

MONTANA DEPARTMENT FISH AND GAME REPORT
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Fisheries Division

Job Progress Report

LAKE KOOCANUSA TRIBUTARY DEVELOPMENT
Lake Koocanusa, Montana, 1972-1973

By

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Reservoir Investigations Project

ANNUAL REPORT, 1972-1973
Development of Lake Koocanusa Tributaries
Project 2275

ABSTRACT

Barriers inhibiting upstream movement of salmonids were removed from sections of Sutton, Barron, Bristow, Jackson, Canyon, Cripple Horse, Five Mile and Murray Creeks. Two miles of Five Mile Creek were chemically treated to suppress the resident fish population and were planted with fingerling adfluvial westslope cutthroat trout (Salmo clarki subsp.). Fingerling cutthroat trout were planted in Murray Creek. Eyed eggs of mountain whitefish (Prosopium williamsoni) were planted in Five Mile, Cripple Horse, Bristow and Sutton Creeks. Mountain whitefish fry were planted in Young Creek below the fish trap. An environmental impact statement of proposed habitat development work to be done in Fiscal-Year 1974 was prepared and submitted to interested organizations. Development work is proposed for Big Creek, Sullivan Creek, Pinkham Creek, and parts of the Tobacco River drainage.

WORK PERFORMED

Habitat Development --- Removal of barriers inhibiting fish migration was done in the lower portions of Sutton, Barron, Bristow, Jackson, Canyon, and Cripple Horse Creeks. The lower 3/4 mile of Sutton Creek channel was cleared upstream to a natural falls. Jackson and Canyon Creeks were cleared below Montana Highway 37 where culverts will likely prevent further upstream movement of fish. Barriers were removed from the lower 2.5 miles of Cripple Horse Creek upstream to an intermittent section. Barron and Bristow Creeks were cleared starting at their mouths and moving upstream until numerous active beaver dams were encountered, about 3 miles. Murray Creek was cleared up to its source.

Mountain whitefish were collected from Hungry Horse Reservoir, spawned and their eggs taken to the Flathead Lake Salmon Hatchery. About 85,000 eyed eggs were planted in each of Five Mile, Cripple Horse, Bristow and Sutton Creeks. About 40,000 whitefish fry were planted in Young Creek below the fish trap.

All of the creeks except Young and Murray Creeks will be planted with whitefish fry in mid-winter 1974.

Barriers consisting mainly of old inactive beaver dams were removed from the lower two miles of Five Mile Creek. Clearing was stopped when active dams became abundant and the cleared area was treated with rotenone to eliminate the resident fish population. Fourteen thousand adfluvial westslope cutthroat trout fingerlings were planted in mid-September, 1972. About 8,000 cutthroat trout fingerlings were planted in the upper portions of Murray Creek in June, 1973.

The existing fish populations in Barron, Bristow, Jackson, Cripple Horse and Five Mile Creeks were sampled. Data were collected on species abundance, size, age and growth rates. Analysis of the age-growth information has not been completed and will be included in Fiscal-Year 1974 report.

General Habitat Surveys --- Habitat surveys were conducted on Pinkham, Big, Sullivan and Graves Creek. Information was collected on species composition and abundance, age and growth rates, abundance of spawning gravels, quality of the physical habitat, and location of barriers inhibiting movement of fish. These surveys updated similar surveys performed in the late 1960's.

An environmental impact statement on habitat development of Lake Koocanusa tributaries planned for Fiscal-Year 1974 was written and submitted to interested agencies. A copy of this statement is attached.

Prepared by: Joe E. Huston

Date: June 27, 1973

Waters referred to:

11-0200-01
11-0420-01
11-0640-10
11-0920-10

11-1520-01
11-2720-01
11-2340-01
11-5140-01

11-3260-01
11-6700-10
11-6620-10
11-4560-01

ENVIRONMENTAL IMPACT STATEMENT

DRAFT

Pursuant To: Montana Environmental Policy Act
Section 69-6504 (b) (3)

Project No. FG-26

Fishery Development of Lake Koocanusa Tributaries
Big, Sullivan, Pinkham, Clarence, Stahl, Graves and Therriault Creeks

February 26, 1973

Prepared by

Montana Department of Fish and Game
Fisheries Division
Helena, Montana

Fishery Development of Lake Koocanusa Tributaries
Big, Sullivan, Pinkham, Clarence, Stahl, Grave and Therriault Creeks.

