

**COLORADO RIVER RECOVERY PROGRAM  
FY-2001 PROPOSED SCOPE OF WORK**

**No.: CAP-28**  
(for MC Use)

Lead Agency:	U.S. Bureau of Reclamation	<u>Category (check)</u>	<u>Expected</u>
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I. Title of Program

Screening of the Tusher Wash Diversion Dam canal intake  
(Green River Canal Company and Thayn Hydropower)

II. Relationship to RIPRAP

Green River Action Plan: Mainstem II.B.5

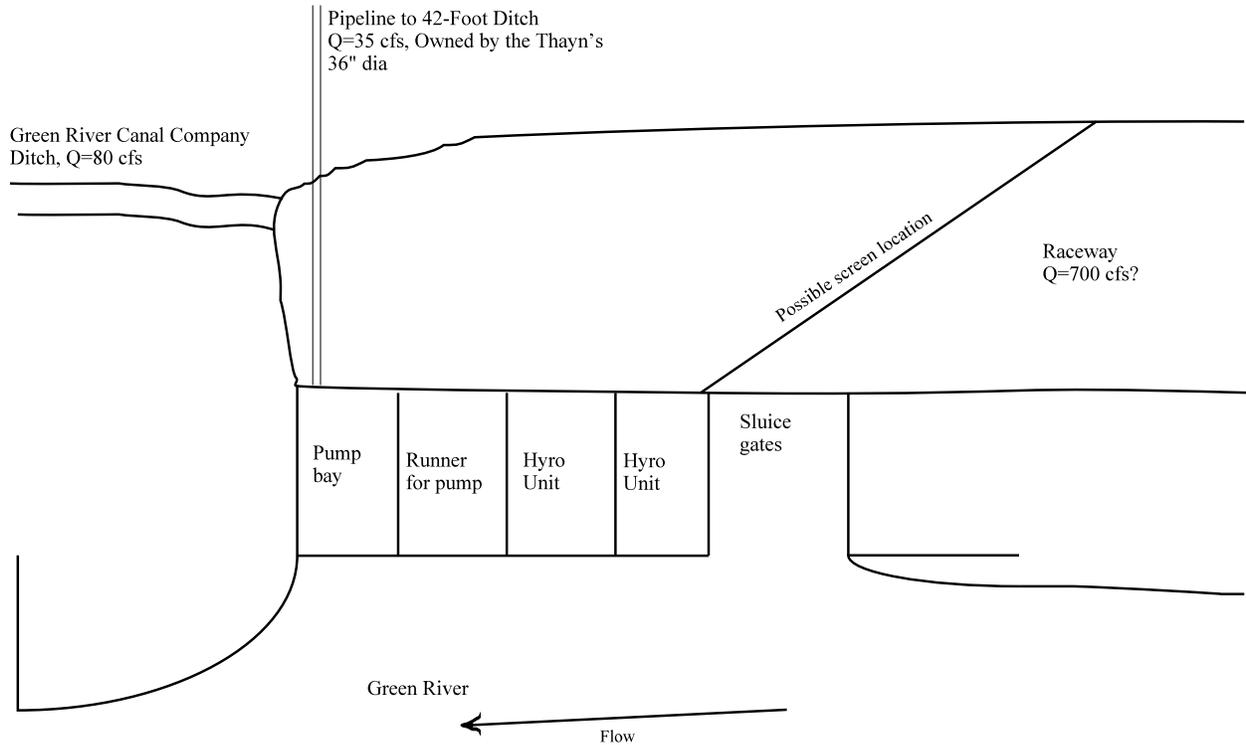
III. Study Goals, Objectives, End Product

Listed and other native fishes have been documented traversing this reach of river and are often found upstream of the diversion structure. Based upon the potential to entrain fish and the research at the Tusher Wash Diversion Dam on the Green River in Utah, screening the diversion to prevent entrainment is prudent.

Project Goals are to design and construct a fish screen for the diversion that will exclude, without harm, adult fish approximately 300 mm in length. At the direction of the Recovery Program and the Fish and Wildlife Service, the Thayn's and Green River Canal Company will be responsible for the long-term operation and maintenance of the screen. Reclamation will establish this requirement by contract. Reclamation will design the fish screen to minimize operational impacts to current water uses. However, a screen will slightly restrict canal flow. The Recovery Program has decided it will not mitigate this impact of the screen.

