

COLORADO RIVER RECOVERY PROGRAM
FY 2013 ANNUAL PROJECT REPORT

RECOVERY PROGRAM
PROJECT NUMBER: C-28a

Stationary PIT detection system in the Green River Canal, Green River, UT

USU cooperative agreement number R11AC40005

Lead Agency: U.S. Bureau of Reclamation

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- I. Abstract: The goal of this project is to evaluate entrainment of PIT-tagged native fish (both non-listed and endangered) in the Green River Canal near Green River, Utah using a passive interrogation array (PIA). We obtained permission from the Green River Canal Company to install and operate a PIA in the Green River Canal on January 7, 2013. On March 20, 2013 we completed our installation and activated the system. Canal operations began in early April and lasted to mid-November. The system functioned uninterrupted for the entirety of the irrigation season and detected a number of PIT-tagged fish during that time. Data analysis is pending.
- II. Study schedule: FY13-FY16

III. Relationship to RIPRAP:

Green River Action Plan

II. Restore habitat

II.B.2 Screen Tusher Wash diversion to prevent endangered fish entrainment, if warranted.

II.B.2.b Design.

IV. Accomplishment of FY 2013: Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Task 1: Installation, testing and activation of PIA in the Green River Canal. We obtained permission to install the PIA by January 7, 2013 through a signed memorandum of understanding (MOU) between the Recovery Program and the Green River Canal Company. Minor changes to this MOU regarding antenna size were made on Feb 6. On March 20 we installed the PIA at the agreed upon location (about 100 m below the canal head gates). The PIA system was constructed from components from the Maybell Ditch PIA (Recovery Program project 146) and is shown in Figure 1. Antenna loops were two 4' X 16' rectangles constructed from schedule 80 PVC which house the antenna wiring. The loops were fastened in upright position to t-posts driven into the canal substrate at the channel margins. The antenna loops were connected to the scanner and data logger via cables buried in a shallow trench (6-8" deep). All electronics are located in a sealed job box placed next to at the solar panel mounting (Figure 2). The power system consists of two, 160 Watt solar panels with a 256 amp hour battery bank. The system was tuned to read PIT tags passed through the dead center of the rectangular loops which ensures good readability (about 20-24") across the entire antenna. We had to increase amperage to the loops to attain this level of performance due to unusually high ambient noise levels.

Task 2: Operate system during the irrigation system; download antennae data, perform diagnostics, repair system if necessary; system shut-down. The system operated without interruption throughout the entirety of the irrigation system (April 1-mid-November). Data was downloaded remotely periodically throughout that time period and stored on USFWS computers. No repairs to the antenna system were required. There was one report of debris caught on the antenna loops in early September, but we did not observe any debris when we visited the site on Sept 11. Detections of PIT-tagged fish were made consistently throughout the irrigation season. However, data analysis is pending at this time.

Following canal shut-down in mid-November, 2013, the PIA will be deactivated and temperature-sensitive equipment removed for the winter.

V. Recommendations: Resume PIA operations prior to the onset of the 2014 irrigation season.

VI. Project Status: Ongoing

VII. FY 2013 Budget Status

- A. Funds Provided: \$11,997.89
- B. Funds Expended as of September 30, 2013: \$11,997.89
- C. Difference: \$0
- D. Percent of the FY 2013 work completed, and projected costs to complete: 100%.
- E. Recovery Program funds spent for publication charges: \$0

VIII. Status of Data Submission (where applicable): Not Applicable

Signed: /s/ Dave Speas
Principal Investigator

November 19, 2013



Figure 1. Completed PIA antenna loops, Green River Canal (looking downstream), March 20, 2013.



Figure 2. PIA electronics job box (foreground) in front of solar panel. PIA antennas can be seen in the background. Green River Canal, March 20, 2013.