ENVIRONMENTAL IMPACT STATEMENT

I. Purpose or Objective

The objective of the fishery management of these creeks is the development of spawning and rearing areas for migratory game fish living in Lake Koocanusa.

II. Description of Development Project

Lake Koocanusa is a man-made reservoir on the Kootenai River created by Libby Dam. Libby Dam is 17 miles above the town of Libby, Montana. The dam and reservoir are being constructed by the Corps of Engineers for power production and flood control. Recreational development is a minor stated purpose of the reservoir project.

The reservoir will have a surface area of about 48,000 acres at full pool of which 28,000 acres are in Montana and the remainder in British Columbia. With a drawdown of 172 feet, the low pool surface area will be about 27,000 acres, all in Montana. Species of fish found in the reservoir flowage include cutthroat trout (Salmo clarki), rainbow trout (Salmo gairdneri), Dolly Varden (Salvelinus malma), brook trout (Salvelinus fontinalis), mountain whitefish (Prosopium williamsoni), ling (Lota lota), pumpkinseed (Lepomis gibbosus), dace (Rhinichthys cataractae), reidside shiner (Richardsonius balteatus), longnose sucker (Catostomus catostomus), and largescale sucker (Catostomus macrochilus).

The U.S. Corps of Engineers, the U.S. Forest Service and Montana Department of Fish and Game are the agencies responsible for the development of recreational opportunities within the reservoir project boundary. The program includes development of camp sites, visitor day-use facilities, boating access, and maintenance of a game fish fishery. Initial introductions of a cutthroat trout which has demonstrated its suitability to reservoirs will be accomplished by stocking the reservoir and streams with hatchery-reared fish. Maintenance of a population in the reservoir will be from natural reproduction and planting hatchery-reared fish.

A comment was made by the U.S. Forest Service about similar stream development impact statement for Projects FG-16, 17 and 18 in 1972. The concern was as to the feasibility of stream development for natural reproduction when a sizable portion of the Reservoir's fishing would probably be dependent on hatchery-reared cutthroat. The reasons for stream development for natural reproduction are many and valid. Hatchery produced fish have traditionally had shorter life spans in the wild and poorer survival to the creel than naturally produced trout. A second valid consideration concerns the genetic characteristics of hatchery brood stock. Selection of fish for brood parents within the hatchery, by both their survival under hatchery conditions and by hand selection by hatchery personnel, causes the available gene pool to be significantly altered from the original wild population after a few hatchery generations. To insure that the hatchery brood fish contain the gene pool allowing best survival under reservoir conditions requires that new stock should be brought from the wild habitat and mixed with the hatchery brood at frequent intervals. Valuable characteristics which could be lost without replenishment from the wild gene pool could include migration tendencies, homing tendencies, survival as related to predation vulnerability, ability to sustain optimum growth under the feeding conditions in the reservoir. The best source of such a gene pool would be those fish maintaining their population under that reservoir life and life in those streams tributary to the reservoir.

The reservoir drainage in Montana contains comparatively few streams suitable for game fish reproduction and nursery areas, and Libby Dam has inundated many miles of spawning grounds of Kootenai River game fish. The few streams having potential for salmonid reproduction must be managed intensively to provide significant numbers of game fish for the reservoir fishery. A trial development project which included removal of barriers to fish migration, suppression of the resident fish population and restocking with imprint plants of a migratory strain (adfluvial) of westslope cutthroat fingerlings was begun in Young Creek in 1969. Trout were planted in 1970, 1971 and 1972 and initial survival has been excellent. The out-migration of the fish planted in 1970 was quite pronounced in 1972 and indicates that these fish are following the normal life cycle of the adfluvial westslope cutthroat.

Development of Big Creek, Sullivan Creek, Pinkham Creek, Graves Creek drainage including Clarence and Stahl Creeks and Therriault Creek is scheduled for the summer-fall of 1973. Two basic methods of development will be used dependent upon existing conditions in a body of water. Mainstem Graves Creek and Therriault Creek support spawning runs of Dolly Varden from Lake Koocanusa at the present time and efforts in these streams will be limited to assuring access throughout the entire stream length suitable for spawning and rearing. The remainder of the creeks do not support a spawning run from Lake Koocanusa and contain populations of stream resident fish. These creeks, Big, Sullivan, Pinkham, Clarence and Stahl Creeks will be treated by removal of barriers preventing upstream movement of fish, suppression of the resident fish populations and replacement of these fish with an adfluvial strain of westslope cutthroat trout.

