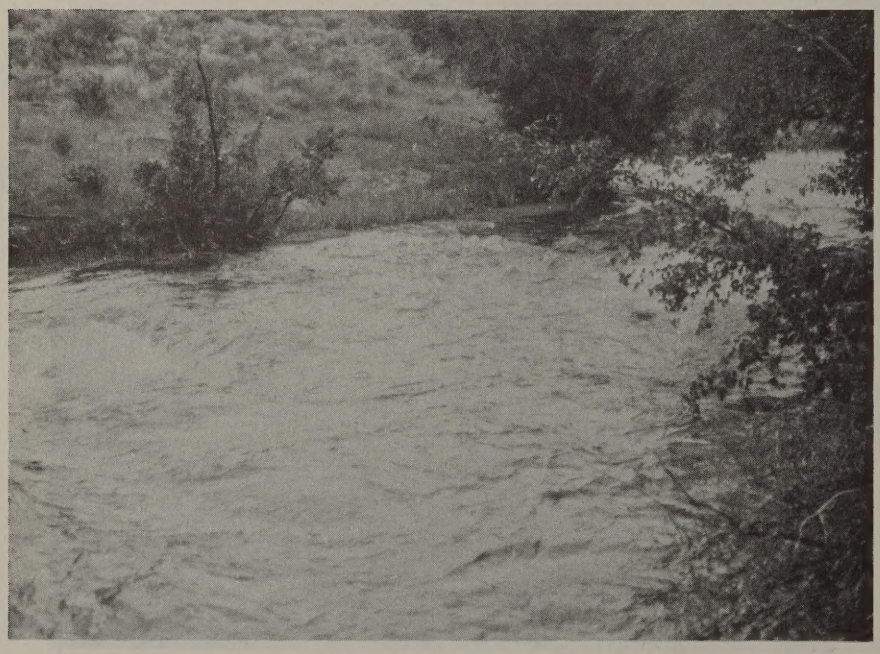
7. Station 17.0 - 18.0. Portions of this section controlled by the Idaho Fish and Game Department. Protected from livestock use the area provides excellent fisheries, waterfowl and non-game habitat.



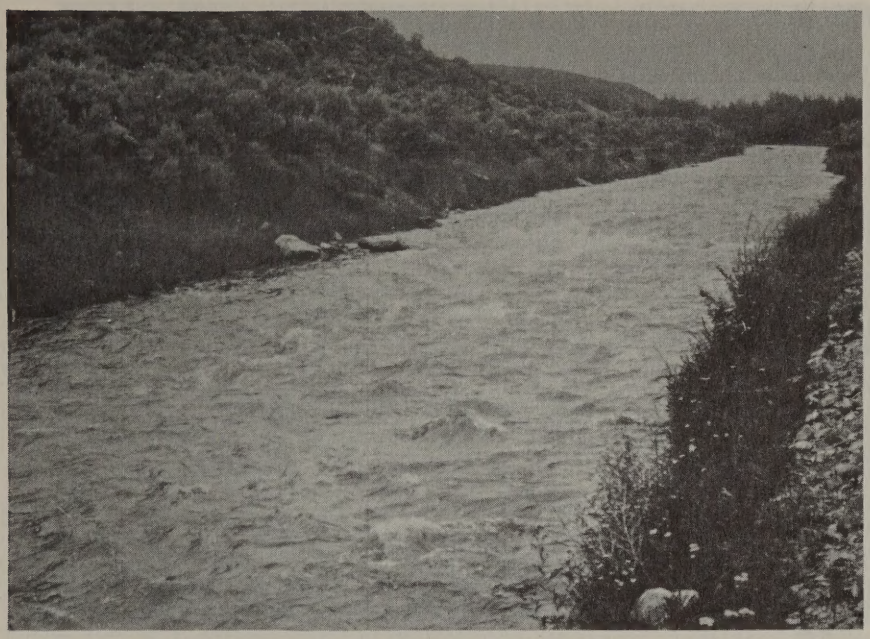
8. Station 16.0 - 17.00. The section contains good overhead cover but lacks low riparian vegetation. Note bank erosion due to livestock use.