**Background:** Tusher Wash (Green River Canal Company & Thayn Hydropower Project)

The Tusher Wash Diversion Dam diverts water from the Green River into a 'raceway' (canal) that delivers water to a gravity canal of the Green River Canal Company. The raceway also carries water for Lee and Leon Thayn to use in pumping irrigation water to their lands and to generate electricity. A dead adult razorback sucker was found in the raceway this spring 1999. A recent ESA enforcement action corrected this 'takings' incident, on a short-term basis. On August 12, 1999, a conference call was held among Service and Reclamation staff: Reed Harris, Keith Rose, Henry Maddux, Pat Nelson, Bob Norman, Lorrie West to discuss preventing or minimizing future losses on a long-term basis.



**Figure 1** - Layout of Thayn Hydro and Green River Company facilities

The recent taking incident was precipitated by a new wall constructed in the raceway, in front of the pump and power plant intake. The likelihood of additional taking was avoided by removal of the wall. Entrainment risk has also been temporarily reduced by curtailing power plant operation to use one turbine.

The Canal Company has a very senior water right to divert 60 cfs to irrigate lands by gravity. Except for ESA approval (issuance of a permit) for any taking incidental to operation of their facilities, there is no Federal nexus that triggers NEPA compliance.

The Thayns have a less senior irrigation right to divert 35 cfs, and another 200 cfs is required to pump their irrigation water to the 42-foot Canal. The pump is housed within the power house of the Thayn Hydro Project. This hydro project required ESA and NEPA compliance prior to FERC approval of a license exemption (FERC Project No. 6643). They have installed two hydro units, each of which use at least 200 cfs of water.

The raceway has a capacity for 600-700 cfs of water. The Canal Company and the Thayns continue to litigate issues relating to shared use of the raceway, and a judge's ruling was originally due in the fall or early winter of 1999. At issue is whether or not the Thayne's are contractually limited to use no more than 400 cfs for pumping irrigation water and generating power.

Lack of any flow measurement devices limits management of the system.

The Service concluded ESA consultation with FERC on the Thayn Hydro Project with a 'no effect' determination on 6/16/87 (i.e., before the Recovery Program was established). FERC's EA/FONSI was issued 9/30/1987.

**Proposed Action:** Screen Canal intake to prevent future take

One of the critical design parameters which must be determined before design of the fish screen can begin is the design flow rate. This is a critical factor affecting the cost of fish screen. The difference between a 400 cfs screen and a 700 cfs screen is about \$900,000.

As was mentioned above, the canal Company and the Thayn's are in litigation regarding permitted flow in the raceway. It is anticipated that whoever the judge's ruling goes against, the other party will appeal. If a final ruling is delayed, there will be a delay in starting design. To be able to award the contract to construct the screen in the fall of 2001, Reclamation must know the design flow by November 1, 2000. Several pre-design activities such as surveying, easements for construction and permits, can be accomplished without this ruling but design is dependent on the design flow rate.

**Options:** Options for installation of a fish screen as a Recovery Program were discussed. Possibilities that would meet purpose of & need (avoid/minimize future taking, recover fish & protect water use):

1. Screen for 700 cfs (80 GR Canal Co.+35 Thayn+400 Pump/Power limit=515+add'l Power) \*Eliminate if Recovery Program can't justify costs for capacity over 400 cfs contract limit
2. Screen for 550 cfs (515 cfs + "E" for efficiency/error); Compensate power production loss \*E compensates for screen head loss; assumes screen removal to generate power in winter
3. Screen for 350 cfs (80 Irr + 235 Irr/pump + E); Compensate power production loss \*Power loss due to no generation during irrigation season, but no effect during winter.
4. Screen for 125 cfs (80 Irr + 35 Irr + E); Replace hydraulic pump with electric pumps \*Limit power production to winter; Compensate for electricity costs of pumping
5. Separately screen GR Canal (80 cfs) & Pump (235 cfs) intakes; Compensate hydropower loss

**Recommendation:** Proceed with design and construction of a 515 cfs screen. This will accommodate all legally and contractually required flows. Costs below are assuming a 515 cfs screen.

#### IV. Study Area

Green River in the vicinity of the Tusher Wash Diversion Dam

##### Task description:

1. Work with the Green River Canal Company and the Thayns.
2. Identification of new alternatives and evaluation of all alternatives and define design criteria.
3. NEPA and permitting.
4. Develop an operation and maintenance agreement for the long-term operation and maintenance of the screen.
5. Prepare plans and specifications for recommended screening option.
6. Construction of screen.
7. Operate screen.

##### Study Schedule and Budget

Task	1999	2000	2001	2002	Total
Task 1		5,000	15,000		20,000
Task 2	31,000		15,000		46,000
Task 3			15,000		15,000
Task 4			15,000		15,000
Task 5			210,000		210,000
Task 6			1,610,000		1,610,000
Task 7					0
Total	31,000	5,000	1,880,000	0	1,916,000