

I. Project Title: **Highline Lake screening O&M**

II. Principal Investigators:

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III. Project Summary:

A spillway barrier net designed to control escapement of nonnative, warmwater fishes from Highline Reservoir (Highline State Park, Colorado) that might enter the Colorado River was installed in August 1999. In addition to keeping the nonnative and native fishes apart, installation of the fish barrier net brings the reservoir into compliance with the nonnative fish stocking requirements established by the states of Colorado, Utah, and Wyoming, and the U.S. Fish and Wildlife Service. Ayres Associates, Inc., of Boulder, Colorado, was the design engineer; Redden Nets of Bellingham, Washington, was the net manufacturer; and Ashley Construction of Grand Junction, Colorado, installed the net.

The fish barrier net is made of Dynema, a high molecular weight polyethylene material, which is extremely strong and durable. The net is approximately 363 feet wide, 19 feet deep, weighs 1,400 pounds, and has mesh openings no larger than a quarter inch. The net stretches across an area of the reservoir that empties into a concrete spillway that flows into Mack Wash and Salt Creek before reaching the Colorado River. Rigging attaches to the spillway's sides and to 13 anchors secured on the bottom of the lake. It is designed to flex with the surge of the current and changing water depth to prevent fish from escaping over or under it.

The purpose of this project is to O&M the net and associated hardware. A new net is planned for installation in 2005.

IV. Study Schedule: 1999-2004

V. Relationship to RIPRAP:

Colorado River Action Plan: Mainstem

III.A. Reduce negative impacts to endangered fishes from sport fish management activities.

VI. Accomplishment of FY 2003 Tasks and Deliverables, Discussion of Initial Findings and

Shortcomings:

Task 1. Maintenance of the floating buoy line that protects the net.

Maintenance of the floating buoy line and floating sign was not extensive; the floats and floating signs are still in good condition and we do not anticipate the removal of them when the new net is installed.

Task 2. Net cleaning and repair operations (in water).

We continued routine cleaning operations utilizing our barge and hydraulic cleaning from the surface. The best time to conduct the cleaning appears to be immediately prior to the water coming into the lake the beginning of April and prior to the high flows through the lake in late August and September. The net cleaning is the most costly operation of all the tasks. High flows will suck the net and the skirt under water if cleaning is not sufficient.

Task 3. Weekly visual survey.

Our survey found the need to re-attach the skirt PVC deployment sections on numerous occasions. We found sand and gravel encroaching on the west end of the net and took appropriate action.

Task 4. Underwater survey.

Due to the need to determine if the net could last an additional year we conducted an additional underwater inspection. This inspection conducted on October 21, 2003 showed: Cables, shackles, manta bolts and boat warning buoys all look to be in satisfactory condition. Some of the Manata bolts are out of the lake bottom by 18". The bottom of the skirt at the west end is accumulating gravel again. Areas between buoys 3-10 area saturated and need to be cleaned ASAP. All these conditions will be addressed in the early spring of 2004 when ice is off and boats can access the reservoir.

Task 5. Deployment of the net skirt.

Continues to be problematic. The new net will be redesigned.

Task 6. Coordinate net replacement.

Project originally scheduled for Federal Fiscal Year 2003-2004 with DOW and FWS. Postponed due to funding issues; will be pushed to 2004-2005.

Task 7. Continue to evaluate the siltation issue on the west end of the net.