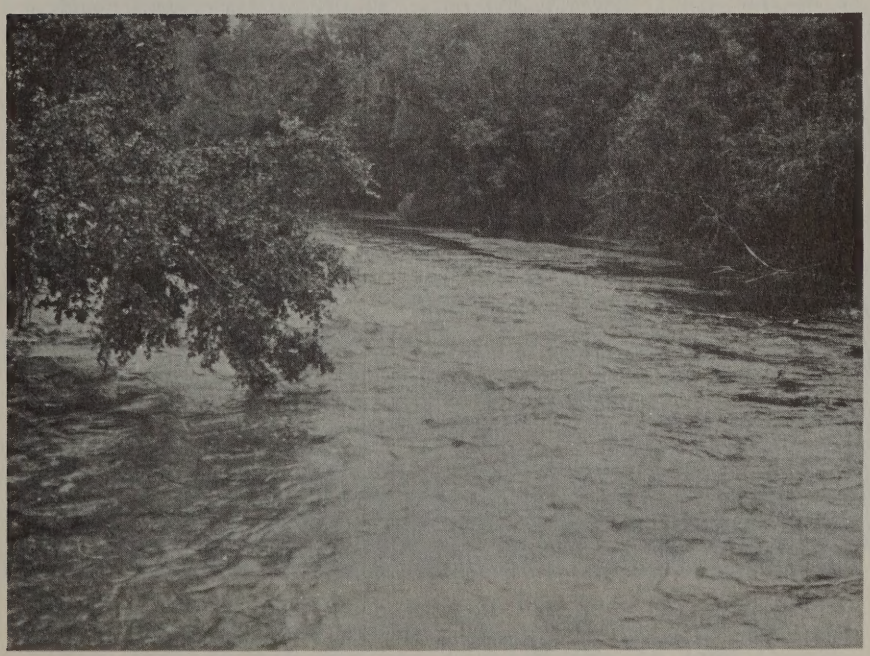
9. Station 15.0 - 16.0. Excellent high shade cover and good bank stabilization. This section generally contains some good "trout water".



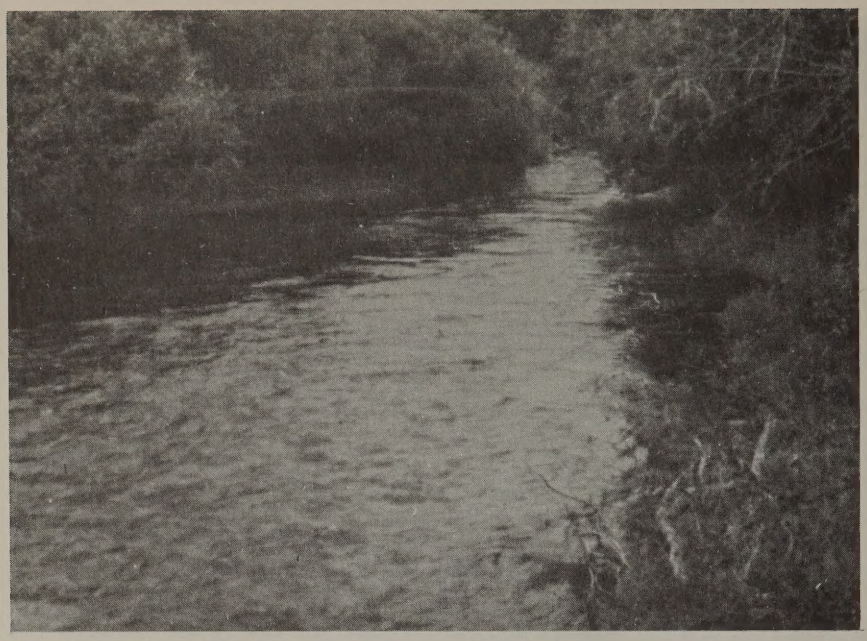
10. Station 14.0 - 15.0. Birch Creek in this area contains good overhead cover and many Class A pools.



11. Station 13.0 - 14.0. Creation of a "new" channel due to highway alignment in portions of this section has created an "irrigation canal" effect. Note lack of pools for cover and resting areas. Livestock use in this area is rather restricted.