The development work to be done will also benefit other spawning fish such as Dolly Varden and mountain whitefish.

Removal of barriers preventing or inhibiting upstream movement of fish will be done using hand tools and some power equipment such as chain saws and donkey winches. No other motorized equipment will be used. Suppression of resident fish populations will be done using either a rotenone-based toxicant or Antimycin A toxicant. Both these toxicants are biodegradable and breakdown quickly in running water.

A general description of each of the streams to be developed will be given below by method of treatment.

Treatment One- Barrier Removal, Suppression-Restocking

Big Creek - Big Creek enters Lake Koocanusa from the west about 15 miles downstream from Rexford, Montana. Flows range from 10 to 1000 cfs. The valley is typical V-shaped bordered by steep sloped mountains. The area to be treated includes the lower 9 miles of the main-stem, 9 miles of the South Fork upstream to Garden Ridge road and 2 miles of the North Fork upstream to the mouth of Roberts Creek. The North Fork is the only area with significant barrier removal; about 20. Only about 35 barriers will be removed from the entire area.

Big Creek contains a meager population of resident rainbow trout which supports a limited sport fishery. These fish seldom exceed 8 inches total length. Suppression of this resident population is necessary to insure good survival of the adfluvial cutthroat to be planted and the rapid conversion of the stream to a spawning and rearing area for cutthroat trout. It is estimated that Dolly Varden, mountain whitefish and cutthroat trout will spawn in Big Creek. Imprint plants of about 75,000 fingerling adfluvial westslope cutthroat trout will be made beginning in fall 1973 and continuing for several years thereafter. The stream will be sampled annually for several years to determine survival and growth of the planted fish and development of spawning runs.

Sullivan Creek - Sullivan Creek enters Lake Koocanusa from the west near the town of Rexford, Montana. Flows range from about 5 to 100 cfs. The valley is typical V-shaped bordered by steep, heavily wooded slopes. The area to be treated includes the lower 3 miles of creek to the mouth of Burro Creek. A 20-foot high falls near the mouth of Burro Creek blocks fish passage to the remainder of Sullivan Creek. Sullivan Creek below these falls contains a good population of resident cutthroat trout which reach a maximum size of about 9 inches. No fish are found above the falls. The resident fish population below the falls supports a small sport fishery.

Log jams and debris barriers are numerous below the falls and about 65 will have to be modified or removed to insure upstream fish passage. Suppression of the resident cutthroat trout population is necessary to insure adequate survival of the imprint plants of adfluvial cutthroat

trout to be made. About 10,000 adfluvial westslope cutthroat trout fingerlings will be planted in the creek in fall 1973 and annually thereafter for several years. The stream will be sampled to determine survival of the planted fish and development of spawning runs. It is estimated that westslope cutthroat trout will be the only game fish spawning in Sullivan Creek.

Prior to treatment several hundred of the resident cutthroat trout below the Burro Creek falls will be captured and transplanted into the creek several miles above these falls. This area of Sullivan Creek is deemed capable of supporting a fish population of resident cutthroat trout of the same magnitude as the area below the falls.

Pinkham Creek - Pinkham Creek enters Lake Koocanusa from the east about 5 miles downstream from Rexford, Montana. The lower 6 miles of this creek are to be developed; the remaining drainage is blocked by a high falls. The development area of Pinkham Creek flows through a broad V-shaped canyon bordered by moderate to steep open wooded slopes. Stream flows may exceed 100 cfs in the spring but summer flows in small areas may be intermittent. Some irrigation water is taken from the creek above the falls.

Pinkham Creek contains a good population of rainbow and brook trout in its lower six miles. One small Forest Service campground is located near the creek about mid-way and the stream supports a fair fishery for pan-sized brook and rainbow trout.

Barriers inhibiting upstream movement of fish are scarce with only about 9 debris and log jams needing removal or modification. Suppression of the resident fish population is needed to insure good survival of the adfluvial cutthroat trout fingerlings to be planted and the rapid transition of this stream into a spawning area for Lake Koocanusa game fish. Imprint plants of about 25,000 adfluvial westslope cutthroat trout fingerlings will be made in fall 1973 and annually for several years thereafter.

Imprint plants of about 100,000 whitefish eggs or fry will also be made in Pinkham Creek in winter 1974 and 1975. Sampling will be conducted annually for several years to determine survival of the planted fish and development of spawning runs.

It is estimated that the development of Pinkham Creek will benefit only the mountain whitefish and westslope cutthroat trout.

