

FISHERIES DIVISION
JOB PROGRESS REPORT

STATE: MONTANA

PROJECT NUMBER: F-46-R-8

JOB #: VI-E

PROJECT TITLE: STATEWIDE FISHERIES INVESTIGATIONS

STATE TITLE: STATEWIDE SURVEY AND INVENTORIES

JOB TITLE: ALTERNATIVE IRRIGATION STRUCTURES

PERIOD COVERED: July 1, 1994 to June 30, 1995

ABSTRACT

Grant funding was provided to the Ellis King Hawks Ditch Company to design a fish friendly diversion structure in the Boulder River near Big Timber. This project will eliminate the need to annually construct a gravel dike which requires operation of heavy equipment in the stream.

Funds were also provided to the East Sanders County Conservation District for engineering advice on a difficult project along the Clark Fork River near Plains and to the City of Glasgow concerning a streambank stability project located on the Milk River.

OBJECTIVES AND DEGREE OF ATTAINMENT

1. To engineer, design and install irrigation diversion structures that have minimal physical effects on stream channels and fish habitat. A diversion improvement was engineered at one site located on the Boulder River near Big Timber.
2. To evaluate cost, maintenance and effects on stream channel stability of diversion projects or other streambank projects for demonstration purposes. Engineering advice was provided on two streambank projects--on the Milk River near Glasgow and the Clark Fork River near Plains.

PROCEDURES

Landowners with water rights or water use permits may divert water from rivers and streams for beneficial purposes. A common practice throughout Montana is to construct diversion dams by bulldozing up streambed material. This practice disrupts the armoring in the streambed and often causes stream channel instability resulting in erosion and sedimentation, thus adversely affecting fish habitat.

The Natural Streambed and Land Preservation Act (SB 310) administered by County Conservation Districts states that a permit is required on all activities undertaken by private individuals

that affect the streambed and banks of perennial streams. Irrigation diversion structures that alter the streambed require a permit. However, many diversions constructed from streambed material are permitted because of a lack of less damaging alternatives.

A contract was consummated with a private consulting firm to study problem diversion sites and difficult streambank stability problems and to recommend designs that may be environmentally acceptable and affordable. Alternative plans are recommended to conservation districts by the department and may be eligible for cost sharing benefits.

FINDINGS

During the report period engineering services were provided to the Ellis King Hawks Ditch Company to design a fish friendly diversion structure on the Boulder River near Big Timber. The existing diversion structure requires annual maintenance to rebuild a gravel diversion dike. This maintenance work requires operation of heavy equipment in the stream. The new diversion will eliminate the need for annual maintenance. Engineering materials and equipment costs are estimated at \$7,500. A total of \$3,500 will be paid from the Alternative Irrigation Diversion Fund and remaining costs will be covered by the ditch company.

Engineering services were also provided to the East Sanders County Conservation District (\$490) to help them with a difficult streambank project on the Clark Fork River near Plains and to the City of Glasgow (\$2389) for a similar problem located on the Milk River near Glasgow.

RECOMMENDATIONS

A contract with a private engineering firm or a firm specializing in fluvial geomorphology should be renewed. Funding should continue to be available on a cost share basis for those irrigators or owners of streambank property who propose projects that will benefit fishery resources. Assistance should also be available to individuals interested in solving diversion and streambank problems that have chronically damaged aquatic resources.