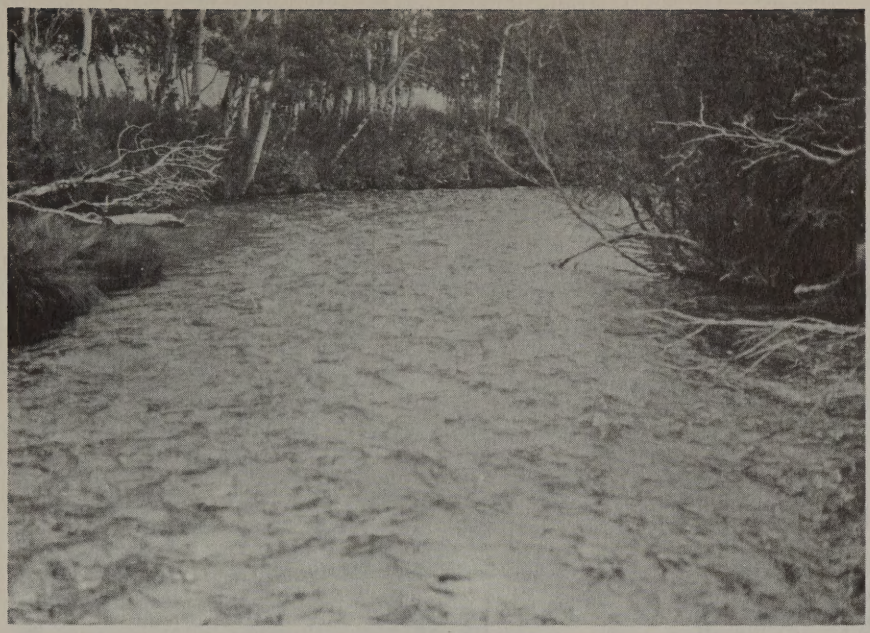


12. Station 13.0 - 14.0. This photo taken downstream from Photo #11 shows the stream as it probably before alteration.

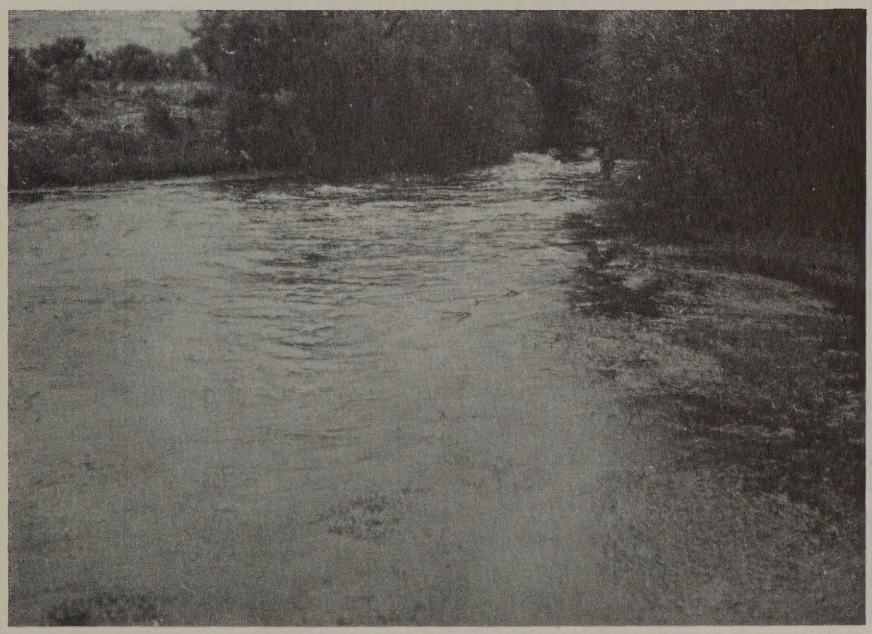


13. Station 12.0 - 13.0. Note heavy Black Birch cover, but lacks good deep pools.

14. Station 11.0 - 12.0. Fairly diversified trout water but the stream is narrow and fast. Portions of the section are in a "bull" pasture where even 2"-3" diameter Black Birch is being destroyed.