Clarence and Stahl Creeks - Stahl Creek is a tributary of Clarence Creek and Clarence Creek is tributary to Grave Creek. Clarence Creek joins Grave Creek near the Clarence Creek Work Center about 12 miles upstream from U.S. Highway 93. Volume of Clarence Creek ranges from 10 to 150 cfs and the stream flows through a typical V-shaped valley surrounded by densely-wooded steep slopes. The area to be treated includes the lower 4 miles of Clarence Creek and the lower 1.5 miles of Stahl Creek. Species of fish found in these streams includes resident cutthroat trout and Dolly Varden. The streams are fished by a small number of anglers.

Only about 10 barriers will have to be altered or removed from Clarence Creek. Road slumps at two sites in Stahl Creek carried debris and logs into the stream and constitute major barriers but other log jams or debris dams forming barriers are scarce. Suppression of the resident fish stocks is necessary to insure the best survival of the adfluvial cutthroat trout to be planted. About 20,000 adfluvial west-slope cutthroat trout fingerlings will be planted yearly for several years. Sampling will be conducted to determine survival of the planted fish and development of spawning runs.

Dolly Varden from Lake Koocanusa migrate into Grave Creek for spawning at the present time. Removal of barriers from Clarence and Stahl Creek may extend the spawning area available for these fish. The chemical suppressant used in Clarence and Stahl Creeks will have to be detoxified before it enters Grave Creek to prevent damage to either adult or juvenile migrant Dolly Varden.

Treatment Two - Barrier Removal Only

Therriault Creek - Therriault Creek drains into the Tobacco River from the east about 8 miles south of Eureka, Montana. It is a small drainage with much of its flows originating from springs. The lower portion is almost all on private land while the upper section is on Forest Service land. At the present time the stream receives a small population of spawning Dolly Varden from Lake Koocanusa. Resident brook trout are also numerous. The stream supports a small sports fishery.

Development of this stream will entail removal of several debris dams and log jams preventing full utilization of the stream by migratory Dolly Varden from Lake Koocanusa.

Grave Creek - Grave Creek and Fortine Creek join to form the Tobacco River about 10 miles south of Eureka, Montana. The lower 3 miles of this stream flows through meadow land while the upper areas flow through a typical V-shaped valley bounded by steep, densely wooded slopes. Flows range from lows of about 15 cfs to highs of about 1000 cfs. The lower end of Grave Creek below the Glen Lake Irrigation District diversion dam contains few resident fish, but is used for spawning by Dolly Varden, mountain whitefish, cutthroat trout and few rainbow trout from lake Koocanusa. No barriers preventing upstream movement are present in this portion of the creek.

The Glen Lake Irrigation District diversion dam located on Forest Service land is a partial barrier preventing upstream movement of spawning fish. It prevents upstream movement of mountain whitefish, cutthroat and rainbow trout, and almost all Dolly Varden. Adequate fish passage at this diversion dam should be provided by 1975 either by the irrigation company or the Forest Service.

Fish populations found in Grave Creek above the diversion dam are scant and include resident and adfluvial Dolly Varden and resident cutthroat trout. Cutthroat trout are most numerous below Clarence Creek

and above Foundation Creek. Dolly Varden are most numerous between Clarence and Lewis Creeks. Dolly Varden from Lake Koocanusa spawn most frequently in the area of Grave Creek between Clarence Creek and Lewis Creek.

Excellent spawning gravels for both Dolly Varden and cutthroat trout are found in Grave Creek above Lewis Creek. Development work planned for Grave Creek is limited to removal or alteration of barriers preventing upstream movement of spawning fish above Lewis Creek to enlarge the potential spawning area for Dolly Varden. No attempts will be made to induce spawning runs of cutthroat trout into Grave Creek drainage above Clarence Creek.

III. Description of Existing Environment

A. Human Resources

Anglers who have fished the streams scheduled for development and management are the primary human resource. The 1968 statewide creel census gives estimates of fishing pressure for each stream. These are: (1) Big Creek, 396 man-days, (2) Sullivan Creek, 97 man-days, (3) Therriault Creek, 557 man-days, (4) Pinkham Creek drainage, 1,115 man-days and (5) Grave Creek drainage, 567 man-days. Almost all of the fisherman-days were from local residents. Most all of the fishing pressure applied to Pinkham Creek occurred above the falls in the area above the proposed treatment zone. Most all the fishing pressure in Grave Creek is in main-stem Grave Creek where no treatment or only barrier modification is proposed. Other human activities in these streams are picnicing, camping, and hunting.