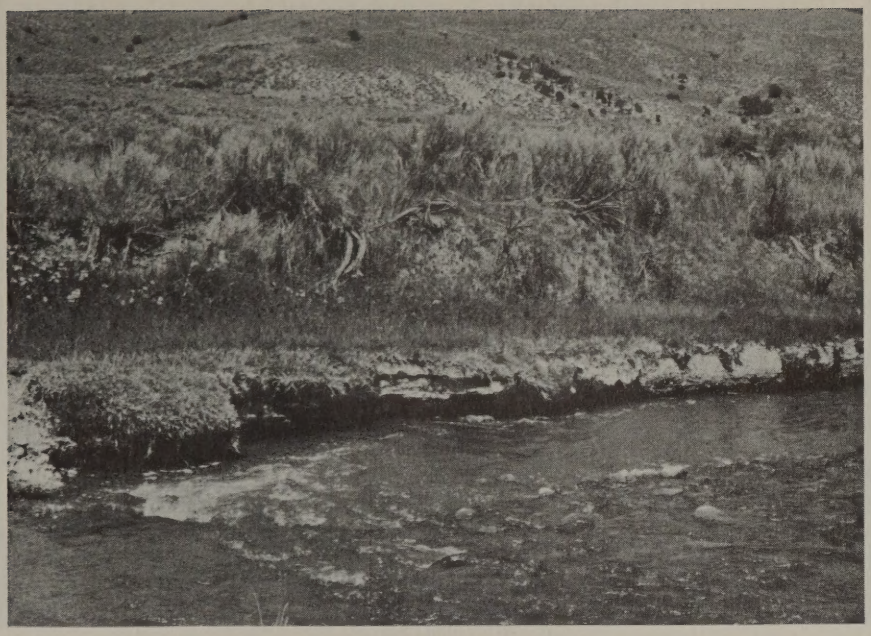
15. Station 10.0 - 11.0. Excellent trout water. Note bank stabilization and abundance of aspen. This section contains best pools in Birch Creek. Old growth aspen is dominant in this area.



16. Station 9.0 - 10.0. Very little livestock use has allowed the persistence of good riparian habitat. Abundance of Class A pools present.

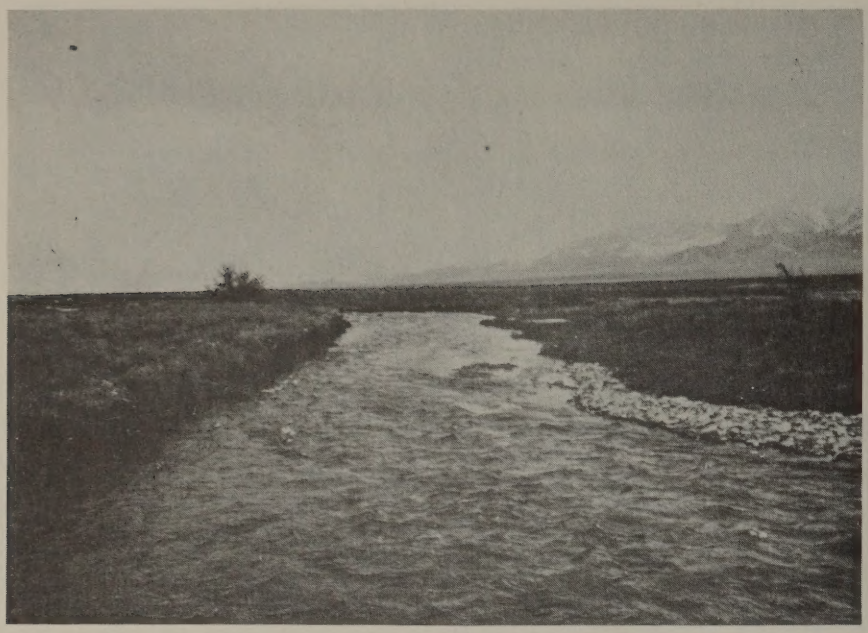
17. Station 8.0 - 9.0. Section 8. Heavy livestock has caused approximately 30% bank erosion. Note the straight fast water. Public Lands predominate.

18. Station 7.0 - 8.0. Heavy livestock use has not allowed for any tree reproduction. Bank sloughing in many areas.

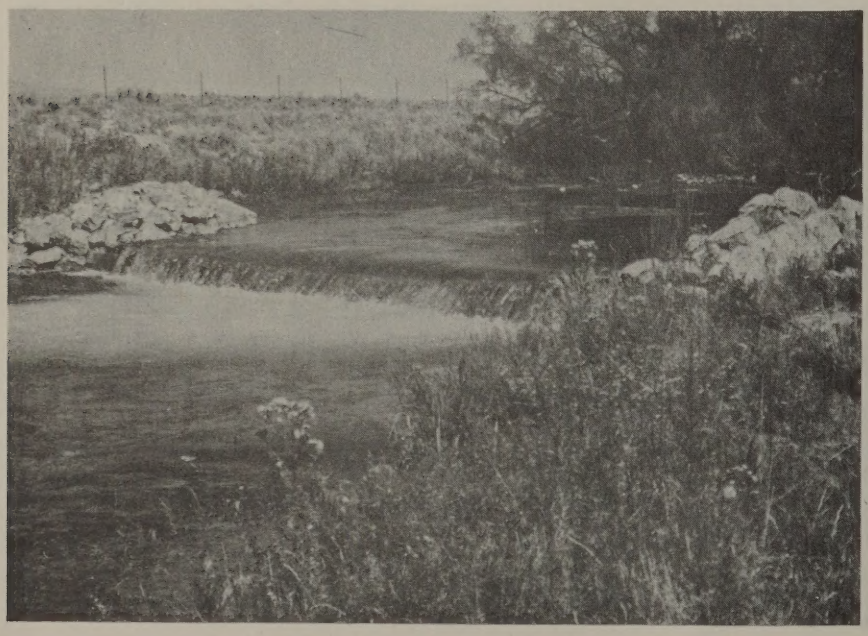


19. Station 6.0 - 7.0. Stream bank sloughing predominates. Very little holding water.

20. Station 5.0 - 6.0. Very little overhead cover. Bank sloughing a common occurence. Altered channel straight and fast.



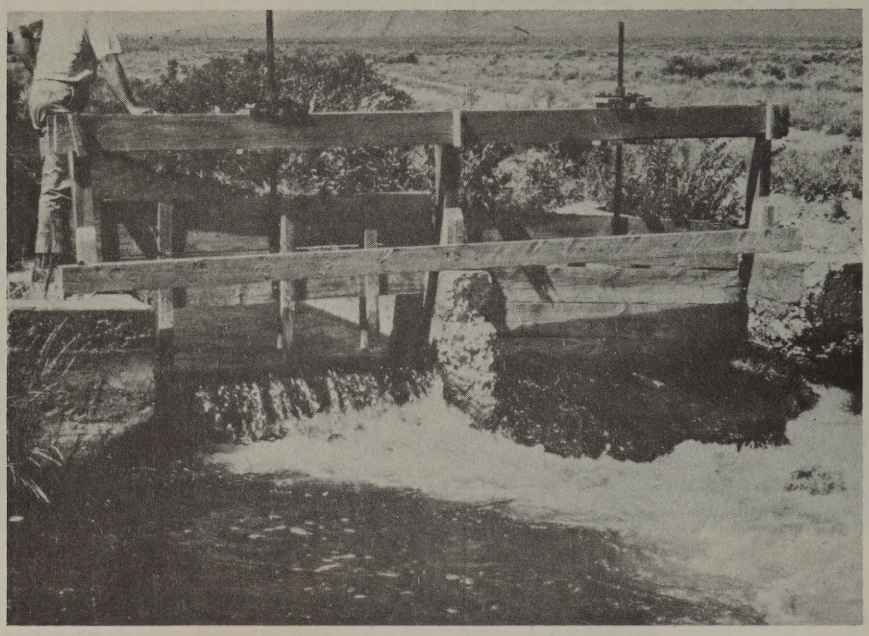
21. Station 4.0 - 5.0. Heavy livestock and recreation use has impacted this section. Very few holes, most of the holding water consists of runs.



22. Station 3.0 - 4.0. With livestock excluded, the development of K-Dams shows the area's potential. Becoming established.

23. Station 2.0 - 3.0. Stream channel straight, and shallow with fast water in many locations. Poor trout habitat.

24. Station 1.0 - 2.0. Heavy to extreme bark sloughing, very little holding water and/or overhead shade cover.



25. The Reno diversion. The total flow of Birch Creek is directed here during most of the year. No fish screen to prevent down "ditch" loss.