B-C. Physiography, Geology and Land Use

Elevations of the drainages range from approximately 2,200 to over 7,000 feet, MSL. The valleys are typical V-shaped and ringed by comparatively steep mountains. The drainages are generally covered with a good growth of timber and timber production has been the chief commercial enterprise in the past. Cattle grazing is found in all drainages. Recreational use of the area is becoming an increasingly important land use and will increase dramatically in future years. The filling of Lake Koocanusa will undoubtedly draw many more people into the area to participate in water oriented recreation. The Kootenai National Forest has been assigned responsibility for the development of the recreation potential of the reservoir and adjacent lands. Planning will provide for swimming, boating, hiking, picnicking, and camping facilities.

The drainages to be developed are mainly under control of the U.S. Forest Service. One area of Pinkham Creek is state-owned while another is privately owned. Much of the lower section of Therriault Creek is under private ownership. All of Grave Creek below the Glen

Lake Irrigation District's diversion dam and some above the dam but below Clarence Creek is privately owned. Developmental work to be done on private owned land will be done only with land-owner permission.

D. Fish and Wildlife

Wildlife includes the usual species associated with small to medium size drainages in Northwestern Montana. Beaver are found in the lower part of Pinkham and on the south fork of Big Creek above the proposed development area. The game fish populations in the proposed managed areas are: (1) Big Creek, resident rainbow trout; (2) Sullivan, resident cutthroat trout; (3) Pinkham, resident rainbow and brook trout; (4) Grave Creek including Clarence Creek, resident cutthroat and Dolly Varden and (5) Therriault Creek, Dolly Varden and brook trout. Resident fish in all four streams seldom exceed 8 or 9 inches in total length.

E. Vegetative Resources

Riparian vegetation is abundant along the streams and includes grasses, sedges, willows, alders, cottonwood and conifers. The riparian vegetation provides shade and cover for trout and produces the esthetic qualities associated with stream trout fishing. Stream side vegetation will not be destroyed or harmed during removal and/or modification of barriers to fish migration.

F. Climate - Not Applicable

IV. Evaluation of Environmental Impact

A-B. Impact and Unavoidable Effects of Proposed Development

The development of the tributary streams as spawning and nursery areas for migrating game fish from Lake Koocanusa is broken down into three stages: (1) barrier removal or modification; (2) suppression of resident fish populations; (3) making imprint plants of sub-fingerlings of a migratory strain of westslope cutthroat which are adapted to live in the reservoir environment.

Barrier removal or modification is the first step in development. Only those obstructions that limit spawning migrations of game fish will be removed or altered. Past experience has shown that very few barriers are completely removed. Rather, barriers are modified by removing certain key logs and accumulated debris which has prevented or severely hindered fish passage. The work is done by chain saws, axes and shovels. The end result is that very little trout cover is destroyed, the channel stability is not noticeably effected and the overall physical disturbance is kept to a minimum. The lower part of Pinkham Creek has some beaver activity, primarily living in bank houses. If beaver become too numerous, control measures such as live trapping and transporting may be instituted.

Limited removal and modification of barriers will have little adverse effects on the stream environment. Silts moving down the water courses will still tend to deposit in areas stilled by natural constrictions. Elimination of temporary stilling areas caused log and debris jams or inactive beaver dams will decrease the number of points of deposition thus providing more fluvial bottom for desirable aquatic insect larvae and exposing more gravel suitable for spawning. Past experience has shown the channel stability and cover should not be appreciably effected.

The second step of the development is suppression of the resident fish populations. This is necessary to create competition-free environment for the imprint plants of cutthroat fingerlings. Survival of fingerling trout depends to a large extent upon the ammount of competition from resident fish populations. Trout are territorial and planted fish are forced into marginal habitat because the wild trout occupy the best available niches. Many studies have shown that survival of fingerling trout planted in streams with fair to good populations of resident trout is generally less than 1 percent. In contrast, the survival of fingerling cutthroat trout in Young Creek following suppression of resident cutthroat and brook trout was about 30 percent. Chemical suppression of resident fish populations will insure good survival of imprint plants and speed up the development of spawning runs of westslope cutthroat.

The chemical suppression will eliminate creel sized fish for about 20 to 24 months until the planted fish grow to a harvestable size. The chemicals used, rotenone or Antimycin A, are not harmful to wildlife, stock or humans in the concentrations used. Both chemicals biodegrade rapidly with complete detoxification occurring within 2 to 5 days. Aquatic insect populations will be depressed by rotenone but studies have shown that insects repopulate treated areas rapidly. Antimycin A has little effect upon aquatic insects in the concentrations recommended.

The third step of the development plan is the planting of fingerlings of a migratory strain of westslope cutthroat which is well adapted to the reservoir environment. Fish will be planted each year for about four years or until spawning runs develop. The planted fish should remain in the stream approximately two years. At this age they reach the smolt stage and migrate to the reservoir, mature in two more years, and return to the "parent stream", to spawn. If the streams are developed in 1973, the first spawning runs from imprinted fish should occur in 1977.

The planted cutthroat trout will range in length from 4 to 8 inches before they smolt and move downstream into Lake Koocanusa. They would provide a fair sport fishery for pan sized fish similar in quality and size to the one that now exists for the resident fish populations. The spawning run of cutthroat trout from Lake Koocanusa

will provide a high quality stream fishery for 12-to 18-inch trout for about 2 months in the spring. The main unavoidable effect will be a loss of fishing in the treated areas for the first 20 to 24 months following development.

C. Alternative

One alternative is not to manage the tributary streams for migratory game fish from Lake Kooacanusa. There is a good possibility that limited spawning will ultimately develop in the lower parts of the stream where access is available. This natural development would take many years and would not utilize all of the suitable habitat. Competition from resident fish would preclude full utilization of the available area for rearing habitat.

Another alternative is to provide access for spawning runs by barrier removal and alteration without suppressing fish populations, or making imprint plants. Barrier removal would provide access but it would take many years for spawning runs to develop, if indeed they would without suppression of the resident fish to reduce competition and planting of the desirable species. The development is intended to establish spawning runs in the shortest possible time and to utilize all of the existing habitat for spawning and rearing of migratory game fish. Basically, the development will accelerate and extend the range of a natural development of spawning runs of a rare and native trout species.

D. Short Term - Long Term Use

The establishment of migratory populations of westslope cutthroat will have both long and short term benefits. The benefits of a quality fishery for an endangered species will begin within two years of the development and last for many years.

E. Irreversible and Irretrievable Commitment of the Resource

The commitment of these creeks as spawning tributaries for Lake Kooacanusa need not be irreversible. Barriers could be constructed to eliminate fish movement from the lake into the creeks and the present fish population sustained. To return the streams to their pre-Lake Kooacanusa condition would require manipulation of a man-made barrier even if no development work was done.

F. Discussion of Problems and Objections by other Agencies or the Public

Few if any problems are anticipated with other agencies. The Corps of Engineers will provide the funds for the development work on Lake Kooacanusa tributary streams. The U.S. Forest Service has agreed to the principle and need for development of Lake Kooacanusa tributaries for spawning and rearing streams. All work will be closely coordinated with the district rangers. Little objection from the public

is expected because of past favorable experience on Young Creek and Five Mile Creek. Little opposition was voiced during discussions with the public including private land owners on both the Young Creek and Five Mile development.

V. Benefits

The benefits from this project will be improved natural reproduction for game fish populations in Lake Koocanusa and high quality fishing for 12 - 18" cutthroat and large Dolly Varden on their spawning runs in the tributaries. The improved reproduction and recruitment of wild fish to the reservoir will allow it to support more angler days both in the reservoir and in the streams. The numbers of a rare species, westslope cutthroat, will be increased.

VI. Summary Statement

Barriers which prevent upstream movement of spawning game fish will be removed or altered from portions of tributaries to Lake Koocanusa. Barriers will be removed or altered by use of chain saws, axes, and shovels. Some maintenance work may be necessary in subsequent years to maintain fish passage.

The resident fish populations, primarily rainbow, brook and cutthroat trout of Big Creek, Sullivan, Pinkham, and Clarence Creeks, will be suppressed by a fish toxicant which biodegrades rapidly within 2 to 5 days and is not harmful in the concentrations used to livestock, wildlife or humans. The treated sections of the streams will be planted with fingerlings of a migratory strain of the native westslope cutthroat.

VII. List of Mailing Distribution

U.S. Forest Service
Department of Planning and Economic Development
Department of Natural Resources
Trout Unlimited
Montana Wildlife Federation
Environmental Quality Council
Governor's Office
Student Environmental Research Center
Libby Rod and Gun Club
Eureka Rod and Gun Club
Western Montana Environmental Protective Association, Inc.
Regional Fisheries Managers
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